

**Creation Care in Maasailand**  
**Utunzaji wa Uumbaji katika Muktadha wa Wamaasai**  
**Erripoto oo Nkitobirunot te Enkop oo Irmaasai**



**Creation Care in Maasailand**  
**Utunzaji wa Uumbaji katika Mukhadha wa Wamaasai**  
**Erripoto oo Nkitobirunot te Enkop oo Irmaasai**

**Lessons to Bless the Church and God's Good Creation**

**Confirmation/*Kipa Imara***

**Women's Groups**

**Secondary Education**

**Theological Education by Extension**

**Written by Lais Joseph, Ezekiel Megiroo, and Suzana Sitayo**

**Edited by Beth E. Elness-Hanson**

**Forewords by Godson Abel Mollel and Knut Holter**

**Translations by Daniel Kosia Mokoro and Joseph Kosia**

Creative Commons license CC BY-NC-SA: Attribution-NonCommercial-ShareAlike: These lessons are developed to be a blessing to the Maasai. Thus, they can be freely used, copied, and adapted with the following guidelines:



- **Attribution:** Permission is given to freely copy, distribute, display, perform and make derivative works and remixes based on this content with attribution of the author(s), i.e., by author's name.
- **NonCommercial:** Others may copy, distribute, display, perform the work and make derivative works and remixes based on it only for non-commercial purposes. For commercial applications, contact the owner of the lessons.
- **ShareAlike:** Others may distribute derivative works only under a license identical to (“not more restrictive than”) the license identified here.

Names: Joseph, Lais (Lais Joseph), author; Megiroo, Ezekiel (Ezekiel Megiroo), author; Sitayo, Suzana (Suzana Sitayo), author; Elness-Hanson, Beth E. (Beth E. Elness-Hanson), editor; Mollé, Godson Abel (Godson Abel Mollé), contributor; Holter, Knut (Knut Holter), contributor.

Title: Creation Care in Maasailand

Identifiers: ISBN: 979-8-234-05793-8

Subjects: Climate change. | Global warming. | Maasai. | Biblical creation care. | Ecotheology. | Ecological justice. | Indigenous environmental knowledge. | Climate science. | Faith-based climate activism. | Evangelical Lutheran Church in Tanzania. | Climate anxiety. | Hope.

2026

Self-published by Mama Anya

Moshi Lutheran Printing Press, Moshi, Tanzania

First edition

Contact: Beth E. Elness-Hanson, <https://www.mamaanya.com/>

Suggested citation: Joseph, Lais, Ezekiel Megiroo, and Suzana Sitayo. *Creation Care in Maasailand*. Edited by Beth E. Elness-Hanson. With Godson Abel Mollé and Knut Holter. Mama Anya, 2026.

Cover design and layout, photos (front cover and internal), graphics, and illustrations: Beth E. Elness-Hanson

Back cover Earth source image: Public domain, NASA, [https://svs.gsfc.nasa.gov/vis/a000000/a005500/a005570/Earth\\_wAtmos\\_spin\\_02.05500.still.jpg](https://svs.gsfc.nasa.gov/vis/a000000/a005500/a005570/Earth_wAtmos_spin_02.05500.still.jpg)

Sun and adapted image: Public domain: "The Greenhouse Effect" in: US EPA (December 2012) *Climate Change Indicators in the United States*, 2nd edition, Washington, DC, USA: US EPA, p.3. EPA 430-R-12-004. [https://commons.wikimedia.org/wiki/File:Earth%27s\\_greenhouse\\_effect\\_\(US\\_EPA,\\_2012\).png](https://commons.wikimedia.org/wiki/File:Earth%27s_greenhouse_effect_(US_EPA,_2012).png)

# Table of Contents

The Bishop’s Blessing: Rev. Bishop Dr. Godson Abel Mollel.....	7
A Double Blessing: Rev. Prof. Dr. Knut Holter, Supervisor .....	9

## Part 1: Overview of the Project

1. Overview of the Project that Developed these Lessons .....	11
a. A blessing from Mama Anya .....	13
b. Acknowledgements .....	14
c. Research project background and funding .....	15
d. Stakeholders .....	15
e. About the Authors, Other Collaborators.....	16
f. About the Lessons .....	17
g. Website .....	20
2. Teaching Tips for Teachers .....	21

## Part 2: Lessons for Confirmation/Kipa Imara (Kiswahili & Maa)

3. Biblical Creation Care.....	25
4. Maasai Traditional Environmental Knowledge .....	39
5. Climate Science for a Pastoralist Context.....	51

## Part 3: Lessons for Women’s Bible Study Groups (Kiswahili & Maa)

6. Biblical Creation Care.....	73
7. Maasai Traditional Environmental Knowledge .....	89
8. Climate Science for a Pastoralist Context.....	107

## Part 4: Lessons for Theological Education by Extension (TEE) (English & Kiswahili)

9. Biblical Creation Care.....	127
10. Maasai Traditional Environmental Knowledge .....	141
11. Climate Science for a Pastoralist Context.....	159

## Part 5: Lessons for Diocese Secondary Schools (English)

12. Biblical Creation Care.....	179
13. Maasai Traditional Environmental Knowledge .....	187
14. Climate Science for a Pastoralist Context.....	193

## Part 6: Shared Resources for the Lessons

15. Resources for Lesson 1: Biblical Creation Care .....	205
16. Resources for Lesson 2: Maasai Traditional Environmental Knowledge .....	209
17. Resources for Lesson 3: Climate Science for a Pastoralist Context .....	215

## Appendices

A. Climate Change Vocabulary in English, Kiswahili, and Maa .....	227
B. MamaAny.com website.....	231



## The Bishop's Blessing

It gives much joy and honor, having been entrusted in introducing *Creation and Care in Maasailand*, a work that speaks by itself whereby spiritual, culture, and environmental awareness embrace one another and therefore, compacted within Maasai community in their contextual setting. This work appears in real time with insightful aspects on traditional and spiritual aspects that give birth to the sustainable practices and livelihood that are essential in local and global context.

This multi-disciplinary work finds its roots in systematic and classical integration of biblical creation and care, Maasai traditional environmental knowledge, climate science and other sources within biblical, eco-theological frameworks, and it could not emerge without commitment, love, and the writers' own participation in the spiritual and life experience in Maasai community.

Through theological, cultural, ethnographic, contextual, environmental, and ecological consideration in Maasai sociocultural setting, this work brings to light an outstanding awareness, whereby societal ecological responsibility earns its significant consideration. Bishops, pastors, evangelists, church elders, policy makers, educators, practitioners, and participants in local-global contexts will find this work valuable and a credible source at hand. It paves more ways for meaningful reflections and practices that takes creation care more seriously and meaningfully, where spiritual, cultural, and conservation aspects are seriously considered and, therefore, strengthening these contextual and societal imperatives.

This work embraces critical thinking and takes the context seriously. It is readable, practical, and understandable for all the giraffes and the dik-diks.

One may not but admirably bless the facilitator of *Creation and Care in Maasailand*, a well-known and honored lady by the Maasai of Tanzania as she appears in Maasailand, whose nick name is (Mama Anya), by using the Maasai blessing: *Mikitamayana Engai* (God bless you).

With all my hearty thanks, appreciation, and salutation,

Rev. Dr. Godson Abel Mollel  
Bishop of the ELCT North Central Diocese  
Evangelical Lutheran Church in Tanzania



## **A Double Blessing**

This book is part of a project on climate change mitigation in Maasailand. The book can be seen as a tangible and concluding result of this project. However, the book should not be taken as an end of the project. On the contrary, the lessons that are found throughout the book have a potential of being used in the time ahead. They can and should be used as tools for facilitating not only reflection around climate change mitigation in Maasailand but also corresponding action on grassroots level, such as in schools, churches, and other community groups.

Climate change mitigation is a topic that attracts much interest today, in Maasailand and beyond. Most projects and researchers, however, approach the question of climate change mitigation from typically sciences perspectives. It might therefore come as a surprise that the present project—now in the form of a book—approaches the challenges of climate change mitigation from perspectives that encourage Maasai reading communities—such as confirmation classes, women’s Bible study groups, theological students, and secondary school students—to let traditional Maasai and biblical wisdom on creation care to interact.

If the approach of the project and book comes as a surprise, it may still exemplify the double blessing of letting traditional Maasai wisdom and practice on creation care interact with corresponding biblical wisdom. Both traditions honor the Creator and our responsibility for continuing creation care. So let us read the two together and then act accordingly!

Rev. Prof. Dr. Knut Holter  
Project Supervisor at VID Specialized University, Norway,  
NLA University College, Norway



# **Part 1: Overview of the Creation Care in Maasailand Project**





# 1. Overview of the Project that Developed these Lessons

## A Blessing from Mama Anya

Growing up as a Lutheran pastor's daughter and as one who studied in Bible college, I was very familiar with the biblical concept of blessings. I recall my course in Genesis, where I learned that Abraham was blessed to be a blessing to all the people groups of the world (Genesis 12). This is a foundational text laying out God's mission of reconciliation of humans and all creation. Then, through faith in Jesus, we are grafted into this covenant, such that we are also blessed to be a blessing and be part of God's grace-filled work of reconciliation. Yes, I understood this in my *head*.

However, it was during my three years teaching at the MaaSae Girls Lutheran Secondary School in Monduli (2002–2004) that I began to glimpse how blessings were palpable in Maasailand, and this insight profoundly expanded my understanding. When the rains come, the Maasai say, "Ewo Engai" (God has come). The Maasai have helped me understand the power of blessings in all of life. I began to understand blessings with my heart.

Now, with this Marie Skłodowska-Curie postdoctoral research project, primarily funded by the European Union's research commission, I have the privilege of living out being a blessing with my hands—actually doing things together with many wonderful collaborators. I designed a project to be a blessing when developed together with the Maasai. In research language, this means "two-way transfer of knowledge" and "shared impacts." So, when I gathered a stellar group of Maasai Stakeholders to shape this project, I explained that I had come with an empty calabash (gourd), something that carries the true blessing of milk. This metaphor of a calabash makes sense in Maasailand where women milk the cows directly into gourds, providing the staple of the Maasai diet

in a shared calabash for sustaining the life of the family. I came with a calabash—a framework for a research project—yet at the beginning, it was empty. I invited the Stakeholders to fill the calabash with the blessings of Maasai values and traditional wisdom. Then, these blessings would shape the project and be shared with the broader Maasai community. Blessed to be a blessing. (See more information on the Stakeholder role, p. 15.)

In a discussion with one of the Stakeholders, I said, "You help me be a better blessing; this work is shaped by your wisdom." Yes, I brought some resources, thanks to the funding of the EU research council, but as many know, resources can cause problems if used unwisely and do not address identified needs. The Stakeholders and other collaborators made these resources a blessing. So, I was surprised to read in a book on faith-based environmental activism that the red thread (theme) uniting all the essays was "tensions."<sup>1</sup> Providentially, this project was the opposite, characterized by eager participation (all accepted my invitation to be involved), respectful cooperation, and even shared joy, especially seen in Maasai music and dance. Ewo Engai! God has showered blessings upon this project, because the empty calabash was filled with Maasai values and wisdom. I am forever grateful. Asante sana. Ashe naleng'.

Mungu akubariki. /Mikitamayana Engai. / With blessings,  
Mama Anya / Beth E. Elness-Hanson, PhD

<sup>1</sup> Jens Köhrsen, Julia Blanc, and Fabian Huber, eds., *Religious Environmental Activism* (Routledge, 2023).

## Acknowledgements

I am profoundly grateful for the following people who have helped to facilitate this project and “fill my empty calabash (gourd)” with Maasai values and wisdom, as well as many other significant contributions (see p. 13). “I am because we are, and since we are, therefore, I am.”

Rev. Bishop Dr. Godson Abel Mollel,  
North Central Diocese, Evangelical  
Lutheran Church in Tanzania

Rev. Prof. Dr. Joseph Parsalaw, retired Vice  
Chancellor, Tumaini University Makumira

Rev. Prof. Dr. Knut Holter, Supervisor, VID  
Specialized University, Norway

### Stakeholders (see p. 15)

- Dr. Neema Kitasho
- Mrs. Sion Kereine
- Mr. Julius Laiser
- Rev. Ezekiel Lemaso
- CPA Elizabeth Loiruck
- Ms. Martha Ntoiopo
- Hon. Benedict Ole Nangoro
- Prof. Dr. Sarone Ole Sena
- Rev. Prof. Dr. Joseph Parsalaw
- Rev. Dr. Suzana Sitayo

### Authors (see p. 16)

- Mwl. Lais Joseph
- Rev. Ezekiel Megiroo
- Rev. Dr. Suzana Sitayo

### VID Specialized University, Norway

- Dean Vebjørn Horsfjord
- Prof. Tomas Sundnes Drønen
- Prof. Daniela Rapisarda
- Prof. Rebecca Solevåg
- Ms. Maria Tendenes

### Core Collaborators and Support

- Office Management Secretary Joyce Felix Mshanga, Vice Chancellor’s Office, Tumaini University Makumira
- Rev. Dr. Seth Mesiaki Ole Sululu, Principal, Makumira Training Institute
- Dr. Daniel Kosia Mokoro, Translator, Statistics Analyst
- Mr. Joseph Kosia, Research Assistant, Translator
- Deputy Principal for Administration Randall Stubbs, Makumira Training Institute, and Director, Cultural Arts Centre
- Deputy Principal for Academics Emmanuel Athanas Ndale, Makumira Training Institute
- Assistant Director Gloria Kileo, Cultural Arts Centre
- Nacco and Imani at Khaki Media Pro
- Mr. Goodluck Natai
- Ms. Laurie Meyer
- Dr. Elenn’ Parrish

### Fieldwork Sites

- MaaSae Girls Lutheran Secondary School*
  - Head of School Tulizael Marco Mbise
  - Mwl. Lais Joseph
  - Matron Elisifa Mollel
  - Student research participants and choirs

### *Moringe Sokoine Secondary School*

- Head of School Lazaro Ndooki
- Mwl. Yona Mollel
- Student research participants and choirs

### *Amazing Grace Widows and Orphans*

- Founder and CEO Winny Ene Sirikwa
- Research participants

### *Asasi Ya Naapok (Naapok Bead Project, CBO)*

- Mrs. Bethany Friberg, Lutheran missionary, research project facilitator at *Asasi Ya Naapok*
- Naapok artisan research participants

### *Kibaya Lutheran Church*

- TEE research participants

### *Wasso Lutheran Church*

- TEE research participants

### *Olchoroonyokie Village*

- Mwinj. Raphael Sitelu Laiser
- Rev. Magilani Lesion Molell
- Chairman Silas Loiruk Laiser, Olchoroonyokie
- Choir director Abel Zephania Molell
- Student research participants and choirs

### *Lendikinya Lutheran Church*

- Mwinj. Seth Nnko
- Student research participants and choir

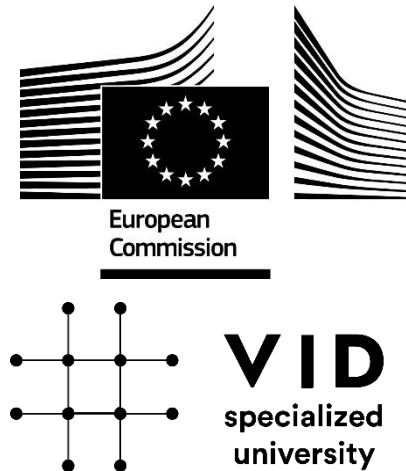
### *Monduli Special Guests*

- Monduli District Office Environmental Officer, Isaack Urassa
- District Pastor Gervas Meitamei
- Retired District Pastor Joel Nangole
- Fr. John Maendeleo

## Research Project Background and Funding

This is part of a Marie Skłodowska-Curie postdoctoral research project facilitated by Dr. Beth E. Elness-Hanson (“Mama Anya”), a former volunteer teacher at the MaaSae Girls Lutheran Secondary School (MGLSS) in Monduli, Tanzania, for three years (2002–2004).

The research was funded primarily by the European Commission (European Union) and partially funded and managed by VID Specialized University, Stavanger, Norway, with supervisor, Rev. Prof. Dr. Knut Holter. The Tanzanian local partner was Rev. Prof. Dr. Joseph Parsalaw, who was then Vice Chancellor at Tumaini University Makumira, Usa River, Tanzania. All the Stakeholders, writers, and other collaborators were compensated for their services in alignment with Tanzanian government established rates.



## Stakeholders and Other Core Collaborators

The project began by receiving a blessing by Rev. Bishop Dr. Godson Abel Mollel with permission to engage the research in the North Central Diocese of the Evangelical Lutheran Church in Tanzania (ELCT).

Then, a stellar Maasai Stakeholder Group served as the advisory council, meeting twice in Arusha. This group shaped the research by:

- Determining the core Maasai values for the overall project;
- Establishing the learning outcomes for the lessons; and later,
- Evaluating the draft lessons in accordance with the established values and learning outcomes.

## The Maasai Stakeholders

These Stakeholders graciously shared their traditional knowledge and expertise:

- Dr. Neema Kitasho, environmental scientist, Lecturer at Sokoine University of Agriculture
- Mrs. Sion Kereine, a leader at *Asasi Ya Naapok* (Naapok Bead Project, CBO), Ketumbeine council member from 2005–2015
- Mr. Julius L. Laiser, CBNRM, Natural Resources Management specialist, Technical Advisor for LOKEEN-Natron, and Co-Lead Implementing Person for the Faith for Restoration Project (4FR) funded by CKU in collaboration with WWF, RECODDA and LOKEEN.
- Rev. Ezekiel Lemaso, Senior Pastor of Ilkiranyi Parish of ELCT North Central Diocese; Lecturer and Deputy Principal (formerly Academic Officer) at Oldonyosambu Theological College; North Central Diocese representative for this project appointed by the bishop.
- CPA Elizabeth Loiruck, Deputy Principal for Planning, Finance, and Administration at the Arusha Lutheran Medical Training Centre and Director and Founder of TAA Finance
- Ms. Ntopoi Martha, environment planning and management
- Honorable Benedict Ole Nangoro, retired Minister of Parliament representing Kiteto who served as the Deputy Minister of Livestock Development and Fisheries
- Prof. Dr. Sarone Ole Sena, Professor and Deputy Vice Chancellor in charge of academic affairs at the International Leadership University, Kenya
- Rev. Prof. Dr. Joseph Parsalaw, retired Vice Chancellor of Tumaini University Makumira, local research partner
- Rev. Dr. Suzana Sitayo, Lecturer at Tumaini University Makumira and Principal of Oldonyosambu Theological College

## About the Authors

### ***Mwalimu Lais Joseph: Secondary School Lesson Writer and Teacher***

Mwalimu (Teacher) Lais Joseph is an advanced level teacher with expertise in biology and geography. He was located at the MaaSae Girls Lutheran Secondary School at the time of the writing and teaching of the lessons there. He intersected his natural science competence with his Indigenous Maasai knowledge in the development of these lessons. This breadth of knowledge is applied through his honed skills as an effective educator, demonstrated in the lesson writing and his instruction of them. His knowledge and pedagogical skill are demonstrated also in the cleaver coalescing of these aspects with biblical creation care messaging developed in collaboration with Rev. Megiroo. The prayer at the end of Lesson 1, Chapter 12, is a beautiful example of the value he brought to this project.

### ***Rev. Ezekiel Megiroo: Confirmation/Kipa Imara Lesson Writer and Teacher***

Rev. Ezekiel Megiroo is a Pastor at Evangelical Lutheran Church in Tanzania, North Central Diocese. He is the pastor in charge of the Monduli Lutheran Parish and former instructor at Oldonyosambu Theological College. With responsibility over worshipping sites and the confirmation program in each location, Rev. Megiroo has developed and taught the lessons for the confirmation ministry. These lessons become an important resource for the entire North Central Diocese and other Maasai contexts. With further developments beyond this project, Rev. Megiroo has initiated the Monduli Parish Youth Campaign on Creation Care. He continues as a vanguard of biblical ecojustice and a resource for the ELCT.

### ***Rev. Dr. Suzana Simon Sitayo: TEE and Women's Bible Study Groups Lesson Writer and Teacher***

Rev. Dr. Suzana Simon Sitayo is a Tanzanian theologian, ordained minister, and academic serving the Evangelical Lutheran Church Tanzania. She holds a PhD in Religious Science, with a master's degree in missiology. She has been a Lecturer at Tumaini University Makumira since 2018 and supervises undergraduate and master's research. Alongside her university role, she has served as College Principal of Oldonyosambu Theological College (OTC) for training lay pastors (called evangelists in the ELCT) who are trusted local leaders and teachers in the church. Thus, she is the author of these lessons for the TEE (Theological Education by Extension) students at OTC.

## Other Collaborators

### ***Rev. Dr. Seth Mesiaki Ole Sululu***

Rev. Dr. Sululu is Principal of the Makumira Training Institute. He is also a lecturer at both the Faculty of Theology and Faculty of Education, Humanities, and Science at Tumaini University Makumira since 2012. He is a leading expert on Maasai music, holding a PhD in ethnomusicology from University of Hildesheim, Germany. He graciously served as the adjudicator for the special choir competitions that integrated main teaching points into traditional Maasai tunes. He also was the managing producer of the music videos sung by the winners of the music competitions.

### ***Dr. Daniel Kosia Mokoro***

Dr. Kosia is a Senior Education Lecturer at Tumaini University Makumira where he is an instructor for research methods, educational assessment, and statistics courses. He provided statistical analysis expertise for the data analysis of the 11,240 data points collected in the pre-, post-lesson, and longitudinal surveys. In addition, he provided the final Maa translation language review. Moreover, Dr. Kosia is a mentor for Mama Anya with her ongoing development of understanding of the Maasai.

### ***Mr. Joseph Kosia***

Mr. Kosia was engaged as the research assistant for this project. He was the principal facilitator of the orientation and survey data collection during the fieldwork. His multifaceted support and strategic help included the primary Maa language translation of surveys and the lessons, bringing his enthusiasm, diligence, and trustworthiness into every task.

## **About the Lessons**

### ***The Lesson Development Process***

After the Stakeholders developed the core Maasai values and established the learning outcomes (see p. 11), three Maasai writers worked with these guidelines and developed three lessons for each of the following four groups.

<b>Lesson Groups</b>	<b>Author</b>
Confirmation/ <i>Kipa Imara</i>	Rev. Ezekiel Megiroo
Secondary education in Diocese owned institutions	Mr. Lais Joseph
Women's Groups	Rev. Dr. Suzana Sitayo
Theological education by extension (TEE) training for lay pastors (called evangelists in the ELCT)	Rev. Dr. Suzana Sitayo

### ***Collaborative Writing***

The overall coherence of the content developed by three different writers writing was primarily shaped by the core values and learning outcomes—such as the main point for each lesson—that the Stakeholders had established. Yet, some content is distinct, as it includes the writer's perspective that was curated for their own target group. In addition, there was collaboration in the writing process that supported cohesion. For example, Dr. Sitayo shared early versions of her lessons with the other writers. Rev. Megiroo and Mr. Joseph met and worked together to share their expertise of biblical theology and natural science respectively. They also collaborated with an initial test of a lesson with confirmation student groups. Furthermore, Mama Anya supported the development of the lessons through providing the writers with the lesson plan template; pedagogy training on active learning and integrating cognitive, affective, and behavioral learning outcomes; as well as providing resources on ecotheology and climate change information related to a Maasai or pastoralist context that could be appropriated for their lesson development. These aspects helped to develop core coherence for the project.

The writers revised the lessons twice. First, the writers made revisions after feedback of their draft lessons from the Stakeholders. The Stakeholders evaluated the lessons according to the core values and learning outcomes that they established at the beginning of the project in the first Stakeholder meeting. In this second Stakeholder meeting, the Stakeholders worked in small groups to review the draft lesson content from their expertise and competencies: 1) Bible and theology; 2) Maasai traditional knowledge and anthropology; 3) climate science and environmental studies; and 4) hope within a Maasai context. The writers made the final content revisions after statistical analysis of surveys that were part of Mama Anya's research aspect of this project.

### **The Research Project**

Mama Anya developed a survey, reviewed by the lesson writers and two professors of research methods, to identify knowledge and attitudes related to the four lesson themes: 1) biblical creation care, 2) Indigenous environmental knowledge, 3) climate science, and 4) hope (see p. 19). All surveys were taken anonymously in alignment with international research ethical standards. Ethical reviews include:

- The Data Protection Services of Sikt—the Norwegian Agency for Shared Services in Education and Research (Reference # 484011).
- The Tanzania Commission for Science and Technology (COSTECH) (Project reference: CST00000053-2023).

The participants took the surveys *before* the lessons to determine the baseline understanding of the participants. *After* the instruction of the lessons in a half-day seminar format, the participants took the same survey again. *After several weeks*, the participants took the same survey for the third and final time. The surveys demonstrated what knowledge and attitudes developed through participating in the lessons and how these developments were sustained, or not, over several weeks.

The detailed description of the research project appears in a book written by Mama Anya (Beth Elness-Hanson), *Creation Care and the Church in Maasailand: Leveraging Underutilized Resources in Response to the Climate Crisis* (proposed title, forthcoming 2026). This book describes the theoretical frameworks, research design, ethical reviews, methods, the survey, and the statistical analysis of the survey data with more detail, as well as an examination of how this model of creation care contributes to the scholarship and practice of faith-based climate activism. Some more public interest information of the research appears at <https://www.mamaanya.com/>. The website also provides all the lessons printed in this book for downloading without cost. The introduction in this volume provides only a summary of the research which helps the reader to understand the larger postdoctoral research project.

### **Three Languages**

The lessons were originally written in English. According to the group for which the lessons were developed, the lessons are published in one or two languages. Secondary education in Diocese owned institutions is English medium. Thus, the lessons here are only in English. The Theological Education by Extension (TEE) training for lay pastors (called evangelists in the ELCT) is primarily taught in Kiswahili. Thus, the lessons appear in parallel columns of English and Kiswahili. For both the confirmation groups and the women's groups, it is prudent to have a Maa translation. For the translations, there were two steps of an initial translation and a following check and revision of the translation. The native Maa language speakers who worked diligently on the Maa translation are Dr. Daniel Kosia Mokoro and Mr. Joseph Kosia.

One of the challenges in presenting climate science terminology in Maa was that these are new and rather technical concepts to render into a language without existing terminology. There were three native Maa speakers who all have advanced education in environmental management and/or climate science who checked and developed the Kiswahili vocabulary as well as developed and revised the Maa vocabulary used for this project (see Appendix A). This project is indebted to this crucial contribution of these three experts: Dr. Neema Kitasho, Mr. Julius Laiser, and Mr. Lashumbai Kilolong in collaboration with the Maa translators, Dr. Daniel Kosia Mokoro and Mr. Joseph Kosia.

## Engai or Enkai?

The Maa language has several dialects and some variations in spelling. For example, the word for God in Maa has two spellings: *Engai* or *Enkai*. In this collection of essays, the writers had their own preferences for the spelling, thus, both *Engai* or *Enkai* appear in the following lessons. Other Maa language spellings are established by the translators according to their Monduli and Ketumbeine area contexts.

## Integrative Lessons

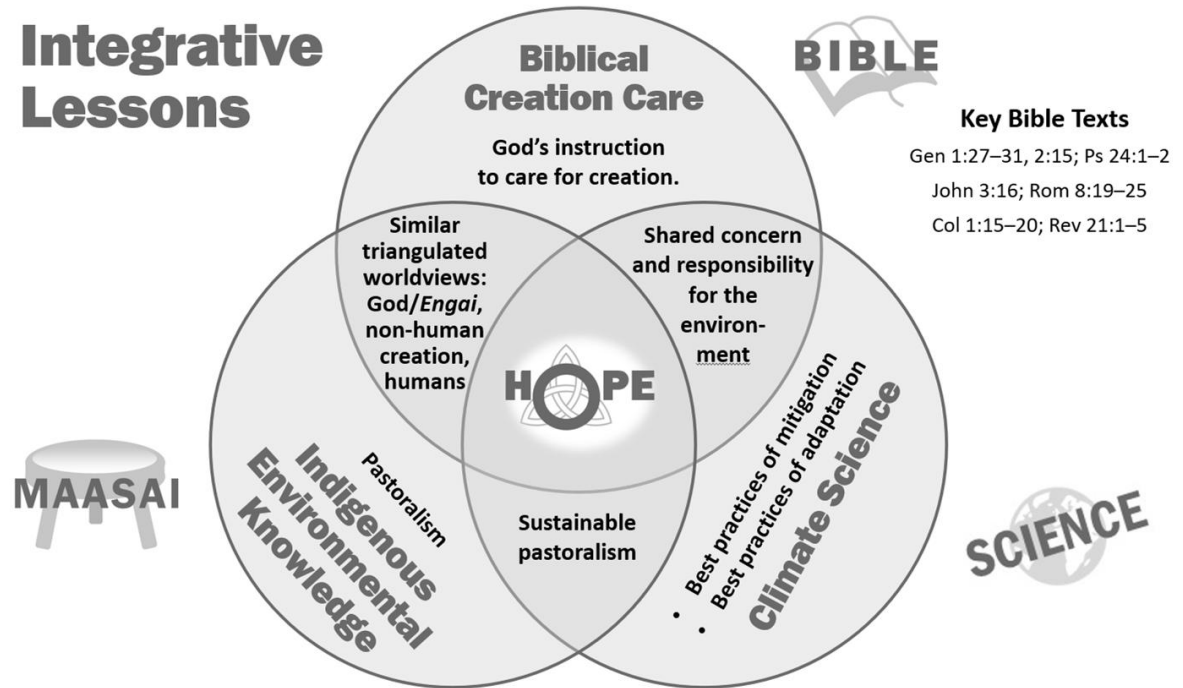
It is undeniable that increasing extreme weather events, changing rainfall patterns, and other environmental degradations have dramatically impacted the traditional Maasai, whose pastoralist livelihoods are dependent upon natural resources.

With these concerns, three Maasai writers—guided by Maasai Stakeholder values and learning outcomes—developed three lessons that enable the community to face the challenges arising from climate change. These lessons are designed to empower the Maasai with biblical, scientific, and practical knowledge to expand the enduring Indigenous environmental knowledge of the Maasai. In addition to knowledge, the lessons include opportunities to enliven motivation for working together and making a difference—engaging the future with hope—as we are commissioned to care for God’s good creation.

There are main points for each of the three lessons that determine the majority of each lesson’s content. Each lesson integrates previews of the next

lesson and subsequent lessons, while also reviewing key concepts from previous lesson (see the illustration). The lessons’ main points are:

1. **Biblical creation care:** God has commissioned (instructed) us to care for God’s good creation. In this lesson, we see how texts in the Bible teach us that God has entrusted us to be part of God’s work. The creation care lessons—the first lesson for each group—represent a general summary of common biblical and ecotheological viewpoints. These lessons are examples from the voices of the writers and do not claim to be the only way of approaching creation care. Additional perspectives and insights are found in the Resources for Lesson 1 in Chapter 15.



2. **Indigenous environmental knowledge:** The Maasai worldview—of the interdependence between humans, the environment, and Engai—is similar to Bible’s “creation triangle” (see p. 45). In this lesson, our Maa community will affirm our Indigenous skills of managing our ancestral land and learn about how our good traditions align with climate science.
  3. **Integrating climate science**—that is appropriate for a Maasai context—can help prevent global climate change as well as prepare for the local challenges faced now. In this lesson, our Maa community will expand our knowledge in caring for creation, by not only supporting Maasai traditions but also appropriating science research that explains the best practices of climate change mitigation (reducing the causes of climate change) and adaptation (reducing the risks of the negative effects of climate change).
  4. **Hope:** Each lesson wraps up with hope shared from the Bible, Maasai wisdom, and the climate scientists.
- Explore the lessons in this volume and discover how each author engaged these main concepts for their group.

## Website

These printed lessons can also be found online in a PDF form at <https://www.mamaanya.com/>.

They are free to download and use to be a blessing with the same Creative Commons license CC BY-NC-SA: Attribution-NonCommercial-ShareAlike (see the colophon/publishing information at the front of this book).

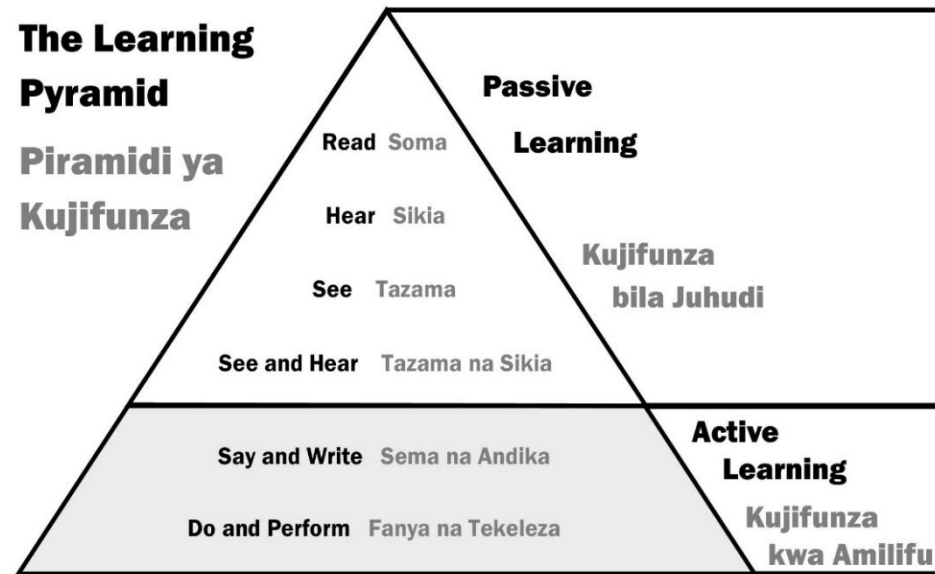
## 2. Teaching Tips for Teachers

### English

- **Adaptable:** These lessons are examples. The Maasai writers wrote the lessons for different groups. Teachers can adapt the lesson plans for other contexts by adding or removing aspects.
- **Italics:** *Words in italics* in the lesson plans are instructional information for the teacher.
- **Active learning:** Active learning methods have stronger learning outcomes rather than lecturing. The most effective and memorable learning happens through methods, such as saying, writing, doing, and performing.
  - This includes small group discussion and exercises where the participants are reflecting upon the concepts and putting them into their own words.
  - Small groups are more productive when there are groups of two to three participants in a group, so that each has an opportunity to speak in short reflection times.

### Kiswahili

- **Inayoweza Kubadilika:** Masomo haya ni mifano. Waandishi wa Wamaasai waliandika masomo kwa makundi tofauti. Walimu wanaweza kurekebisha mipango ya masomo kwa muktadha mwingine kwa kuongeza au kuondoa vipengele.
- **Italiki:** *Maneno yaliyoandikwa kwa alama za italiki* katika mipango ya somo ni taarifa za mafundisho kwa Mwalimu/mfundishaji



This adapted concept was originally developed by Edgar Dale.

- **Kujifunza kwa ushirikiv** Mbinu za kujifunza kwa vitendo/ushiriki zina matokeo bora ya kujifunza badala ya kutoa mihadhara. Kujifunza kwa ufansi na kwa kumbukubmu zaidi hutokea kupitia mbinu, kama vile kusema, kuandika, Kutenda, na kufanya vizuri.
  - Hii inajumuisha majadiliano na mazoezi ya vikundi vidogo ambapo washiriki wanatafakari dhana na kuziweka kwa maneno yao wenyewe.
  - Vikundi vidogo vina tija zaidi wakati kuna vikundi vya washiriki wawili hadi watatu katika kikundi kimoja, ili kila kimoja kipate fursa ya kuzungumza kwa muda mfupi wa kutafakari.

- **Singing as a pedagogical strategy:** In several of the lessons in this book, the writers have encouraged an application (“Took”) activity where small groups of students work together to turn the main point of the lesson into a verse that they write in order to sing it with a traditional Maasai song tune. This is a strong pedagogical strategy for many reasons. First, it reviews the main point of the lesson. Second, music is a great way to remember, because singing involves using more and different brain functions. Third, putting the content into their own words is an important part of reflective learning. Furthermore, putting words to a traditional Maasai tune is not only an effective use of limited lesson time, but it also affirms the Maasai culture. Yes, singing is an important pedagogical strategy, but it will take some time. Try to allow 15-minutes in the lesson time, or perhaps, the students can be given an assignment to work on after class and bring back to the next lesson. This would also provide review of the first lesson before the next lesson begins.
- **Minute markings:** Minutes for each activity are suggested in the far-left column to fit into a 60-minute lesson. These can be adapted according to your available time.
- **A lot of information in the lesson plans:** There is a lot of information in the lesson plans. It may be difficult to include all the information in one 60-minute lesson. Some information is provided to have the core lesson content available for the teachers of the lessons.
- **Lessons for four different groups:** Teachers can compare the lessons from the four different groups for other ideas to see how another writer had developed lesson plans for their specific group.
- **Collected resources in the last three chapters:** Additional information appears in the last three Resource chapters: 15, 16, and 17. All the authors contributed to collecting resources, which were combined at the end of the book. These are resources to expand the teacher’s understanding, but there is too much detail that is beyond the scope of each lesson. The intent is that teachers can read through these resources to be better equipped for teaching the lesson plan without having to do independent research.
- **Kuimba kama mkakati wa ufundishaji:** Kwa masomo kadhaa katika kitabu hiki, waandishi wamehimiza shughuli ya matumizi (“Took”) ambapo vikundi vidogo vya wanafunzi hufanya kazi pamoja ili kugeuza hoja kuu ya somo kuwa ubeti ambao wanaandika ili kuiimba kwa ala/sauti ya nyimbo ya kitamaduni ya Wamaasai. Huu ni mkakati imara wa ufundishaji kwa sababu nyingi. Kwanza, unapitia hoja kuu ya somo. Pili, muziki ni njia nzuri ya kukumbuka, kwa sababu kuimba kunahusisha kutumia kazi nyingi zaidi na tofauti kwenye ubongo. Tatu, kuweka maudhui katika maneno yao wenyewe ni sehemu muhimu ya kujifunza kwa kutafakari. Zaidi ya hayo, kuweka maneno kwenye wimbo wa kitamaduni wa Wamasai si tu matumizi bora ya muda mdogo wa somo, lakini pia inathibitisha utamaduni wa Wamasai. Ndiyo, kuimba ni mkakati muhimu wa ufundishaji, lakini itachukua muda. Jaribu kuruhusu dakika 15 katika muda wa somo, au labda, wanafunzi wanaweza kupewa kazi ya kufanya baada ya darasa na kuiwasilisha watakaporudi kwenye somo linalofuata. Hii pia itatoa mapitio ya somo la kwanza kabla ya somo linalofuata kuanza.
- **Alama za dakika:** Dakika za kila shughuli zinapendekezwa katika safu wima ya kushoto ili kuendana na somo la dakika 60. Hizi zinaweza kubadilishwa kulingana na muda uliopo.
- **Taarifa nyingi katika mipango ya somo:** Kuna taarifa nyingi katika mipango ya somo. Inaweza kuwa vigumu kujumuisha taarifa zote katika somo moja la dakika 60. Kuna baadhi ya taarifa hutolewa ili kubaki na maudhui ya msingi ya somo yanayopatikana kwa urahisi kwa walimu wa masomo.
- **Masomo kwa makundi manne tofauti:** Walimu wanaweza kulinganisha masomo kutoka kwa makundi manne tofauti kwa mawazo mengine ili kuona jinsi mwandishi mwingine alivyotengeneza mipango ya somo kwa ajili ya kundi lao.
- **Rasilimali zilizokusanywa katika sura tatu zilizopita:** Taarifa za ziada zinaonekana katika sura tatu zilizopita za Rasilimali: 15, 16, na 17. Waandishi wote walichangia kukusanya rasilimali, ambazo ziliunganishwa mwishoni mwa kitabu. Hizi ni rasilimali za kupanua uelewa wa mwalimu, lakini kuna maelezo mengi sana ambayo yako nje ya upeo wa kila somo. Kusudi ni kwamba walimu waweze kusoma rasilimali hizi ili wawe na vifaa bora vya kufundisha mpango wa somo bila kulazimika kufanya utafiti wa kujitegemea.

**Part 2:**  
**Lessons for Confirmation/ *Kipa Imara***  
**(English/ Kiswahili)**





### 3. Confirmation/ Kipa Imara Lesson 1: English/Kiswahili

## Biblical Creation Care Utunzaji wa Uumbaji wa Kibiblia Eramatata oo Nkitobirunot te Biblia

**Hoja Kuu**  
Enkironoto kitok

Matokeo ya Kujifunza

Fahamu



**Mungu ametupa jukumu ametuamuru (agizo ametuamuru) la kutunza viumbe vizuri vya Mungu.**

Kama matokeo ya somo hili, mwanafunzi atafanya yafuatayo:

#### Biblia

- Elewa kwamba Mungu aliumba ulimwengu, na ni mzuri sana (**Mwanzo 1:31a**).
- Elewa ujue kwamba tumepewa agizo (tumepewa) la kutunza kile ambacho Mungu amekiumba (**Mwanzo 2:15; Mambo ya Walawi 25:1–7**).
- Fahamu kwamba ulimwengu umeenda vibaya kwa sababu ya dhambi ya mwanadamu (**Warumi 8:20–22**) hasa inayoonekana katika ubinafsi na uchoyo.
- Tambua kwamba Mungu anaupenda ulimwengu na Yesu alikufa ili kuukomboa ulimwengu wote—sio wanadamu tu (**Yohana 3:16**).
- Elewa kwamba Mungu anawezesha uumbaji kustawi pamoja na wasaidizi wa binadamu ambao wameitwa kusaidia kustawi (**Mwanzo 1:22**), akirekebisha kutoelewana kwamba kutiisha kwa mwanadamu na kutawala uumbaji huruhusu uharibifu wake (**Mwanzo 2:28**).

#### Maarifa ya Mazingira ya Jadi ya Wamaasai

- Jua kwamba maarifa ya mazingira ya jadi ya Wamaasai na ufugaji endelevu ni njia nzuri za kutunza uumbaji.



**Itanapa yook Enkai pee kirrip nkitobirunot sidan e Enkai.**

Ore ntilat ena kisoma naa pee iidim oloiteng'eni aataasa kuna:

#### Biblia

- Tayolo aajo itobirwa Enkai olosho, naa sidai oleng' (**Enkiterunoto 1:31a**).
- Tayolo orkilikwai aajo ishoki yook enkitanapa pee kirrip ina naitobirwa Enkai (**Enkiterunoto 2:15; Ilawi 25:1–7**).
- Tayolo aajo etopong'o enkop torbae le eng'oki oltung'ani (**Iroma 8:20–22**) nisulaki ina nalioo makewon oo empiani.
- Tayolo aajo enyorr Enkai olosho netwa apa Yesu pee itopok olosho pookin-me iltung'anak ake (**Yohana 3:16**).
- Tayolo aajo idimie Enkai nkitobirunot pee epok tenebo oo eretokinoto oo iltung'anak oo ipotoki pee eretoo empuan (**Enkiterunoto 1:22**), itobirr enemening'oi aajo ore enkitatheikinoto oltung'ani oo enkitoria oo nkitobirunot neyau enkinyalata enye (**Enkiterunoto 2:28**).

#### Engarriyano e Enkop e Mila oo Irmaasai

- Tayolo aajo ore engarriyano e nkop e mila oo Irmaasai oo eramtare nabikoo naa engoitoi sidai narripieki nkitobirunot.



- Maarifa ya mazingira ya jadi ya Wamaasai ni sawa na agizo la kibiblia la kutunza uumbaji.

### **Utangulizi wa Mabadiliko ya Tabianchi**

- Tambua kwamba wanadamu wamesababisha uharibifu kwenye dunia, hasa kutokana na shughuli za kibinadamu ambazo mara nyingi huchochewa na uchoyo.
- Fahamu ufafanuzi wa mabadiliko ya tabianchi.
- Fahamu sababu kuu za mabadiliko ya tabianchi yanayosababishwa na binadamu (yanayotokana na binadamu) ambayo hutoa gesi zinazoozeza joto kwenye dunia (gesi mbaya/hatari).



### **Tumaini**

- Fahamu kwamba Muumba wetu, Mungu wa tumaini, anaupenda ulimwengu na hatauacha kamwe (Wakolosai 1:15–20).
- Fahamu kwamba Mungu atarejesha uumbaji Yesu Kristo atakaporudi (Warumi 8:21; Ufunuo 21:1–5).
- Elewa kwamba kuna tumaini la wakati ujao, tukijua kwamba tunapoitunza dunia, tunashiriki katika mpango wa Mungu wa kurejesha na kufanya upya uumbaji wote, na kuleta amani duniani.



### **Hisi**



Wanafunzi watatafakari nafasi yao katika uumbaji wa Mungu.

- Wabarikiwe na uumbaji mzuri wa Mungu, ambao hukupa kila unachohitaji.
- Nimeheshimiwa kuwekwa na Mungu katika nafasi hii ya kutunza uumbaji.
- Wajibu wa nafasi ambayo mwanadamu amepewa na Mungu.
- Wamejitolea kutunza uumbaji wa Mungu kwa mwitikio wa dhati kwa Mungu kwa baraka kama hiyo.

- ore engariyano e nkop e mila oo Irmaasai netiwana anaa engitanapata e Biblia narripieki nkitobiruno.

### **Enaituruku oo Ngibelekenyat Orreje**

#### **le Enkop**

- Tayolo aajo ikenakaki iltung'anak endorrni te Dunia, isulaki too nkiasin e tung'anishu naleng' naayeu empiani.
- Tayolo enkitalalaunoto oo nkibelekenyat orreje le enkop.
- Tayolo m'baa naayeu nkibelekenyat orreje le enkop naayeu iltung'anak naitau irgesii oopon enkirowaj te enkop (irgesii torrok/ooirowaje enkop).

#### **Osiligi**

- Tayolo aajo ore Alaitobirunoni lang, Enkai osiligi enyorr olosho neming'waa aikata (Ilkolosai 1:15–20).
- Tayolo aajo ore Enkai neshuku nkitobirunot teneshukunye Yesu Kristo (Iroma 8:21; Embolunoto 21:1–5).
- Tayolo aajo etii osiligi le enkata nalotu, kiyolo aajo tenikirrip/tenikigolie dunia/enkop, nikiaku tenebo oo enkidanyata e Enkai nashuku nitang'ejuk nkitobirunot pookin, neyau eserian te enkop/dunia.

N'choo ibirribirr iloitenteng'eni eng'asiata enye tiatwa nkitobirunot e Enkai.

- N'choo emayan nkitobirunot sidan e Enkai, nikin'jo toki pookin niyeu.
- Aiyenyitaki pee aapik Enkai ena ng'asiata narripie nkitobirrunot.
- Esiai eng'asiata naishoo Enkai iltung'anak.
- Itautwo ote pee errip nkitobirrunot e Enkai te enkirukoto nasipa te Enkai te emayani nijo ina.

## Confirmation/Kipa Imara

### Fanya



- Tambua njia za vitendo za kulinda uumbaji wa Mungu.
- Imbeni pamoja wimbo mmoja wa kitamaduni kumshukuru Mungu kwa mvua na nyasi.
- Andika ubeti wa kwanza wa wimbo wa kitamaduni wa Wamaasai unaoelezea wajibu wetu wa kutunza uumbaji mzuri wa Mungu.
- Tayolo nkoitoi oo iyesat naaripieki nkitobirunot e Enkai.
- Entarany tenebo osinkolio obo le mila ijokiki Enkai ashe te enchan oo nkujit.
- Tisira orbeti le dukuya lo osinkolio le mila oo Irmaasai olikioo esiai ang' erripoto oo nkitobirrunot sidan e Enkai.

### Vidokezo kwa Walimu

- Maneno yaliyoandikwa kwa herufi za italiki ni mwongozo kwa walimu.
- Walimu wanahimizwa kutumia mbinu za kujifunza kwa vitendo badala ya kutoa mihadhara. Hii inajumuisha majadiliano na mazoezi ya vikundi vidogo.
- Dakika za kila shughuli zinapendekezwa katika safu wima ya kushoto ili kuendana na somo la dakika 60.
- Tazama nyenzo zingine nzuri katika Sura ya 15 na 17 ili kumpa mwalimu ujuzi kabla ya kufundisha somo.
- Kiswahili Biblia kutoka SRUV, [Mwanzo 1 | SRUV Bible | YouVersion](#);

### Vifaa vya Kufundishia Vinahitajika

- Athari ya gesi zinazongeza joto kwenye dunia au mchoro wa “athari ya blanketi” (athari hii hufunika kama blanketi “athari ya gesi joto”) (iliyochorwa kwenye ubao au karatasi kubwa)
- Hiari: Blanketi ya Wamaasai
- Kutenganisha Sababu za Binadamu na Asili kwenye Chati ya Hali ya Hewa (kwenye ubao au karatasi kubwa)
- Tazama Nyenzo katika Sura ya 17 kwa zote mbili.

### Vifaa vya Wanafunzi / Vipeperushi vya Karatasi

- Biblia
  - Mistari ya Biblia kwenye vipande vya karatasi.
- |                           |                      |
|---------------------------|----------------------|
| 1. Mwanzo 1:31            | 7. Yohana 3:16       |
| 2. Mwanzo 2:15            | 8. Warumi 1:20       |
| 3. Mwanzo 1:22            | 9. Warumi 8:20–22    |
| 4. Mambo ya Walawi 25:1–7 | A. Warumi 8:19–21    |
| 5. Zaburi 24:1–2          | B. Wakolosai 1:15–17 |
| 6. Yeremia 2:7            | C. Ufunuo 21:1–5     |

### Iyolot oo Rmalimuni/Ilaiteng'anak

- Ore isirat oolwaa naa akeutaa ilaiteng'anak.
- Eyeuni ilaiteng'anak pee eesishore olesek le enkiteng'enwo oo nkiasin aalang' enkiteng'ena enkiroto ake. Itushulu ena nkiroto oo yasat too ilturrurri kunyinyi.
- Ore ildakikani le esiai nitodoluno te em'bata e kedianye pee elo oo enkisoma oo ildakikani 60.
- Ngurai nareta kulie sidan te ematwa e tomonoimiet (15) oo tomon oopishana (17) pee isho alaitengenani engarriyano eton itu iteng'enisho.
- Biblia Sinyati naing'waa <https://www.bible.com/bible/1816/GEN.1.MBS>

### Eyewuni Inareta Naaiteng'enishoreki

- N'golikinot naayeu irgesi oopon enkirowaj te Dunia arashu orkigeroto loo “n'golikinot orbirangeti” (ore kuna golikinot niyep alaing'enge anaa orbirangeti)
- Teniyeu: Orbirangeti loo Irmaasai
- Ntobiru naaishakinore e tung'anishu oo asili te enkardasi nagol oreje le enkijape (torkibao arashu enkardasi sapuk).
- N'gurai nareta te ematwa e tomonoopishana (17) te pokirare

### Inareta oo Looiteng'eni/Ingardasini Kunyinyi

- Biblia
  - Irkererin le Biblia oosira te enkardasi kinyi.
- |                             |                      |
|-----------------------------|----------------------|
| 1. Enkiterunoto 1:31        | 7. Yohana 3:16       |
| 2. Enkiterunoto 2:15        | 8. Iroma 1:20        |
| 3. Enkiterunoto 1:22        | 9. Iroma 8:20–22     |
| 4. Ilawi 25:1–7             | A. Iroma 8:19–21     |
| 5. Olkerempe le Nkai 24:1–2 | B. Ilkolosai 1:15–17 |
| 6. Yeremia 2:7              | C. Embolunoto 21:1–5 |

**1) NDOANO**

kupata usikivu

**Uumbaji Mwema wa Mungu na Utunzaji wa Uumbaji wa Wamaasai**

7 *Washirikishe wanafunzi kwa kuwauliza maoni yao kuhusu ulimwengu wa asili na umuhimu wake.*

- Katika jozi, simulia hadithi ya dakika 1 kwa rafiki kuhusu wakati uliposhangazwa na uzuri wa ulimwengu wa asili. Baada ya dakika 1, badilisha na usikilize hadithi ya mwenzako.
- Tuwape watu 2 wa kujitolea wanipe sentensi moja kuhusu uzoefu wao na uzuri wa ulimwengu wa asili.

*Unganisha uzoefu huu na hadithi za Wamaasai zinazoonyesha kwamba Mungu/Enkai ndiye muumbaji au jinsi Wamaasai wanavyojali uumbaji. Waombe watu 2–3 wajitolee kujibu.*

- Ni nani anayeweza kutambua hadithi ya Wamaasai kuhusu Mungu/Enkai kama muumbaji wa ulimwengu?  
Au Jinsi Wamaasai wanavyojali uumbaji?

*Kumbuka kwamba kunaweza kuwa na muda mwingi wa somo unaotumika kusimulia hadithi, hata hivyo, muda unahitaji kutumika kimkakati ili kukuza uelewa mpya baada ya hatua hii muhimu ya kuunganisha kila mwanafunzi na uzoefu katika uumbaji wa Mungu.*

**Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)**

- 0.25
- Utajiri wa maarifa wa Wamaasai—kama tulivyosikia kuhusu wema wa uumbaji wa Mungu na wajibu wa mwanadamu katika kutunza uumbaji—unaendana vyema na mafundisho katika Biblia.
  - Hebu tuangalie pamoja baadhi ya maandiko muhimu katika Biblia.

**1) ALTARGE**

entumoto oling'o

**Nkitobirunot Sidan e Enkai oo Erripoto oo Nkitobirunot oo Irmaasai**

*Toliki looiteng'eni inkilikwan n'dwaat enye ipirita olosho le asili e esidano enye.*

- Ore tena kiteng'ena tolimu enatini to oldakika obo (1) to olchere ipirita enkata niking'asyaye esidano olosho le asili. Ore peeim aldakika 1, m'belekenya nning'o enatini olikai.
- Kin'jo iltung'anak aare (2) pee aisho ororei dorrop (esentensi nabo) enayolo nin'che oo esidano olosho le asili.

*N'diko ena niyolo oo natinin/ngatinin oo Irmaasai naitodolu aajo Enkai alaitobirunoni arashu eniko Irmaasai eneshilaa nkitobirunot. Toomono iltung'anak aare metabaiki okuni (2–3) pee ewolu.*

- Kang'ai naidim aatayolo natinin oo Irmaasai naipirita Enkai era alaitobirunoni lo olosho?  
Arashu Eniko Irmaasai eneshilaa nkitobirunot?

*Tadamu aajo idimayi netii engata naado (sapuk) te enkisoma nalimunyeki natinin, kake ishaakinore neesishoreki enkata esidai pee eshumu eyelounoto ng'ejuk teniiting' ena rishata e tipat nitutum oloiteng'eni oo enayolo too nkitobirunot e Enkai.*

**Ilomom lenkidikidikoto (enkidikidikoto Altarge oo Em'bae Kitok)**

- Dupoto engarriyano oo Irmaasai—anaa enekitoning'o naipirita esidano oo nkitobirunot e Enkai oo nkias oltung'ani te erripoto oo nkitobirunot-irukore esidai nkiteng'emat te Biblia.
- Maing'urai siye tenebo kuti sirat le tipat tiatwa Biblia.

## 2) ENKITABU engikeemore e Biblia oo arashu m'baa e tipat

### Msingi wa Kibiblia wa Utunzaji wa Uumbaji



- 10 *Wanafunzi, katika vikundi vya watu 2 au 3, hupewa mojawapo ya maandiko yafuatayo (au yaliyochaguliwa). Nukuu za Biblia zinatoka katika SRUV.*
1. **Mwanzo 1:31** Mungu aliumba ulimwengu, nao ulikuwa mzuri sana.
  2. **Mwanzo 2:15** Bwana Mungu akamtwaa huyo mtu, akamweka katika Bustani ya Edeni ili kuitumikia/kuifanyia kazi (גֶּדֶן ni neno la Kiebrania linalomaanisha kazi na kuitumikia) na kuitunza.
  3. **Mwanzo 1:22** Mungu anawezesha uumbaji kustawi na wasaidizi wa kibinadamu ambao wameitwa kusaidia kustawi, akirekebisha kutokuelewana kwamba kutiisha na kutawala kwa wanadamu huruhusu uharibifu wa uumbaji (Mwanzo 2:28).
  4. **Mambo ya Walawi 25:1–7** Nchi inahitaji kupumzika na kutunzwa, ikiimarisha mazoea endelevu.
  5. **Zaburi 24:1–2** “Nchi na vyote vilivyomo ni mali ya BWANA, / Dunia na wote wakaa ndani yake.”
  6. **Yeremia 2:7** “Nami nikawatia katika nchi ya shibe, mpate kula matunda yake na mema yake; lakini ninyi mlipoingia katika nchi ile, mliitia unajisi nchi yangu, na urithi wangu mliufanya kuwa chukizo.”
  7. **Yohana 3:16** “Kwa maana jinsi hii Mungu aliupenda ulimwengu, hata akamtoa Mwanawe pekee, ili kila mtu amwaminiye asipotee, bali awe na uzima wa milele.” (“Ulimwengu” katika Kigiriki cha Agano Jipya ni cosmos, ulimwengu wote uliombwa, ikiwa ni pamoja na uumbaji usio wa kibinadamu.)
  8. **Warumi 1:20** Uumbaji unaonyesha nguvu za Mungu na asili ya kimungu.
  9. **Warumi 8:20–22** Uumbaji pia unateseka kwa sababu ya dhambi ya mwanadamu, lakini utawekwa huru kutoka utumwani wa kuoza.

## 2) ENKITABU enking'uraroto arashu engiteng'ena e tipat

### Enkitahoto e Biblia te Erripoto oo Nkitobirunot

*N'choo ishori iloitent'eni too ilturrurri loo iltung'anak aare metbaiki okuni (2–3), kulo sirat (arashu kulie ootegelwaki). Rorei le Biblia oingwaa SRUV.*

1. **Enkiterunoto 1:31a** Nedol Enkai pooki toki naitobirua ajo aisidai katukul.
2. **Enkiterunoto 2:15** Neya Olaitoriani Enkai ilo tung'ani apik ninye enkurma e Eden peyie etur neramat sii. (גֶּדֶן ororei leburania oipirita esiai oengitaheikinoto.)
3. **Enkiterunoto 1:22** Nemayian Enkai ninche ejo, “Entoisho niponariri aaput inkariak oo naaiposha, naa nchoo sii imotonyi o loing'ang'e metubula te enkop.”
4. **Ilawi 25:1–7** Eyeu enkop niyang'iyang'a nerripi, nitagol ormoo obikoo.
5. **Olkerempe le Nkai 24:1–2** Eno Laitoriani enkop o ntokitin pooki naabore, / enkop o lelo oomanya;
6. **Yeremia 2:7** Nayau nanu intae atua enkop sidai, / pee ishipakinono ilng'anayio lenyena o ntokitin enyena sidain. / Kake ore pee ipuonunu atua ninturujuju enkop ai, / nintaa enjung'ore ai olminong.
7. **Yohana 3:16** Amu etonyorra Enkai enkop aiko nji o meishoru Enkerai enye nabo, paa ore pooki ng'ae oiruk nemeimin kake netum enkishui nemeish. (Ore “Olosho” te te-Kigiriki lo Osofwa Ng'ujuk naa olosho, olosho pookin oitobirwa Enkai tenebo oo nkitobirunot neme netung'anishu.)
8. **Iroma 1:20** Itodolu nkitobirunot en'golon e Enkai oo asili e Enkaishu.
9. **Iroma 8:20–22** Ilishito sii nkitobirunot torbae loo ng'ok oltung'ani, kake elakuni te sinkaishu oo eng'wani.

*Wanafunzi wanasoma maandishi yao na wanaombwa kuyajadili kwa maswali yafuatayo katika kikundi chao kidogo.*

- Ubeti huu wa Biblia unasema nini kuhusu uumbaji wa Mungu?
- Ubeti huu wa Biblia unasema nini kuhusu uhusiano kati ya wanadamu na uumbaji wa Mungu?

*Waandishi wa habari kutoka vikundi vya kila maandishi ya Biblia wanaalikwa kushiriki uvumbuzi wao. Ikiwa darasa ni kubwa, muwe na mwandishi mmoja wa habari anayejitolea kwa kila kifungu cha Biblia.*

## **Hoja Kuu: Agizo la Mungu kwa Wanadamu kutunza Uumbaji**

- 2
- Biblia inasisitiza kwamba wanadamu wamepewa jukumu la kutunza dunia.
  - Hii inaitwa **utunzaji wa uumbaji** katika imani yetu ya Kikristo.

### **Wamaasai na Utunzaji wa Uumbaji**

- Wamaasai wamekuwa wakiishi maisha endelevu kijadi, wakitambua kwamba ustawi wao unahusiana moja kwa moja na afya ya mazingira.
- Hii inaitwa maarifa ya kitamaduni ya mazingira.
- Kwa mfano, mtindo wa maisha wa wafugaji huzunguka usimamizi makini wa maeneo ya malisho ili kuzuia matumizi kupita kiasi.
- Hii ni sehemu muhimu ya kile kinachoitwa ufugaji endelevu, ambao ni utunzaji mzuri wa mazingira na unaonyesha uelewa wa kina wa hitaji la kutunza uumbaji wa Mungu. (Hoja muhimu!)
- Kwa hivyo, maarifa ya kitamaduni ya mazingira ya Wamaasai inafanana na agizo la kibiblia la kutunza uumbaji. (Hoja muhimu!)

*Dokezo la kufundisha: Zaidi kuhusu muktadha wa Wamaasai inakuja katika somo la 2.*



*Iisom iloitent'eni isirat lenye neomoni pee iimakini te kuna kikilikwanat naasuju to olturrurr kinyi lenye.*

- Kejaa ele kereri le Biblia enaipirita nkitobirunot e Enkai?
- Kejaa ele kereri le Biblia ipirita enebaikinore iltung'anak nkitobirunot e Enkai?
- Ore Lasirak loo lomom oing'waa ilturrurri loo lasirak le Biblia nitinyikuni pee elimu inaadwaa. Ore tenaa sapuk aldarasa entegelu alasirani obo loo lomom te kila osirata le Biblia.

## **Em'bae Kitok: Enkitanapa/Enkirriwaroto e Enkai too Iltung'anak pee Errip Nkitobirunot**

- Itanapu Biblia aajo ishooiki iltung'anak esiai pee errip enkop/Dunia.
- Eji ena erripoto oo nkitobirunot te enkirukoto ang' e Kirisianishu/oo Irkirisiano.

### **Irmaasai oo Erripoto oo Nkitobirunot**

- Eeta Irmaasai enkishui nabikoo te mila, eyolo aajo ore puan enye nebaikinore tukul em'biotishu/enkishaa e enkop.
- Eji ena engarriyano e mila te enkop.
- Engitanyanyikiet, ore orreje le enkishui oo laramatak nemanaa, enkitashekinoto sidai oo wejitini oo n'daat pee iibok eesishore enalus.
- Eweji e tipat ena ina naji eramatare nabikoo, naa erripoto sidai e enkop nitodolu eyelounoto nagut le eyeunoto pee erripi nkitobirunot e Enkai. (Em'bae e Tipat!)
- Metaa/neeku, ore engarriyano e mila te enkop oo Irmaasai nenyanyikie engitanapata e Biblia erripoto oo nkitobirunot. (Em'bae e Tipat!)

*Eutaroto enkiteng'ena: Naleng' naipirita orkwak loo Irmaasai elotu to enkisoma eare (2).*

## Wajibu wa Binadamu na Matokeo ya Kutotii

- 3
- Katika **Mathayo 22:37–39**, tunaona Yesu akifundisha amri mbili kuu:
    - **Mpende Mungu** kwa moyo wako wote, roho yako yote, na akili yako yote.
    - **Mpende jirani yako** kama unavyojipenda.
  - Tukifikiria kuhusu uharibifu wa mazingira, hii inaweza kuonekana kama matokeo ya kushindwa kupenda kile ambacho Mungu anapenda: uumbaji wa Mungu na majirani zetu.
    - **Kupenda uumbaji wa Mungu:** Mungu aliumba dunia na akaiita nzuri (**Mwanzo 1:31**). Uharibifu wa mazingira—ikiwa ni pamoja na idadi kubwa ya watu, kuchoma misitu, ukataji miti, uchafuzi wa mazingira kama vile kutupa takataka au kuchoma chupa za plastiki—ni kushindwa kuheshimu na kutunza uumbaji wa Mungu, kuonyesha ukosefu wa upendo kwa kile ambacho Mungu ameumba.
    - **Kuwapenda majirani zetu:** Uharibifu wa mazingira huwaumiza watu, na Waafrika watakuwa baadhi ya walioathiriwa zaidi na janga la tabianchi, ambalo tutalifafanua baadaye, kwa sababu Waafrika wengi wanategemea maliasili kwa ajili ya riziki zao.
  - Kwa hivyo, ulimwengu umeenda vibaya kwa sababu ya **kutotii kwa wanadamu**.
    - Uchoyo na ubinafsi hufanya viwanda viendeleo kuchoma mafuta ya visukuku ili kupata pesa badala ya kutunza mazingira.
    - Ingawa tunajua la kufanya, maarifa hayatupi nguvu ya kufanya hivyo. Dhambi za ubinafsi, uchoyo, na kutojali ni kubwa.
    - Lakini baadaye, tutazungumzia kuhusu matumaini tuliyo nayo ya kupunguza (kupunguza) matatizo yanayotokana na mabadiliko ya tabianchi, ambayo tutajadili baadaye.

## Esiai o Oltung'ani oo Naayau ene Mening'isho

- Ore te **Mathayo 22:37–39**, kidol Yesu itengenu nkitanapat are kitwaak:
  - **Tonyorra Enkai** to oltau lino pookin to enkiang'et ino pookin oo te eng'eno ino pookin.
  - **Tonyorra ole elatya ino** anaa eninyorr kewon.
- Tenikimbirribirr enaipirita enginyalata e enkop, idimayi nitodolu anaa inaayau elaikinoto enyorrata ina nanyor Enkai: nkitobirunot e Enkai oo ile-latya aang'.
  - **Enyorrata oo nkitobirunot e Enkai:** Itobirwa e Enkai enkop niipot aajo sidai (**Enkiterunoto 1:31**). Ore enginyala e enkop—tenebo oo enkumoi oo iltung'anak, empejoto oo ntimi, en'dung'oto oo irkeek, enkitarruoroto e enkop nijo anaa enang'aroto altaka arashu empejoto oo ilchupai loo mpirai—naa elaikinoto enganyit oo erripoto oo nkitobirunot e Enkai, itodolu elaunoto enyorrata teina naitobirwa e Enkai.
  - **Enyorrata oo lelatya aang':** Ore enginyalata e enkop nilishse iltung'anak, naa ore iltung'anak lolosho le Afirika netii aatwa lelo oinyal oleng' entorroni oo nkibeleyenat e enkop, kindalalu ade, amu ore iltung'anak le Afirika kumok nisilig n'dupot e asili tarbae le en'daa enye.
- Metaa, inyale enkop te ngaraki meeta **iltung'anak olning'o**.
  - Ore empiani oo makewon nisho nkiwandani metapejo iila e petroli pee etum ngohola elang errip enkop.
  - Wee enake kiyolo nikias, misho yook engarriyano en'golon nekiasie ina. Ore eng'oki e makewon, empiani oo mekishilaa naa sapuk.
  - Kake ore ade, kiimaki enaipirita osiligi likiata le enkintong'orata oo n'golikinot naayau nkibeleyenat orreje le enkop, kiimaki ade.

### 3) UCHUNGUZI ufafanuzi au tafakari ya maudhui ya msingi

## Tumaini

*Matokeo: Elewa kwamba Muumba wetu, Mungu wa Matumaini, anapenda ulimwengu na hatauacha kamwe.*



## Tumaini katika Muktaadha wa Wamaasai

5

- Wamaasai wanaposikia kuhusu mgogoro wa mabadiliko ya tabianchi, wakati mwingine huvunjika moyo au kuwa na wasiwasi. Hii inaitwa **wasiwasi wa tabianchi**.
- Kumbuka kwamba Enkai/Mungu ni mwenye huruma na anashughulika na uumbaji kwa neema, kama inavyoonekana katika hadithi za Wamaasai.
- Kwa mfano, kumekuwa na vipindi vya vita vya kiwewe miongoni mwa makundi ya Wamaa, magonjwa katika historia yaliyoua karibu mifugo yote ya Wamaa, ukame mkali uliowanyima utajiri Wamaa na kuwafanya kuwa wanyonge; lakini Mungu ni Mungu wa matumaini.

*Maelezo ya kufundishia: Zaidi kuhusu muktaadha wa Wamaasai yanapatikana katika somo la 2.*



## Tumaini la Kibiblia katika Ahadi za Mungu

6

- Kumbuka kwamba Biblia hutoa matumaini na kutia moyo.
- Tumaini (kwa Kiingereza, pia Kiswahili na Wamaa) mara nyingi hutumika kama mawazo ya kutamani, kama vile, “Natumaini mvua haitanyesha kesho.” Au, “Natumaini nitapata alama nzuri katika mtihani wangu.”
- Lakini tumaini la kibiblia ni tofauti, kwa sababu linategemea ahadi za Mungu wetu anayeaminika. Msingi wa tumaini letu si mawazo ya kutamani, bali ni Mungu anayeaminika na mwenye upendo.
- Hebu tuangalie ahadi muhimu katika Biblia sasa.



### 3) ENGING'URAROTO enkitalalaunoto arashu engibirribirr e engiteng'ena e tipat

## Osiligi

*Enaisiliguni: Tayolo aajo ore Alaitobirunoni lang', Enkai o Osiligi, enyorr olosho neming'ua aikata.*

## Osiligi tiatwa Orkwaak loo Irmaasai

- Ore tenening' Irmaasai enyamali oo nkibelekenyat orreje le enkop, neya tegila iltauja arashu etum arng'ash/orkirutoto. Ore ena naa akeji **arng'ash/orkirutoto lo orreje le enkop**.
- Tadamu aajo eeta Enkai orng'urr neepare nkitobirunot te emburis, anaa elioo too natinin oo Irmaasai.
- Enkitanyanyikiet, Etii nkataitin oo larrabali too loreren loo Irmaasai, mweyaretin tea pa naataara eramatare pookin oo Irmaasai, alamei sapuk otomityoko Irmaasai karsisishu/tajirishu neeku menat; kake ore Enkai naa Enkai o osiligi.

*Iwutarot engiteng'ena: Naleng' enaipirita orkwaak loo Irmaasai netumoi to osomo le are (2).*

## Osiligi te Biblia too Nkisiligat e Enkai

- Tadamu aajo ishoru Biblia osiligi nitagol iltauja.
- Ore osiligi (te Kingeresa, baiki te Kiswaili oo te Maa) naleng' itodolu nkibirribirrat naaisirai oltung'ani nijo anaa: “Aisilig aajo mesha taisere.” Arashu, “Aisilig aajo aaim esidai te mitiani aai.”
- Kake ore osiligi te Biblia neme nija amu ake erubare nkisiligat e Enkai aang' naisiligai. Ore enkipirata o osiligi lang' neme ngibirribirrat orng'warr, kake Enkai naisiligai neeta enyorrata.
- Maing'urai siye ngisiligat e tipat te Biblia tenakata.

## **Shughuli**

*Wape wanafunzi 3 karatasi moja kati ya mistari 3 ya Biblia na uwaombe waangalie maandishi ya Biblia na wawe tayari kuyasoma kwa darasa zima.*

- A. Warumi 8:19–21
- B. Wakolosai 1:15–17
- C. Ufunuo 21:1–5

*Mwambie mwanafunzi aliyeteuliwa asome mstari wa Biblia kwa darasa zima.*

- **Warumi 8:19–21** Kwa maana viumbe vyote pia vinatazamia kwa shauku nyingi kufunuliwa kwa wana wa Mungu. Kwa maana viumbe vyote pia vilitiishwa chini ya ubatili; si kwa hiari yake, ila kwa sababu yake yeye atiyevitiisha katika tumaini; kwa kuwa viumbe vyenyewe navyo vitawekwa huru na kutolewa katika utumwa wa uharibifu, hata viingie katika uhuru wa utukufu wa watoto wa Mungu.
  - Mmesikia? Uumbaji utawekwa huru kutoka katika utumwa wake wa kuoza.
- **Wakolosai 1:15–17** Naye ni mfano wa Mungu asiyeonekana, mzaliwa wa kwanza wa viumbe vyote. Kwa kuwa katika yeye vitu vyote viliumbwa, vilivyo mbinguni na vilivyo juu ya nchi, vinavyoonekana na visivyoonekana; ikiwa ni vitu vya enzi, au milki, au enzi, au mamlaka; vitu vyote viliumbwa kwa njia yake, na kwa ajili yake. Naye amekuwako kabla ya vitu vyote, na vitu vyote hushikana katika yeye.
  - Kwa hivyo, tunajua kwamba Yesu anashikilia vitu vyote—ikiwa ni pamoja na dunia pamoja.
- **Ufunuo 21:1a, 5** Kisha nikaona mbingu mpya na nchi mpya... Na yeye aketiye juu ya kile kiti cha enzi akasema, “Tazama, nayafanya yote kuwa mapya.” Akasema tena, “Andika haya, maana haya maneno ni ya amini na kweli.”

*Dokezo la kufundishia: καινός ni tofauti na νέος. Hili la mwisho lina maana mpya kabisa, lakini halitumiki hapa.<sup>1</sup>*

## **Esiai/Enki**

*N'choo iloitenteng'eni okuni (3) engardasi nabo too irkererini okuni le Biblia niomon ming'urai isirat le Biblia nitayanakino pee iisom ta aldarasa pookin.*

- A. Iroma 8:19–21
- B. Ilkolosai 1:15–17
- C. Embolunoto 21:1–5

*Tyaaki oloitenteng'eni otuutaki pee iisom orkereri le Biblia ta aldarasa pookin.*

- **Iroma 8:19–21** Keanyita seseni pooki toki naitayioki, te yieunoto kitok, metaboluni nkeru e Nkai. Amu etipikaki iseuseu erruoroto, neme nkaraki naa enkop nayieu, kake to siligi, amu keyookini aalaku iseuseu pooki aaitung'uaa rrindikisho enye e nkidaaroto, neng'amu elakunoto e nkitoo oo nkeru e Nkai.
  - Itoning'o? Elakuni nkitobirunot te sinkaishu enye errwoyoroto.
- **Irkolosai 1:15–17** Ninnye nyaanyukie e ina Ai nemelioo, olkikau le pooki toki naitayioki; te nkaraki ninnye pee eitayioki ntokitin pooki, naatii shumata o naatii enkop, inaaliioo o nemelioo te naa lorikan loo looitoreisho, aashu nkitoriat, aashu looishoro engolon e nkitoria, te ninnye eitayioki ntokitin naa ninnye eitobirakaki. Ninnye otii enkiterunoto oo ntokitin pooki, naa atua ninnye eitasheyie aatumokino ntokitin pooki.
  - Metaa, kiyolo aajo ibung'ita Yesu ntokiting pookin-aa tenebo oo enkop/dunia pookin.
- **Revelation 21:1a, 5** Naitoki adol keper ng'ejuk o enkop ng'ejuk. Amu ore keper e dukuya o enkop e dukuya neidipa aatulusoi, meekure eetae enaiposha... Ore ilo otonita to lorika le nkitoo nejo, “Ng'ura, ekaitaa intokitin pooki ng'ejuko.” Nejo sii, “Ngero ena, amu ore kulo rorei naa keisiligayu nesipa.”

*Ewutaroto engiteng'ena: Ore καινός nepaasha oo νέος. Ore ele sirata obaye neeta tilata ng'ejuk tukul, kake mekirubare tene.<sup>1</sup>*

### **Muhtasari wa Tumaini la Biblia**

- Kwanza, Mungu ni Mungu wa tumaini anayependa na kutegemeza ulimwengu!
- Mungu hatawahi kuacha au kuacha uumbaji wake.
- Licha ya changamoto, Mungu hutuwezesha kutenda kwa uwajibikaji.
- Juhudi zetu zinachangia mpango wa Mungu wa uumbaji na kuakisi upendo na utunzaji wa Mungu kwa ulimwengu.
- Licha ya changamoto za mabadiliko ya tabianchi, Wakristo wanaweza kuwa na tumaini kwa sababu Mungu anapenda na atarejesha uumbaji. Tunaamini ahadi za kibiblia za urejesho wa Mungu wa uumbaji (k.m., **Warumi 8:19–21, Ufunuo 21:1–5**).
- **Hii ni habari njema!** Hii ni habari tunayoweza kuiamini, kwa sababu inategemea ahadi kutoka kwa Mungu wetu anayeaminika.

*Dokezo la kufundisha: Katika somo la tatu, pia tunajifunza kuhusu tumaini kutoka kwa wanasayansi.*

### **Tumaini kwa Sababu ya Jukumu la Vijana**

- 1
- Tunajua kwamba kila mtu, wakiwemo vijana, ana jukumu muhimu katika kutunza mazingira.
    - Vijana kote ulimwenguni wanafanya mabadiliko makubwa.
    - Vitendo vidogo, kama vile kuchakata na kutochoma plastiki ni mwanzo, na kwa pamoja, vijana wana athari kubwa.

### **Mabadiliko ya Tabianchi**

*Utangulizi huu wa mabadiliko ya tabianchi unaweka msingi wa hitaji la utunzaji wa uumbaji. Maarifa ya sayansi ya tabianchi yatapitwa na kuendelezwa zaidi katika Somo la 3.*



### **Osiligi le Biblia te En'dorrop**

- Enaituruku, Era Enkai, Enkai o osiligi nanyorr nisiligishore olosho/enkop!
- Meing'waa aikata Enkai nkitobirunot enyena.
- Ore anaa n'golikinot naatii, idimie yook Enkai pee kias tesidano.
- Epon nyuaat ang' nkidanyat/eyeunoto e Enkai oo nkitobirunot nitodolu enyorrata oo erripoto e Enkai to olosho/enkop.
- Baiki tene tii n'golikinot oo nkibelekenyat orreje le enkop, iidim Irkirisiano neeta osiligi amu enyorr Enkai nitopok nkitobirunot. Kiiruk nkisiligat e Biblia empuan e Enkai oo nkitobirunot (nijo, **Iroma 8:19–21, Embolunoto 21:1–5**).
- **Ore ena naa ilomon sidan!** Ilomon sidan kule nekiin'dm airuko, amu isilig nkisiligat naing'ua Enkai aang' naisiligai.

*Eutaaroto le enkiteng'ena: Ore to osomo le uni (3), kinteng'enwo sii enaipirita osiligi oing'waa ilang'eni le sayansi.*

### **Osiligi Torbae le Esiai e Elelero**

- Kiyolo aajo kila altung'ani, tenebo oo elelero neeta esiai e tipat te erripoto e enkop.
  - Ore elelero pookin tooloshon pookin nees nkibelekenyat sapukin.
  - Ore siaitin kutiti nijo anaa enkias nemepeji mpirai era enkiterunet, naa wore tenaboishu, eyau elelero m'baa sapuki/kitwaak.

### **Nkibelekenyat Orreje le Enkop**

*Ore ena naituruku oo nkibelekenyat orreje le enkop nepik enkitashoto eyeunoto erripoto oo nkitobirunot. Ore engarriyano e sayansi orreje le enkop niimaari neshumuni oleng' to somo le okuni (3).*

## Ufafanuzi wa Mabadiliko ya Tabianchi (Hoja Muhimu!)

- 10
- Mabadiliko ya tabianchi yanarejelea mabadiliko ya muda mrefu katika halijoto, mvua, mifumo ya upepo, na vipengele vingine vya mfumo wa tabianchi wa Dunia.
  - Mabadiliko ya tabianchi yanajumuisha michakato ya asili na shughuli za binadamu zinazobadilisha tabianchi ya Dunia kwa muda mrefu.
  - Huu ni mchakato wa asili unaoweka Dunia joto la kutosha kwa maisha.
  - Hata hivyo, shughuli za binadamu kama vile kuchoma mafuta ya visukuku (mafuta, makaa ya mawe, gesi, plastiki) na kukata miti hutoa gesi za ziada zinazoongeza joto la dunia hewani.
  - Hii husababisha Dunia kunasa joto nyingi, ambalo husababisha kupasha joto dunia.

## Athari ya Kupasha Joto Dunia (Hoja Muhimu!)

- Athari ya kupasha joto Dunia (athari ya gesi mbaya/hatari) ni mchakato wowote unaopasha joto uso wa Dunia.
- Hutokea wakati gesi fulani zinazoongeza joto dunia angani zinakamata joto kutoka kwa jua.
- Gesi zinazoongeza joto dunia hufanya kazi kama blanketi kuzunguka Dunia, zikishikilia joto.

*Tazama jalada la kitabu hiki upande wa nyuma. Chora picha ya msingi ubaoni.*

## Vyanzo Vikuu vya Mabadiliko ya Tabianchi (Hoja Muhimu!)

- Gesi kuu zinazoongeza joto duniani ni:
  - **Kaboni Dioksidi (CO<sub>2</sub>):** Kuchomwa kwa mafuta ya visukuku (kama vile makaa ya mawe, mafuta, na gesi asilia) kwa ajili ya nishati na usafirishaji ndio chanzo kikubwa zaidi cha uzalishaji wa CO<sub>2</sub>. Ukataji miti, ambao hupunguza idadi ya miti inayoweza kunyonya CO<sub>2</sub>, pia huchangia kwa kiasi kikubwa.

## Enkitalalaunoto oo Nkibelekenyat Orreje le Enkop (Em'bae e Tipat!)

- Ore nkibelekenyat orreje le enkop naa nkibelekenyat enkata naado to orreje le engirowaj, en'chan, osiwwo, oo kulie baa naaipirita orreje le enkop te Dunia.
- Ore nkibelekenyat orreje le enkop nitushulu mpukunot e asili oo nkiasin oo iltung'anak naaibelekeny orreje le enkop te Dunia te engata naado.
- Era ena empukunoto e asili napik enkop engirowaj nabaiki te enkishui.
- Kake, ore nkiasin oo iltunganak njio anaa empejoto oo (ila e petroli, nguk, irgesii, mpirai) oo en'dung'oto oo irikeek nitau irgesii oopon engirowaj alaing'ange te dunia.
- Isho ena enkop/Dunia mibooi engirowaj sapuk, nairowaje Dunia.

## Inaayeu Engirowaj e Dunia/Enkop (Em'bae e Tipat!)

- Ore inaayeu engirowaj e enkop/Dunia naa empukunoto nairowaje olchoni le enkop.
- Elotu ena teniibok irgesii torrok oopon engirowaj ta alaing'ange le Dunia niibung' engirowaj naing'waa engolong'.
- Ore irgesii oopon engirowaj te Dunia nees esiai anaa orbirangeti omanita enkop/Dunia niboooki engirowaj.

*Ng'urai en'jalada te syadi ena kitabu. N'geru empicha ormsingi torkibao.*

## Ntokitin Kituak Naayau Nkibelekenyat Orreje le Enkop (Em'bae e Tipat!)

- Ore irgesii kituak oopon engirowaj te enkop (irgesii torrok) na:
  - **Orgesi le kabon (CO<sub>2</sub>):** Ore tenepeji iila e-peteroli (oo nguk-oo soitok, oo orgesi le asili) tarbae le nishati oo motokaani naa ninje tesapuko/naleng' naitau orgesi le kabon (CO<sub>2</sub>). Ore en'dung'oto oo irkeek naitong'orr esiana oo irkeek oibibi orgesi le kabon (CO<sub>2</sub>) nepon sii naleng.

- **Methani (CH<sub>4</sub>):** Methani hutolewa wakati wa uzalishaji na usafirishaji wa makaa ya mawe, mafuta, na gesi asilia. Pia hutolewa na mifugo wakati wa usagaji chakula na kwa madampo ambapo taka za kikaboni huoza.
- **Na zingine** (maelezo zaidi katika Somo la 3).

### **Mabadiliko ya Tabianchi na Athari kwa Mazingira**

Hata hivyo, ukosefu wa usawa katika maumbile, unaosababishwa hasa na gesi zinazosababisha ongezeko la joto duniani zinazosababishwa na binadamu, husababisha yafuatayo:

- **Ongezeko la halijoto:** Shughuli za binadamu—kama vile kuchoma mafuta ya visukuku hutoa CO<sub>2</sub> na gesi zingine zinazosababisha ongezeko la joto duniani—hunasa joto na kusababisha ongezeko la halijoto duniani.
- **Mabadiliko ya mifumo ya mvua:** Kwa mabadiliko ya tabianchi, mifumo ya mvua imekuwa si ya kawaida, na kusababisha ukame au mafuriko, ambayo huvuruga upatikanaji wa malisho na maji.
  - Wamaasai hutegemea mvua za msimu zinazotabirika kwa ajili ya kulisha mifugo yao.
  - Hii inatishia moja kwa moja uhai wa mifugo yao, ambayo ni muhimu kwa utamaduni na uchumi wa Wamaasai.
- **Matukio mabaya ya hali ya hewa,** kama mafuriko au ukame yanaweza kuharibu mazingira, na kuharibu zaidi usawa wa asili.
- **Usumbufu wa mfumo ikolojia:** Joto la juu na mifumo ya mvua iliyobadilika huathiri mifumo ikolojia, na kusababisha upotevu wa makazi, uhamiaji wa spishi, na mabadiliko katika minyororo ya chakula.
- **Upungufu wa rasilimali:** Ongezeko la halijoto na ukame wa muda mrefu huchangia uharibifu wa maliasili.
  - Kwa kuwa maeneo ya malisho yameharibiwa na ufugaji kupita kiasi, watu wa Maasai wanahitaji kupeleka ng'ombe mbali kuchunga katika nchi za mbali ili kupata malisho ya kutosha.
- **Kupotea kwa bioanuwai:** Kadri tabianchi inavyobadilika, baadhi ya spishi ambazo ni muhimu kwa mifumo ya ikolojia asilia zinaweza kuwa hatarini au kutoweka.

- **Orgesi le Methane (CH<sub>4</sub>):** Ore orgesi le Methane nitauni te enkitobirunoto oo enapare oo nkuk oo soitok, iila oo irgesii le asili. Itau sii eramatare teniisakepurd nkujit naatamaen'daa oo too wejitin naanan'gakini altaka le kabon neng'wei.
- **Oo irkulie** (italaluni to somo le okuni 3).

### **Nkibelekenyat Orreje le Enkop oo Naayau e Enkop**

Neeku, ore elaunoto erisyoroto te elioroto, naayau naleng'irgesii oopon engirowaj te enkop/dunia eyau iltung'anak, neyau kuna:

- **Emponatari orreje le engirowaj:** Ore nkiasin oo iltung'anak—anaa empojoto oo ila e petrol nitau orgesi le kabon (CO<sub>2</sub>) oo irkulie gesii ooyeu emponata engirowaj te enkop—niibok engirowaj nepon orreje le engirowaj te enkop.
- **Nkibelekenyat oo m'baa en'chan:** Ore too nkibelekenyat orreje le enkop, etaa m'baa enchan mee anaa enatamooki, neyau olamei arashu ngariak supoki naainyal endumoto oo n'daat oo engare.
  - Isilig irmaasae en'chan oo nkataitin naaibala torbae loo n'daat eramatare (ngishu).
  - Ore ena niture tukul enkishui oo ngishu (eramatare) enye, nara tipat te mila/orkwaak oo en'golon oo ngohola too Irmaasai.
- **Mpukunot torrok orreje le enkiyape,** nijo anaa ngariak sapuki naanang'ari, arashu alamei neidim aitarwei enkop oo erisyooroto e asili.
- **Enyamali oo m'baa e ikolojia:** Ore engirowaj sapuk oo orreje le enchan oibelekenye niinyal m'baa e ikolojia neyau enkiminata e manyisho, iduru kulie tokitini, oo nkibelekenyat too m'baa pookin naipirita n'daikin/en'daa.
- **En'goron oo n'dupot/malin e asili:** Ore emponata orreje le engirowaj oo alamei le enkata naado neyau enkinyala oo nd'upot/malin e asili.
  - Ore amu itarweyekei wejitin oo n'daat oo eramatare natuluso, eyeu Irmaasai nidurrie ngishu enelakwa nedaa too nkwapu naalakwa pee etum n'daat/inrkujit naoobaiki.
- **Engiminata e seusu (enchula oo ntokitin naishu):** Ore anaa enaibelekenya orreje le enkop etii nkitobirunot naishu (iseuseu) naa netipat te ikolojia e asili naaidim aintoto enyamali arashu iiting'.

- Kupotea huku kwa bioanuwai huvuruga usawa dhaifu wa asili ambao Wamaasai wamedumisha kwa muda mrefu, na kuathiri kila kitu kuanzia mifumo ya malisho hadi upatikanaji wa mimea ya dawa.
- **Mabadiliko ya bahari:** Ongezeko la joto na kuongezeka kwa viwango vya CO<sub>2</sub> husababisha ongezeko la joto la bahari na asidi, ambayo huharibu mifumo ya ikolojia ya baharini, ikiwa ni pamoja na miamba ya matumbawe.
- **Kuyeyuka kwa barafu na kuongezeka kwa bahari:** Tabianchi ya joto husababisha barafu na vifuniko vya barafu kuyeyuka, na kuchangia kuongezeka kwa viwango vya bahari. Hii huvuruga mifumo ya ikolojia ya pwani na kutishia jamii za wanadamu na wanyamapori.

*Athari mbaya kwa wanadamu na afya zitajadiliwa katika somo la 2 na 3.*

- Ore enkiminata e isseuseu niinyal erisoroto e asili naatorripo Irmaasai te enkata naado, iinyal ena toki pooki aiter n'daat oo ngishu metabaike entuomoto oo inirkeekt naara alchani.
- **Nkibelekenyat enaipasha:** Ore emponata engirowaj oo emponata orgesi le kabon (CO<sub>2</sub>) neyau emponata engirowaj te enaipasha oo enkisiij nitarwoo m'baa e ikolojia te enaipasha, tenebo oo n'dapidapo e aatwa engare.
- **Eshola arbarafu nepona enaipasha:** Ore Orreje le engirowaj e enkop neshol arbarafu, nepon engare te enaipasha. Niinyal ena m'baa e ikolojia too wejitin oo nkarriak niture/nitanyamal iltung'anak oo lowarak lo osero.

*Ore n'golikinot naleng' too iltung'anak oo em'nbiotishu osesen niimakini to osomo le are (2) oo le okuni (3).*



## **Vijana Huleta Tofauti Katika Utunzaji wa Uumbaji**

- 15 *Wanafunzi watatafakari kuhusu jukumu lao katika uumbaji wa Mungu na jinsi wanavyoweza kuchangia katika utunzaji wake.*
- Sasa, hebu tufikirie jinsi tunavyoweza kutunza uumbaji kwa kuleta mabadiliko katika shule zetu, familia, na jamii.
  - Pamoja na mwenzi wako/kikundi kidogo, tambua njia za vitendo za kutunza uumbaji wa Mungu. Una dakika 3. Hakikisha umechagua mwandishi wa habari wa kushiriki na kikundi kizima.
    - **Hatua za Vitendo:** Wanafunzi hufikiria na kuelezea miradi rahisi ya mazingira wanavyoweza kutekeleza, kama vile kupanda miti, kutochoma plastiki, usafi kwenye jamii, au mipango ya kuchakata tena. Vitendo hivi vitawasaidia wanafunzi kuelewa kwamba mabadiliko huanza na hatua ndogo.
    - **Ushiriki wa Jamii:** Wahimize wanafunzi kufikiria jinsi wanavyoweza kuwashirikisha familia zao na wenzao katika



## **Eyau Elelero Nkibelekenyat te Erripoto oo Nkitobirunot**

*N'choo ibirribirr iloitent'eni enaishaakinore pee ees te erripoto oo nkitobirunot e Enkai oo naaidim aataas pee ees erripoto enye.*

- Onaa, maibirribirra enikiin'dim aataas pee kirrip nkitobirunot nekiyau nkibelekenyat too n'chulei aang', irmareita lang' oo olosho.
- Ore iyye oo oliboitare/olturrurr kinyi, tayolo nkoitoo oo easat nirripie nkitobirunot e Enkai. Iata ildakikani okuni (3). Tadamu tegelu alasirani loo lomon neliki olturrurr olulung'a.
  - **Erishata oo Nkiasin:** Ibirribirr iloitent'eni nelimu irmiradini ooleleki (nkiasin naalelek) te enkop naaidim aataas, anaa eunoto oo irkeek, mepeji mpirai, enkitobirata/eworoto enkop arashu nkidanyat naigili aitag'ujuk ntokitin. Eretoo kuna kiasin neretoki loitent'eni pee eyolou aajo ore nkibelekenyat niteru temwa kinyi.
  - **Enaas Olosho:** N'choo itanapi loitent'eni pee ibirribirr enaidim olosho aatoliki irmareita lenye oo iltung'anak lenye te erripoto e enkop.

utunzaji wa mazingira. Mawazo yanaweza kujumuisha usafi wa jamii, upandaji miti, au kukuza desturi endelevu.

*Baada ya majadiliano ya kikundi kidogo, waombe waandishi wa habari washiriki wazo moja. Ikiwa darasa kubwa, waalike waandishi wa habari 2 au 3 kujitolea kushiriki mawazo yao. Wape muda wa maswali ya mwisho na tafakari. Kutakuwa na majadiliano zaidi katika Somo la 3 kwa ajili ya mapitio na vidokezo zaidi vya vitendo.*

- Darasa zima litaimba wimbo mmoja wa kitamaduni kumshukuru Mungu kwa mvua na nyasi.

### Uandishi wa Nyimbo

- Au 15 • Andika ubeti wa kwanza wa wimbo kuhusu Mungu kutuagiza kutunza uumbaji wa Mungu kwa wimbo wa Wamaasai.

*Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni matumizi mazuri sana, inahitaji muda wa kutosha kufanywa vizuri. Toa muda mwingi iwezekanavyo.*

- Je, tunaweza kuwa na vikundi 2 au 3 vinavyoshiriki ubeti wao nasi? Jitolee tu ikiwa uko tayari na unaweza kuuimba bila kuchelewa.
- Katika masomo 2 yafuatayo, pia utaongeza ubeti mmoja kwa kila moja ya masomo 2. Kwa hivyo, mradi huu utaendelea kuendelezwa.

#### Maombi

- .5 Mungu muumba wa mbingu na dunia, tunakushukuru kwa baraka ya uumbaji na heshima ya kuumbwa kwa mfano wako.  
Asante kwa mvua na nyasi, maziwa, na watoto.  
Tunaomba kupitia neema na wema wako udumuo milele utuwezeshe kutimiza kazi yetu kama wasimamizi wa uumbaji wako. Tupe tumaini lisilotikisika katikati ya mabadiliko makubwa ya tabianchi. Kwa maana wewe ni kimbilio letu sasa na milele. Amina.

Ore n'dwaat neya nitushulu enkitobirata enkop, eunoto oo irkeek, arashu eshumu orkwaak obikoo.

*Tenidipi nkirorot to olturrur kinyi, toomono ilasirak loo lomom pee elimu end'waata nabo. Tenea sapuk aldarasa, ntinyiku ilasirak loo lomom aare (2) arashu okuni (3) pee elimu n'dwaat enye. N'choo enkata oo nkikilikwanat naabay nibirribirr. Etii enkiimakinoto naleng' to osomo le okuni/uni (3) pee iimaari oo wutarot oo nkiasin/eyasat.*

- Erany aldarasa pookin osinkolio obo le mila ejoki Enkai ashe te en'chan oo nkujit.

### En'dungunoto oo Sinkolioitin

- Tisiru arkereri obo lo osinkolio oipirita enkirriwaaroto e Enkai te yook pee kirrip nkitobirunot sidan e Enkai to osinkolio le mila loo Irmaasai.

*Ildim ena siai neya ildakikani 10–15. Metaa, ore anaa enkias sidai oleng' eyeu enkata nabaiki pee easi esidai. N'choo enkata sapuk tenidimayi.*

- Amaa, ke kiin'dim pee kiata ilturrurri 2 arashu 3 pee eliki yook orbiti lenye? Wou/Tudumunye tenintayanakine, niin'dim sii aataranya mimutye.
- Ore too somoi 2 oosuju, nipon sii orereri obo to somoi aare (2). Metaa, kishukokino ake ena siai.

#### Enkomono

Enkai naitobira shumata, o enkop, kijoki iye ashe te emayani oo nkitobirunot o enganyit ndobirwa yook te engitanyenyukoto ino.

Ashe te nkaraki enchan, oo ngujit, oo kule, oo nkeru.

Kiomonu tenkaraki e emburis oo ennyorata ino nabik indarasi pee indimie iyoo pee kindabaya inkiasin ang' ana ilaitashekinok loo nkitobirat/nkitobirunot inono. N'choo iyook osiligi lemeigusugus tiatwa enkibelenyekata sapuki orreje le enkop.

Amu ira iyee enkwentikinoto aang taata oo ndarasi. Eesaay.

#### Bibliography

<sup>1</sup> N.T. Wright, "Ufufuo na Upya wa Uumbaji" 11/16/2018, [https://www.youtube.com/watch?v=\\_7wamvWVN4](https://www.youtube.com/watch?v=_7wamvWVN4); and <https://atyourservice.arocha.org/en/the-radical-renewal-of-creation-and-the-new-earth/>

4. Confirmation/ Kipa Imara Lesson 2: English/Kiswahili

**Maasai Traditional Environmental Knowledge**  
**Ujuzi wa Asili wa Wamaasai katika Utunzaji wa Uumbaji**  
**Eng'eno e Asili oo Irmaasai te Erripoto oo Nkitobirunot**

**Hoja Kuu**  
 Enkironoto kitok

Maarifa ya mazingira ya kitamaduni ya Wamaasai:

- Huchangia katika utunzaji wa uumbaji na
- Huambatana na kanuni za kibiblia za utunzaji wa uumbaji (ambapo Mungu anatuita kuwa wasimamizi wa Dunia [Somo la 1]).



Engarriyano enkop e mila oo Irmaasai:

- Eretoki tiatua erripoto oo nkitobirunot
- Tenebo oo wutarot e Biblia erripoto oo nkitobirunot (Naake ipotito iyook Enkai mataa ilaitahekinok le enkop [osomo oituruku 1]).

Matokeo ya Kujifunza

Kama matokeo ya somo hili, mwanafunzi atafanya yafuatayo:

Ore ntilat ena kisoma naa pee iidim oloiteng'eni aataasa kuna:

Kujua



**Biblia**

- **Mapitio:** Elewa kwamba kutunza uumbaji kulingana na kanuni za kibiblia ni wajibu mtakatifu unaotolewa na Mungu.
- Fahamu kwamba “pembetatu ya uumbaji wa kibiblia” inarejelea uhusiano kati ya **Mungu, ubinadamu, na uumbaji usio wa kibinadamu.**



**Biblia**

- **Iimai:** Tayelo aajo ore erripoto oo nkitobirunot enaa enajo Biblia naa enkitanapata sinyati naihoru Enkai.
- Tayelo aajo “Ore ewunishu oo nkitobirunot e Biblia” naa akelikioo enebaikinore **Enkai, oo iltung’anak, oo nkulie kitobirunot neme iltung’anak.**

**Wamaasai**

- **Mapitio:** Fahamu jinsi maarifa ya mazingira ya kitamaduni ya Wamaasai yanavyoonyesha hisia sawa ya wajibu na uwajibikaji kwa mazingira.
- Elewa jinsi mtazamo wa ulimwengu wa kitamaduni wa Wamaasai—unaoonyeshwa na kiti cha miguu mitatu— unavyofanana na “pembetatu ya uumbaji wa Biblia.”
- Elewa jinsi ufugaji endelevu ulivyo sehemu ya utunzaji mzuri wa uumbaji.



**Irmaasai**

- **Iimai:** Tayelo eniko engarriyano enkop e asili oo Irmaasai tenitodolu enkitanapata oo nkiasin te enkop.
- Tayelo eneti n’dwaat olosho le mila oo Irmaasai—oitodolu olorika loo nkejek wuni— enaa enanyanyikie “ewunishu oo nkitobirunot e Biblia.”
- Tayelo eniko eramatare nabikoo teneeku ewueji erripoto sidai oo nkitobirunot.

## Sayansi

- **Mapitio:** Elewa dhana kuu za sayansi ya tabianchi (yaani, mabadiliko ya tabianchi, athari ya ongezeko la joto duniani [athari ya blanketi], gesi zinazosababisha ongezeko la joto duniani zinazosababishwa na binadamu) na athari zake kwenye mifumo ikolojia na wanadamu.
- **Mapitio:** Tambua kwamba sayansi ya tabianchi inaingiliana na vipimo vya kiroho na kimaadili vya utunzaji wa mazingira vilivyoelezwa katika mafundisho ya Biblia.
- **Mapitio:** Elewa jinsi mabadiliko ya tabianchi yanavyoathiri mazingira ya jamii ya Wamaasai na mtindo wa maisha wa kitamaduni.
- Kuongeza uelewa wa jinsi mila za Wamaasai na sayansi ya tabianchi zinavyosisitiza umuhimu wa kuishi kwa amani na mazingira na kulinda maliasili.
- Kuelewa jukumu la nyasi kama kisima cha kaboni chenye ufanisi mkubwa.
- Kuelewa kwamba sayansi imejifunza na kuamua mbinu bora za kulinda na kutunza viumbe hai na mazingira yao ili kusaidia kurejesha au kudumisha usawa katika asili.

## Tumaini

- **Mapitio:** Elewa kwamba licha ya changamoto zilizopo sasa, Biblia inafundisha kwamba Mungu aliumba dunia kwa kusudi na ataleta urejesho wa uumbaji katika siku zijazo (**Ufunuo 21:1-4**).
- Juhudi zetu za kushughulikia mabadiliko ya tabianchi ni sehemu ya kufanya kazi kuelekea mustakabali huu wenye matumaini.

- Hisia ya kina ya upendo, heshima, na uwajibikaji kwa uumbaji wa Mungu (inayorejelewa kutoka kwa hekima ya kale ya mistari ya Biblia).
- Muunganisho wa kijamii na ardhi kwa kuangazia hadithi kutoka kwa mila za Wamaasai.



## Sayansi

- **Iimai:** Tayelo m'baa sapukin e sayansi orreje le enkop (ena, nkibelekenyat orreje le enkop, n'golikinot emponoto enkirowuaj te enkop [en'golikinoto torriono], irgesii ooyau emponata enkirowuaj te enkop naayau iltung'anak) oo n'golikinot enyena too nkulie baa pookin oo iltung'anak.
- **Iimai:** Tayelo aajo ore sayansi orreje le enkop naa kerisio oo nkipimeta oo ltauja te erripoto enkop enaa enejo Biblia.
- **Iimai:** Tayelo eniko nkibelekenyat orreje le enkop teneyau n'golikinot te enkop oo Irmaasai oo orreje lengishui e mila.
- Emponoto oo yelounot eniko mila oo Irmaasai oo sayansi orreje le enkop enitanapisho tipatishu emanyisho enkop natii eseriani oo erripoto n'dupot e asili
- Piiyolou esiaai oo nkujit anaa orkisima le kabon tesidano sapuk.
- Piiyolou aajo iteng'enwe sayansi neyau nkoitoi sidan naaripieki negolieki nkitobirunot naishu oo enkop enye pee eretoki m'baa e asili.


## Osiligi

- **Iimai:** Tayelo aajo ore enake etii n'golikinot taata, Iteng'enu Biblia aajo itobirwa apa Enkai enkop too n'tilat neyau empwaan oo nkitobirunot too nkolong'i naaponu (**Embolunoto 21:1-4**).
- Ore nywaat ang' kiapare nkibelekenyat orreje le enkop naa tenebo oo easata e siaai e entaisere naata osiligi.
- Iltauja lenyorrota, enganyit, oo nywaat too nkitobirunot Enkai (naing'waa enganyit eepa oo irkererini le Biblia).
- Enkidikidikoto olosho oo enkop too m'baa oo inatinin naing'waa mila oo Irmaasai.

Hisi



## Confirmation/Kipa Imara

	<ul style="list-style-type: none"> <li>• Imehamasishwa na maarifa ya kitamaduni ya mazingira ya Wamaasai, desturi endelevu, na uhusiano mzuri na ardhi.</li> <li>• Imewezeshwa kuchanganya desturi hizi za kitamaduni na mikakati ya kisasa ya sayansi ya mazingira ili kuimarisha usimamizi na uendelevu.</li> </ul>	<ul style="list-style-type: none"> <li>• Eewuaki te engariyano e mila enkop oo Irmaasai, orkwaak obikoo, oo em'baikinoto sidai e nkop.</li> <li>• Idimieki piitushuli kulo kwaaki lemila oo m'baa e kisasa e sayansi enkop pee eretoki enkitaheikinot oo em'bikooroto.</li> </ul>
<p><b>Fanya</b></p> 	<ul style="list-style-type: none"> <li>• Waombe wanafunzi watambue desturi moja au mbili za kitamaduni za Wamaasai wanazoweza kuzitumia au kuziendeleza katika jamii yao ili kuboresha utunzaji wa mazingira.</li> <li>• Waombe wanafunzi watafakari jinsi wanavyoweza kuunganisha maarifa ya Wamaasai na mafundisho ya kibiblia katika maisha yao ya kila siku ili kutunza mazingira.</li> <li>• Au andika ubeti wa pili wa wimbo ukizingatia maarifa na desturi za kitamaduni za kimazingira za Wamaasai ambazo pia ni mbinu bora za kupunguza mabadiliko ya tabianchi (kupunguza).</li> </ul>	<ul style="list-style-type: none"> <li>• Toomono ilooiteng'eni peeyolou orkwaak obo arashu aare le mila oo Irmaasai ooidim aataasishore te enkop enye pee itosidan erripoto enkop.</li> <li>• Tiaki ilooiteng'eni mibirribirra eniko enidikidik engariyano oo Irmaasai oo nkiteng'emat e Biblia tenkishui enye ekutwa pee errip enkop.</li> <li>• Arashu tisira orbeti liare lo osinkolio oipirita engariyano oo rkwaak lemila enkop oo Irmaasai naake sii nkoitoi sidan naaitong'orr nkibelekenyat orreje le enkop (enkitong'oroto).</li> </ul>

### Vifaa vya Kufundishia Vinahitajika

- Kiti cha kitamaduni cha Wamaasai chenye miguu mitatu, *olorika*
- Vifaa vya kuona (chati, picha) kuhusu utunzaji wa mazingira
- Biblia kwa mwalimu (ikiwezekana ikiwa na mistari husika iliyotiwa alama)
- Vifaa vya kuandikia (kalamu, karatasi)
- Chati mgeuzo au ubao mweupe

### Eywuni Inareta Naaiteng'enishoreki

- Oltonet le mila oo Irmaasai oota nkejek wuni, *olorika*
- Inareta naadoli (enkardasi sapuk, empicha) naipirr erripoto enkop
- Biblia to alaiteng'enani/armalimui (tenidimakinoi, eeta irkererini tilat oo tipikaki orng'elata)
- Inareta naasirihoreki (arkalamu, empalai/enkardasi)
- Enkardasi sapuk arashu orkibao oiborr

### Vifaa vya Wanafunzi / Vipeperushi vya Karatasi

- Marejeleo ya Maandiko kuhusu utunzaji wa uumbaji
  1. Mwanzo 1:31
  2. Mwanzo 2:15
  3. Mambo ya Walawi 25:1–7
  4. Zaburi 24:1–2
  5. Yeremia 2:7
  6. Yohana 3:16
  7. Warumi 1:20
  8. Warumi 8:20–22
- Maswali ya kutafakari kwa ajili ya majadiliano ya kikundi

### Inareta oo Looiteng'eni/Ingardasini Kunyinyi

- Enking'uraaroto oo rkigerot naipirita erripoto oo nkitobirunot
  1. Enkiterunoto 1:31
  2. Enkiterunoto 2:15
  3. Ilawi 25:1–7
  4. Olkerempe le Nkai 24:1–2
  5. Yeremia 2:7
  6. Yohana 3:16
  7. Iroma 1:20
  8. Iroma 8:20–22
- Irmaswali oo ibirribirri torbae loo nkirorot olturrurr



## Maarifa ya Jadi ya Mazingira katika Muktaadha wa Wamaasai

8 *Waulize wanafunzi maswali yafuatayo. Unaweza kufikiria kuanza na majadiliano ya kikundi kidogo—hasa kwa swali la kwanza—na kisha kujadili majibu katika kundi kubwa.*

- Unajua nini kuhusu desturi za kitamaduni za Wamaasai zinazohusiana na mazingira?
- Maarifa haya ya kitamaduni ya mazingira yanarithishwaje kupitia vizazi?
- Unapataje uzoefu wa maarifa haya katika maisha yako ya kila siku?

### Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)

- 1
- Maarifa haya ya kitamaduni ya Wamaasai ni aina ya utunzaji wa mazingira, ambayo yamekuwa yakidumishwa na jamii ya Wamaasai kwa karne nyingi.
  - Maarifa haya yanaonyesha uhusiano wa kipekee wa Wamaasai na asili na jukumu lao kama la utunzaji wa ardhi.
  - Kwa kuelewa mila za Wamaasai, tunaweza kuchunguza jinsi mitazamo kama hiyo ya kitamaduni inavyounda mwingiliano wa Wamaasai na mazingira na kutoa uelewa mpana kuhusu uendelevu na utunzaji wa uumbaji.
  - Hebu tuyachunguze sasa!



## Enkarriyano e Mila te tiatua Orkwaak loo Irmaasai

*Nkilikwana ilooiteng'eni kuna kilikwanant, iin'dim aibirribirra nin'teru oo nkirorot olturrurr kiti—aisulaki ilo lEnkaiterr—ore piidipi neimakini nena limunot tolturrurr sapuk.*

- Kanyoo iyolo naipirita orkwaak lemila oo Irmaasai naimaki enkop?
- Amaa ena arriyano e mila e enkop kaja ikoni pee itujung'i eishoi oo eishoi nalotu?
- Kaja ingo pee itum emokunoto ena arriyano tiatua engishui ino ekutwa?

### Ilomon lenkidikidikoto (enkidikidikoto Altarge oo Em'bae Kitok)

- Ore ena arriyano e mila oo Irmaasai naa erripoto enkop, naake egirai oshaake aadupoo iltung'anak loo Irmaasai te engata naado.
- Ore ena arriyano nitodolu naboishu sidai oo Irmaasai oo asili oo enkitanapata enye erripoto enkop.
- Ore pee iyolou mila oo Irmaasai, kiin'dim aatujurr eniko n'dwaat nijo nena e mila enitobirr engidikidikoto oo Irmaasai oo enkop neyau yolounot naalala tiatua orkwaak oo erripoto oo nkitobirunot.
- Maing'urai siyie taata!

## 2) KITABU

uchunguzi wa Biblia na/ au maudhui ya msingi

## Maarifa ya Jadi ya Mazingira ya Jamii ya Wamaasai



MAASAI

- 10 Maarifa ya jadi ya mazingira ya Wamaasai yana uhusiano mkubwa na uhusiano wao na asili na ardhi. Wamaasai wanajiona kama walenzi au watunzaji wa dunia, wanaowajibika kulinda na kudumisha usawa wa mazingira, hasa kuhusiana na ng'ombe wao, ardhi, na maliasili. Hapa kuna mambo muhimu kuhusu utunzaji wa Wamaasai:

### Kuwajali Watu:

Imani ya Wamaasai katika utegemezi wa pande zote kati ya watu, mifugo, na ardhi.

#### 1. Kutunza Mifugo kupitia Malisho Endelevu:

Wamaasai wanajulikana kwa usimamizi wao makini wa ng'ombe. Wanahamisha mifugo yao mara kwa mara ili kuepuka kulisha kupita kiasi eneo lolote, kuruhusu nyasi na mimea kukua tena. Hii inahakikisha kwamba ardhi inabaki na afya na inaweza kuendelea kusaidia maisha.

#### 2. Kutunza Ardhi:

Wamaasai wanaamini ardhi ni takatifu na lazima ichukuliwe kwa heshima. Wanatumia ardhi kwa ajili ya kulisha ng'ombe, kilimo, na kuishi, lakini pia wanahakikisha wanaihifadhi. Hii inajumuisha malisho ya mzunguko (*ronjo*) ambayo yanahusisha kuhamisha mifugo yao kati ya malisho tofauti. Mbinu hii inazuia kulisha kupita kiasi katika eneo lolote, kuruhusu mimea kupona na kudumisha afya ya udongo.

#### 3. Uhifadhi wa Maji:

Maji ni muhimu sana kwa Wamaasai, hasa katika misimu ya kiangazi, kutokana na maeneo kame na yenye ukame wanayoishi. Wanajua wapi pa kupata vyanzo vya maji, na wanavitumia kwa busara, wakihakikisha hawapotezi maji. Wanasimamia vyanzo vya maji kwa uangalifu, wakivitumia kwa uangalifu na kuhakikisha kwamba havitumiwi kupita kiasi. Hii inajumuisha desturi kama vile kuchimba visima vifupi,

## 2) ENKITABU

enking'uraroto arashu engiteng'ena e tipat

## Enkarriyano e Mila te Enkop oo Iltung'anak loo Irmaasai

Ore enkarriyano e mila te enkop oo Irmaasai neeta em'baikinoto sapuk oo asili oo enkop. Edolita Irmaasai oote enaa ilarripok arashu iloogolie enkop, neitasheiki nerrip enkop terisyooroto aisulaki nkishu enye, enkulukoni, oo n'dupot e asili. Etii ene m'baa e tipat naaipirita erripoto oo Irmaasai:

### Enshilaaroto oo Iltung'anak:

Ore enkirukoto oo Irmaasai tiatua enking'urata oo m'bat pookin too iltung'anak, eramatate, oo enkop/enkulukoni.

#### 1. Erripoto Eramatate tiatua N'daat Naabikoo:

Eyieloi Irmaasai tenkitaheikino enye sidai oo ngishu. Idurrie eramatate enye nkataitin kumok pee medaare ewueji nabo tenkata naado, piisho nkujit migila aabulu. Eretoki ena enkop metanaru/metaa biyoto niidim ainyaaki aaretoki enkishui.

#### 2. Erripoto e Enkop:

Eeta Irmaasai enkirukoto aajo ore enkop naa sinyati, nishaakinore pee iyanyiti. Eyasishore enkop torbae le eramatate, nkurman, oo manyisho, kake errip sii. Ore ena naa tenebo oo n'daat emanikinoto (*ronjo*) naipirita enkidurrare eramatate enye toon'daat naapaasha. Ore ele rreje nemiinyal enkop amuu medaa eramatate/ngishu te ewueji nabo tenkata naado pee memut enkop, nisho enkop metanaru oo em'biyotishu enkulukoni.

#### 3. Erripoto oo Ngariak/Engare:

Tipat engare oleng' too Irmaasai, aisulaki te engata alamei, te ngaraki wuejitin naamanya naatoito talamei. Eyolo enetumie nkonyek oo nkariak, neesishoreki tenganyit, nenyok peerrip engare. Itasheiki nkonyek oo nkariak tenganyit, neok tenganyit, nemeok ainyalaki/aaishu. Ore ena naa tenebo oo enturore oo ilturot

kutumia vyungu vya maji, na kulinda maeneo ya vyanzo vya maji ili kuhakikisha kwamba maji yanabaki yanapatikana wakati wa kiangazi.

4. **Muunganisho wa Kiroho na Asili na Maeneo Matakatiifu:**  
Wamaasai wana uhusiano mkubwa wa kiroho na asili. Wanaamini kwamba ardhi, wanyama, na anga vyote ni zawadi kutoka kwa Mungu (*Enkai*), na ni jukumu lao kuwatunza. Tamaduni zao za kitamaduni, kama vile kutouza ardhi kabisa na kusimamia rasilimali, zinaonyesha imani hii. Hii inajumuisha kuhifadhi maeneo matakatiifu ya asili. Heshima kwa miti fulani, miamba, mito/vyanzo vya maji, na milima huchukuliwa kuwa takatiifu na muhimu kwa hali ya kiroho ya Wamaasai na ustawi wa kimwili. Maeneo haya yanalindwa kutokana na unyonyaji na usumbufu, kuhifadhi bioanuwai na usawa wa ikolojia.
5. **Kupitisha/Kurithisha Maarifa:**  
Wamaasai hupitisha maarifa kuhusu utunzaji kutoka kizazi hadi kizazi. Wazee huwafundisha vijana katika jamii jinsi ya kutunza ng'ombe, ardhi, na mazingira, na kuhakikisha kwamba vizazi vijavyo vinaendelea kuheshimu na kutunza asili.

*Tazama zaidi katika Nyenzo za Somo la 2, Sura ya 16.*

## Mtazamo wa Dunia wa Wamaasai

Uelewa huu wa Wamaasai—au mtazamo wa kidunia—unaweza kuonyeshwa na kiti cha kienyeji chenye miguu mitatu.

- Wamaasai wanaelewa kwamba ustawi wa binadamu (ustawi) maishani unatokana na uhusiano mzuri na 1) *Enkai*, 2) watu wengine, na 3) uumbaji usio wa kibinadamu.
- Vipengele hivi vitatu vinaonekana kama kiti cha kienyeji chenye miguu mitatu, *olorika*.
- Kwa miguu mitatu, kinaweza kuwa imara—hata kwenye ardhi isiyo na usawa—na kufanya kazi vizuri.

dorropu, nashum nkariak , nerrip nkonyek oo nkariak, pee elekuni engare neesishoreki tengata alamei.

4. **Enkididikoto oo Itauja oo Asili oo Wuejitin Sinyat:**  
Eeta Irmaasai em'baikinoto sapuk oo Itauja oo asili. Eeta enkirukoto aajo ore enkop, oo alaing'ang'e naa nkishorunot naaing'waa Enkai, naa esiaai enye pee errip. Ore mila enye e asili, anaa memiri engulukoni tukul nin'tasheiki n'dupot e asili, itodolu ena kirukoto. Ore ena naa tenebo oo erripoto oo wuejitin sinyat e asili. Enganyit te matwa oo rkeek, irkejek/nkonyek oo nkariak, oo ldonyo nitaay sinyat naa tipat too Itauja loo Irmaasai oo empuan oo seseni. Ore kuna wuejitin nerripi naleng' torbae lolosek torrongo, oo enyamali, erripoto e iseuseu oo erissyooroto e ikolojia (ntokiting pookin).
5. **Engitang'arata Enkarriyano:**  
Itang'arr Irmaasai enkarriyano erripore tengishui oo engishui, iteng'en rpayani elelero te enkop eniko enerrip nkishu, enkop, nenyok aajo ore engishui nasuju niyanyit nerrip asili.

*Tujurro oleng'tiatua tenkisoma osomo 2 enkurasa 16.*

## En'dwaata Enkop oo Irmaasai

Ore ena yolounoto oo irmaasai arashu en'dwaata olosho—ni dimi aitodolu to olorika le asili loo nkejek wuni.

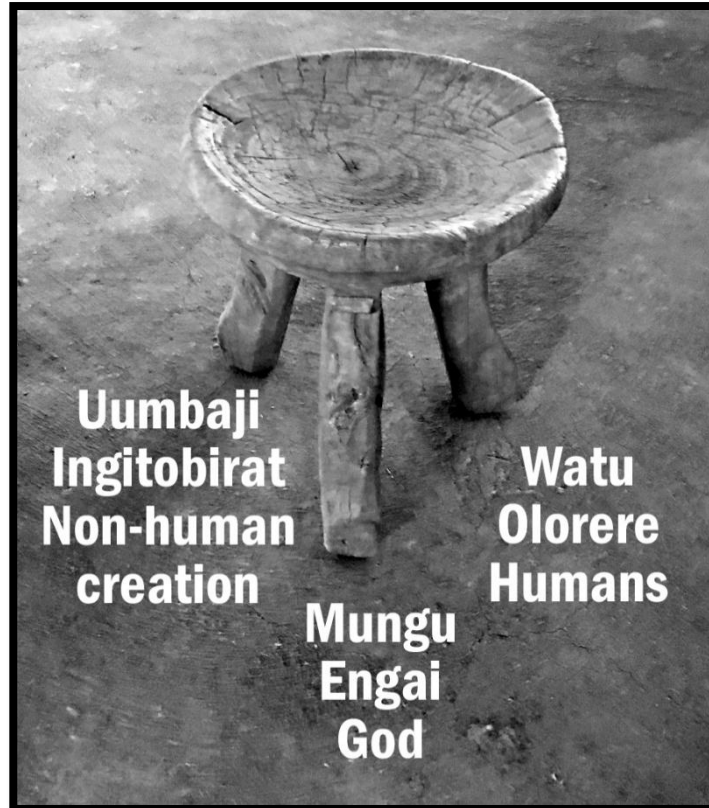
- Eyiolo Irmaasai aajo ore empuan oo iltung'anak (empuan) te enkop naa tengaraki em'baikinoto sidai oo 1) Enkai, 2) iltung'anak kulie, 3) nkitobirunot/ngitobirat neme iltung'anak.
- Ore kuna baa wuni naa ake elio enaa oltonet loo nkejek wuni, olorika.
- Ore too nkejek wuni niidim aitashe esidai—ata te enkop nemerisyo—nees esiaai esidai

## “Pembetatu ya Uumbaji” ya Biblia



- 4 Mtazamo wa ulimwengu wa Wamaasai unafanana na kile kinachoonekana katika Biblia, kile kinachoitwa “pembetatu ya uumbaji” ya kibiblia.
- Uelewa wa biblia ni kwamba kustawi kwa binadamu (*shalom/amani/ustawi kamili*) maishani hutokana na kuwa katika uhusiano sahihi na: 1) Mungu, 2) watu wengine, na 3) uumbaji usio wa kibinadamu.
  - Kwa hivyo, kuna uelewa wa pamoja wa msingi wa ulimwengu wa Mungu ambao unashirikiwa kati ya Wakristo na Wamaasai.

*Uelewa huu wa pamoja unamaanisha kwamba mafundisho ya kibiblia ya utunzaji wa uumbaji yanaendana na uelewa wa Wamaasai, na uelewa wa jadi wa Wamaasai unathibitisha hekima ya kale ya Biblia.*



## Ewunishu oo Nkitobirunot e Biblia

Ore n'dwaat olosho loo Irmaasai nenyanyuk oo ina nekidolita Biblia, ina naji “Ewunishu oo nkitobirunot” e Biblia.

- Ore yolounot e Biblia naa pwaan too iltung'anak (eseriani/empwaan nalulung'a) te enkishui nebaikinore esidai oo: 1) Enkai, 2) irkulie tung'anak, oo 3) nkitobirunot neme iltung'anak.
- Neeku, etii eyielounoto e enaboishu e tipat olosho le Enkai ong'arr Irkirisyano oo Irmaasai.

*Ore ena yolounoto enaboishu nitodolu aajo ore ingiteng'emat e Biblia naipirita erripoto oo nkitobirunot naa nirukore n'dwaat oo Irmaasai, oo eng'eno e asili oo Irmaasai nitodolu.*

**Mapitio: Utunzaji wa Uumbaji wa Kibiblia**  
**[kutoka Somo la 1]**

7 *Wagawanye wanafunzi katika vikundi vidogo vya wanafunzi 2 hadi 3. Kila kundi limepewa kifungu kimoja cha Biblia ambacho ni tofauti na kile walichokijadili katika Somo la 1:*

- |                           |                   |
|---------------------------|-------------------|
| 1. Mwanzo 1:31            |                   |
| 2. Mwanzo 2:15            | 5. Yereimia 2:7   |
| 3. Mambo ya Walawi 25:1–7 | 6. Yohana 3:16    |
| 4. Zaburi 24:1–2          | 7. Warumi 1:20    |
|                           | 8. Warumi 8:20–22 |

- Hebu tupitie mistari ya Biblia tuliyoiangalia katika somo letu la kwanza na tuiangalie kwa undani zaidi kulingana na “pembetatu hii ya uumbaji.”
- Hata hivyo, tukisoma ubeti tofauti, tazama unasema nini kuhusu mahusiano haya matatu:
  - **Uhusiano wa Mungu na wanadamu.**
    - Pia unasema nini kuhusu uhusiano wa wanadamu na Mungu?
  - **Uhusiano wa Mungu na viumbe visivyo vya wanadamu.**
    - Unasema nini kuhusu umiliki wa Mungu wa Dunia?
  - **Uhusiano wa wanadamu na viumbe visivyo vya wanadamu.**
    - Unawapa wanadamu jukumu gani?
    - Wamaasai wanaamini kwamba Mungu amewapa mifugo na ardhi, na ni jukumu lao kuwatunza.

*Kumbuka: Mungu/Engai ni Mungu wa Rehema, ambaye utunzaji wake unawafikia watu na mazingira, ambayo hayawezi kutenganishwa katika uelewa wa Wamaasai.*

*Baada ya majadiliano ya vikundi vidogo, mwambie mwandishi kutoka kila kikundi atoe maarifa yake. Ikiwa muda ni mdogo, mwambie mwandishi mmoja kutoka kila maandishi, na waalike wengine waongeze vipengele vinavyokosekana.*

**limai: Erripoto oo Nkitobirunot e Biblia**  
**[ing'waa Enkisoma/Osomo 1]**

*Tirisha ilooiteng'eni tiatua Iturrurri kutiti oo iltung'anak 2 arashu 3. Nishori ilturrurri orkereri obo le Biblia napaasha oo enaduoong'uraitie tenkisoma engaiterr.*

- |                             |                  |
|-----------------------------|------------------|
| 1. Enkiterunoto 1:31        |                  |
| 2. Enkiterunoto 2:15        | 5. Yereimia 2:7  |
| 3. Ilawi 25:1–7             | 6. Yohana 3:16   |
| 4. Olkerempe le Nkai 24:1–2 | 7. Iroma 1:20    |
|                             | 8. Iroma 8:20–22 |

- Maing'urui siyie irkererini le Biblia likitadwaa te enkisoma aang'engaiterr naa maing'urui telalai oleng'ena “ewunishu oo nkitobirunot.”
- Ore ake, teneking'uraa orkereri opaasha, tujurro ajo kanyoo ejo tekuna baa wuni:
  - **Enebaikino Enkai oo iltung'anak.**
    - Kejo aa sii enebaikinore iltung'anak oo Enkai?
  - **Enebaikino Enkai oo nkitobirat neme iltung'anak.**
    - Kanyoo ijo tenkitoria Enkaite Dunia?
  - **Em'baikino iltung'anak oo nkitobirat neme iltung'anak.**
    - Kaa kitanapata/siai isho iltung'anak?
    - Eeta Irmaasai engirukoto aajo ishoo Enkai eramatere oo enkop, naa esiai enye pee erri.

*Tadamu: Ore Enkai, naa Enkai Osiligi, naa ore erripoto enye nebaiki iltung'anak oo enkop, nemeidimi aatirish too yiolounot oo Irmaasai.*

*Ore tenidipai nkirorot oo Iturrurri kutiti, nijoki ilasirak loo Iturrurri metolimu ina arriyano nataduaa, kake tenaa kiti angata naa alasirani obo tolturrurr obo oiro neeku nepon irkulikai nena nitu elimu.*

**3) UCHUNGUZI** ufafanuzi au tafakari ya maudhui ya msingi

## Utunzaji wa Wamaasai na Uumbaji wa Kibiblia



10 *Majadiliano ya Kikundi Kidogo: Wanafunzi* **BIBLIA**  
wanaendelea katika vikundi vyao vidogo na kupewa maswali ya kutafakari:

1. Je, desturi za Wamaasai zinaendanaje na dhana ya usimamizi inayopatikana katika Biblia?
2. Tunaweza kujifunza nini kutokana na desturi hizi ambazo zinaweza kutumika leo?
3. Kuelewa maarifa ya mazingira ya Wamaasai kunaongezaje uelewa wetu wa amri ya Mungu ya kutunza uumbaji?

*Maelezo ya kufundisha: Wanafunzi wanapewa muda kwa kila kikundi kushiriki maarifa yao.*

### Maelezo ya Majadiliano:

1. **Kuhusiana na kanuni za kibiblia na desturi za Wamaasai**, mila zote mbili zinaonyesha heshima kubwa kwa uumbaji wa Mungu.
  - Kwa kuiona ardhi kama takatifu na kuisimamia kwa uangalifu, Wamaasai wanaonyesha mfano wa jukumu la usimamizi ambalo Biblia inawakabidhi wanadamu, wakiichukulia dunia si kama milki bali kama zawadi ya kimungu inayopaswa kuhifadhiwa na kuheshimiwa.
2. **Malisho ya mzunguko na mapumziko ya mwaka wa Sabato:**
  - Waisraeli waliagizwa kujiepusha na kufanya kazi katika ardhi wakati wa mwaka wa Sabato.
  - Jitihada za uhifadhi wa Wamaasai zinaonyesha utambuzi kwamba maliasili zina kikomo na lazima zitumike kwa uwajibikaji ili kuepuka kupungua. Wamaasai wanatambua kwamba kulisha kupita kiasi

**3) ENGING'URAROTO** enkitalalaunoto arashu engibirribirr e engiteng'ena e tipat

## Erripoto oo Irmaasai oo Nkitobirunot e Biblia

*Nkitorot tolturrurr kinyi: Ishori ilooiteng'eni irmaswali oibirribirr too Iturrurri lenye kutiti:*

1. Amaa, orkwaak loo Irmaasai, kaja ikunakino oo em'bae enkitaheikinoto natumoi tiatua Biblia?
2. Kanyoo kii'dim aiteng'enwoto tekuna milai naidimi ake aatusuj taata?
3. Amaa, teniyolou engarriyano enkop oo Irmaasai, kajiko peepon yolounot ang'oo nkitanapat Enkai erripoto oo nkitobirunot?

*M'baa naaiteng'enishoreki: Ishori ilooiteng'eni enkata too Iturrurri pookin piimaki engarriyano enye.*

### M'baa Naaimakini:

1. **Ore enaa ncheriani e Biblia oo rkwaak loo Irmaasai**, ore kuna milai pokira nitodolu enganyit sapuk too nkitobirunot Enkai.
  - Tengaraki edaalta enkop enaa sinyati nitaheiki esidai, egira Irmaasai aitodolu enkitanyanyikiet erripoto enaa enaishoo Biblia iltung'anak, pee mitaa enkop enaa enenye kake enaa em'bae etipat nanare pee eshumi nianiyiti.
2. **N'daat naamanikini oo enkiyang'iyang'are alari le Sabato:**
  - Etiaakaki apa iltung'anak le enkop e Israel pee mees esiaai te enkop tenkata alari le Sabato.
  - Itodolu nywaat erripoto oo Irmaasai aajo ore n'dupot e asili neeta engiting'oto nishaakinore pee eesishoreki esidai pee meng'oru. Eyolo Irmaasai aajo ore teniing'orr eramatere ewueji nabo kutwa niinyal enkop, niimin nkujit, oo em'bobolata e enkulukoni, naake ake iinyal enkop nitong'orr enkidimata

kunaweza kusababisha uharibifu wa ardhi, kupotea kwa mimea, na mmomonyoko wa udongo, ambao ungeharibu mazingira na kupunguza uwezo wa ardhi wa kusaidia maisha. Kwa kuzungusha maeneo ya malisho, Wamaasai sio tu kwamba wanahifadhi rutuba ya ardhi lakini pia wanahakikisha kwamba inaweza kuendelea kutoa kwa vizazi vijavyo.

**3. Tabia za Wamaasai zinaongeza uelewa wa utunzaji wa uumbaji wa kibiblia.**

- Pia, kwa kujifunza mazoea haya, tunapata ufahamu wa vitendo na uelewa wa kina wa jinsi ya kutimiza amri ya Mungu ya kutunza uumbaji wa Mungu kwa njia inayoheshimu mazingira na Muumba.

*Dokezo la kufundishia: Katika somo linalofuata, kutakuwa na majadiliano ya jinsi Maasai maarifa ya jadi ya mazingira inavyoendana na sayansi ya tabianchi.*

**Uchunguzi Unaendelea: Tumaini**

- 4
- **Fahari ya Kitamaduni na Uwajibikaji:** Maarifa ya Wamaasai ni rasilimali muhimu katika utunzaji wa uumbaji.
  - **Uwezeshaji kupitia Maarifa:** Ninyi wanafunzi ni walenzi wa maarifa haya, na mnaweza kuleta athari chanya kwenye mazingira.
  - **Mtazamo wa Wakati Ujao:** Katika somo linalofuata, tutaangalia jinsi ujumuishaji wa maarifa ya kitamaduni ya mazingira na uvumbuzi wa kisasa utakavyounda mustakabali endelevu zaidi.
  - **Tumaini la Kibiblia na Wamaasai:**
    - Tumaini katika muktadha wa Wamaasai linaendana na dhana ya usimamizi inayopatikana katika Biblia.
    - Tumaini letu katika mustakabali endelevu na wenye upatano, limejengwa katika Mungu wa Tumaini anayeaminika.
    - Mungu wetu anayeaminika ameahidi kwamba hatatuacha kamwe au viumbe.



enkop te eretokinoto enkishui. Ore enaa ibelekeny Irmaasai n'daat eramatare, maakeretoki ake Irmaasai esidano enkulukoni enkop, kake pee iidim sii aataretoki engishon/eishoi nasuju.

**3. Epon orreje loo Irmaasai yolounot erripoto oo nkitobirunot e Biblia.**

- Neeku, ore tenekiteng'enwo kuna mokunot, naa aikiyolou too nkiasin telalai enekingo enekindabaya enkitanapata Enkai erripoto oo nkitobirunot Enkai tenkoitoi naiyanyit enkop oo laitabirunoni.

*Em'bae naiteng'enishoreki: ore tenkisoma nasuju, nekiaata nkiimakinot naaing'uraa aajo ketiamwa Irmaasai, oo engarriyano e mila enkop, enyanyuk oo sayansi orreje le enkop.*

**Enkigilata En'jurrore: Osiligi**

- **Esidano e Mila oo Nkiasin:** Ore engarriyano oo rmaasi naa n'dupot etipat te erripoto oo nkitobirunot.
- **Eretoto e Engarriyano:** ore n'tai ilooiteng'eni naa ilarripok tena arriyano, nin'dimidimi aayau nkibelekenyat sidan te enkop.
- **En'dwaata Enkata Nasuju:** ore tenkisoma nasuju, neking'uraa eniko enkitushulata engarriyano e mila enkop oo m'baa e kisasa tenitobirr enkariyano nabikoo oleng'.
- **Osiligi le Biblia oo Irmaasai:**
  - Ore osiligi torkwaak loo Irmaasai naakenyanyuk oo erripoto natumoi tiatua Biblia.
  - Ore osiligi lang'obikoo oo olaata osotwa, naaketehetaki tiatua Enkai osiligi nemeurishoreki.
  - Ore Enkai aang'nemekiurishore netolimwo aajo ming'waa aikata iyook arashu nkitobirunot.

**4) KUTUMIA** kufanya au kutumia mafunzo

## Kutumia Maarifa ya Jasi ya Mazingira na Utunzaji wa Uumbaji wa Kibiblia



15 *Chagua mojawapo ya shughuli zifuatazo za matumizi zilizopendekezwa.*

- Gawanya wanafunzi katika vikundi ili kujadili mojawapo ya desturi za kitamaduni zilizojadiliwa hapo juu. Kila kikundi kitaelezea faida za desturi ya mazingira na jinsi inavyoakisi kanuni ya utegemezi wa pande zote mbili.
- Waulize wanafunzi kutambua desturi moja au mbili za kitamaduni za Wamaasai wanazoweza kuzitumia na jinsi watakavyoziendeleza katika jamii yao ili kuboresha utunzaji wa mazingira.
- Waulize wanafunzi watafakari jinsi wanavyoweza kuunganisha maarifa ya Wamaasai na mafundisho ya kibiblia katika maisha yao ya kila siku ili kutunza mazingira. Wanafunzi wanaombwa kuandika ahadi yao na kuishiriki na mwenzi au kikundi.



### Utunzaji wa Uumbaji katika Wimbo

Au

15 *Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni matumizi mazuri sana, inahitaji muda wa kutosha kufanywa vizuri.*

- Jiunge na vikundi vile vile kutoka somo la kwanza, endelea kuandika wimbo wako kwa wimbo uleule wa kitamaduni wa Wamaasai.
- Ubeti wako wa kwanza ulikuwa kuhusu Mungu kutuagiza kutunza uumbaji mzuri wa Mungu.



**4) EESISHOREKI** eesata arashu eesishoreki engiteng'ena

## Eesata te Engarriyano e Mila Enkop oo Erripoto oo Nkitobirunot e Biblia

*Tegelu nabo ekuna kiasin naasishoreki enaa enaitodolwaki.*

- Tirisha ilooiteng'eni too Iturrurri pee ing'uraa nabo too rkwaaki lemila naaing'urayieki tengaiterr. Ore Iturrurri pookin nelikioo esidano orkwaak le enkop enitodolu eretoto oo m'bat pokira.
- Nkilikwana ilooiteng'eni peelimu orkwaak obo arashu aare lemila oo Irmaasai ooidim aataasishore oo eniko piitobik too iltung'anak lenye piitosidan erropoto enkop.
- Tiaki ilooiteng'eni piibirribirr eniko tenidikidik engarriyano oo Irmaasai oo nkiteng'emat e Biblia too nkiasin enye ekutwa peerrip enkop. Ewomoni ilooiteng'eni pee esirr esile enye niimaki tenebo oo ilo otahare arashu olturrurr.

### Erripoto oo Nkitobirunot to Osinkolio

*Ore enasiiai niidim aawa lidaikani tomon arashu tomon oimiet. Neeku, ore enakee m'baa sidan oleng', neyeu enkata nanare peesi esidai.*

- Tutumore iladuoo turrurri lenkisoma enkaiterr, entisirr orbeti taladuoo sinkolio lemila oo Irmaasai.
- Ore duoo orbeti linyi oituruku naa akipirita ajo, irriwua iyook Enkai pee kirrip enkitobirunoto sidai Enkai.
- Neeku tisira orbeti liare losinkolio oipirita engarriyano oo rkwaak lemila enkop oo Irmaasai naake enkoitoidai sii naitong'orr nkibelekenyat orreje le enkop (enkitong'oroto).

## Confirmation/Kipa Imara

- Sasa andika ubeti wa pili wa wimbo kuhusu maarifa na desturi za kitamaduni za kimazingira za Wamaasai ambazo pia ni mbinu bora za kupunguza mabadiliko ya tabianchi (kupunguza).
- Je, tunaweza kuwa na vikundi 2 au 3 kushiriki ubeti wao nasi? Jitolee tu ikiwa uko tayari na unaweza kuuimba bila kuchelewa sana.

*Mwishoni mwa somo, himiza uundaji wa mistari ya wimbo.*

- Unaweza kuendelea kufanya kazi kwenye ubeti wako kwa ajili ya shindano la wimbo baada ya madarasa.
- Katika somo linalofuata na la mwisho, pia utaongeza ubeti mmoja zaidi. Kwa hivyo, mradi huu utaendelea kuendelezwa.

### Maombi

- 1 Ee *Enkai*, Mungu wetu wa Mbingu na Dunia,  
Tunakushukuru kwa baraka ulizotupa, ikiwa ni pamoja na mazingira mazuri tunayoishi. Tuongoze kuitunza na kuheshimu viumbe vyote. Tusaidie kuilinda dunia kwa ajili ya vizazi vijavyo.  
Tunaomba kwa jina lako takatifu. Amina.

- Amaa, kekiin'dim aanoto Iturrurri aare arashu okuni ooliki iyook orbeti lenye? Karibu tenitii tayari niin'dim aataranya itu iya engata sapuk oleng'.

*Ore tenkiting'oto enkisoma, ntirriha enkitobirata oo rkererini losinkolio.*

- In'dim ainyaaki aataasa esiaai to orbeti lino torbae leranyare osinkolio teniiting'ena kisoma.
- Ore tenkisoma nasuju oo enabayie, napon orbeti obo. Neeku, ore ena siiai netumi aas.

### Enkomono

Enkai, Enkai aang'e Shumata oo Enkop,  
Kiliki iyie aashe temayiani ninchoo iyook, aatenebo oo enkop sidai nekimanya. In'dimie iyook matorrip nekiyanyit nkitobirunot pookin. Taretoki iyook matorrip Dunia/Enkop torbae lengishon nasuju.

Kiomonu te engarna ino sinyati. Essay.

5. Confirmation/ Kipa Imara Lesson 3: English/Kiswahili

## Integrating Climate Science

### Kuunganisha Sayansi ya Tabianchi kwa Mukstadha wa Wamaasai Engidikoto e Sayansi Orreje le Enkop to Orkwaak/te Enkop oo Irmaasai

#### Hoja Kuu Enkioroto kitok

Mabadiliko ya tabianchi yanaathiri mtindo wa maisha wa jadi wa jamii ya Wamaasai, lakini kuunganisha sayansi ya tabianchi na maarifa ya kitamaduni na mazingira kunaweza kusaidia kupunguza na kukabiliana na hali hiyo kwa ajili ya maisha endelevu.



Ore nkibelekenyat orreje le enkop nibeleyen orkwaak le enkishui e mila olosho loo Irmaasai, kake tenidiki sayansi orreje le enkop oo engariyano e mila oo enkop niidim aataretoki engitong'orata nirisheki ilo rreje te enkishui nabikoo.

#### Matokeo ya Kujifunza

Kama matokeo ya somo hili, mwanafunzi atafanya yafuatayo:

Ore ntilat ena kisoma naa pee iidim oloiteng'eni aataasa kuna:

#### Kujua



#### Sayansi

- **Mapitio:** Elewa dhana kuu za sayansi ya tabianchi (yaani, mabadiliko ya tabianchi, athari ya uchafu, gesi zinazosababishwa na binadamu zinazosababisha ongezeko la joto duniani)
- **Mapitio:** Elewa athari kuu za mabadiliko ya tabianchi kwenye mifumo ikolojia na ulimwengu wa asili
- Fahamu tofauti kati ya kupunguza mabadiliko ya tabianchi (kinga) na kukabiliana nayo (kupunguza hatari ya athari mbaya)
- Elewa kanuni kuu za ufugaji endelevu.



#### Sayansi

- **Iimai:** Tayolo nkibirribirrat kituak e sayansi orreje le enkop (aa, nkibelekenyat orreje le enkop, n'golikino naayau altaka, irgesii ooyeu iltung'anaka oopon engirowaj te enkop (dunia).
- **Iimai:** Tayolo n'golikinot kituak naayeu nkibelekenyat orreje le enkop te ikolojia o olosho le asili.
- Tayolo enepaashare "engitong'ortao" oo nkibilekenyat orreje le enkop (enkibooroto) oo "enkirishata" enye (enkitong'oroto endorroni enye).
- Tayolo nkoitioi e tipat o ermatare nabikoo.

## Wamaasai

- **Mapitio:** Elewa jinsi mabadiliko ya tabianchi yanavyoathiri mtindo wa maisha wa kitamaduni wa Wamaasai wafugaji.
- Elewa jinsi kuunganisha sayansi na maarifa ya jadi ya mazingira kunavyoweza kuwasaidia Wamaasai kukabiliana na athari mbaya za mabadiliko ya tabianchi na kusaidia maisha endelevu.



## Pembetatu ya Uumbaji wa Biblia

- Elewa jinsi sayansi ya tabianchi inavyoweza kusaidia utunzaji wa uumbaji na vipimo vyake vya kiroho na kimaadili vya utunzaji wa mazingira vilivyoelezewa katika mafundisho ya Biblia.



## Tumaini

- Elewa kwamba wanasayansi wa tabianchi na wanamazingira wana matumaini kwamba juhudi za binadamu zinaweza kupunguza mabadiliko ya tabianchi, ambayo huhimiza matumaini.
- **Mapitio:** Fahamu maandiko muhimu ya Biblia yanayofundisha kwamba Mungu ameahidi kutowahi kuacha uumbaji na atasababisha upatanisho na urejesho wake wa mwisho.
- **Mapitio:** Tambua kwamba juhudi zetu za kushughulikia mabadiliko ya tabianchi ni sehemu ya kufanya kazi kuelekea mustakabali wa Mungu wenye matumaini huku tukiwa waaminifu kwa agizo la Mungu la kutunza uumbaji.



## Irmaasai

- **Iimai:** Tayolo eniko nkibelekenyat orreje le enkop nibeakenya orkwaak le enkishui e mila oo Irmaasai laramatak.
- Tayolo eniko enkidikoto e sayansi oo engarriyano e mila e enkop pee iidim aataretoki Irmaasai pee iirish endorroni nayau nkibelekenyat orreje le enkop neretoo enkishui nabikoo.

## Eunishu oo Nkitobirunot e Biblia

- Tayolo eniko sayansi orreje le enkop pee iidim aataretoki erripoto oo nkitobirunot oo nkipimat oo iltauja oo enganyit erripoto enkop naatutwaki te enkiteng'ena e Biblia.

## Osiligi

- Tayolo aajo ore ilang'eni le saysnsi orreje le enkop neeta osiligi aajo iidim nyuat oo iltunganak aitong'oro ngibelekenyat orreje le enkop, nishoru osiligi.
- **Iimai:** Tayolo isirat le tipat le Biblia oiteng'enu aajo isigishe Enkai aajo meingua aikata nkitobirunot neyau osotwa oo empuan enye te engiting'oto.
- **Iimai:** Tayolo aajo ore nyuaat ang' kiasisho torbae loo nkibelekenyat orreje le enkop naa easata naipirita oo ngolong'i naaponu osiligi te Enkai kira ilairukok te engirriwaroto e Enkai pee kirrip nkitobirunot.

## Hisi



- Kuthamini maarifa ya kitamaduni ya mazingira ya Wamaasai.
- Wajibu wa kuhifadhi mazingira kwa ajili ya vizazi vijavyo.
- Kuhamasishwa kuchukua hatua katika jamii zao kupambana na mabadiliko ya tabianchi.
- Kuwa na matumaini kwa wakati ujao kwa juhudi za kibinadamu na ahadi za Mungu.
- Tishilai engarriyano/eng'eno e mila oo Irmaasai naipirita m'baa e enkop.
- Torriipo enkop torbae le eishoi nalotu.
- Nteng'ena olosho lino too nkiasin nairisheki ngibelekenyat orreje le enkop.
- Inoto osiligi te enkata nalotu too nyuat e tung'anishu oo nkisiligat e Enkai.

## Confirmation/Kipa Imara

### Fanya



- Tengeneza mpango wa utekelezaji mikakati ya kupunguza makali ya mabadiliko ya tabianchi (k.m., upandaji miti, malisho endelevu, kupunguza matumizi ya chupa za plastiki na kutochoma).
- Jadili suluhisho za vitendo kwa mikakati ya kukabiliana na hali (k.m., uhifadhi wa maji, usimamizi bora wa mifugo, kubadilisha njia za kujipatia riziki).
- Ntobiru engidanyata oo m'barakinot naitong'orieki n'golikinot oo nkibileknyat orreje le enkop (anaa, eunoto oo irkeek, n'daata naabikoo, engitong'orata easishoreki ilchupai loo mpirai nemepejori).
- Iimaki nkoitoi nairisheki nkibelekenyat orreje le enkop (anaa, erripoto oo ngariak, enkitaheikinoto sidai eramatare, engibelekenya loo ngoitoi nikitumie en'daa).

### Vifaa vya Kufundishia Vinahitajika

- Ubao wa chaki na chaki au ubao mweupe na kalamu za kuandikia
- Hiari: Picha za maarifa ya mazingira ya kitamaduni ya Wamaasai yaliyounganishwa na sayansi ya tabianchi
- Hiari: Picha za mabalozi wa matumaini barani Afrika

### Vifaa vya Wanafunzi / Vipeperushi vya Karatasi

- Karatasi na kalamu

### Eyewuni Inareta Naaiteng'enishoreki

- Orkibao la alchaki arashu orkiabo oiborr oo irkalamuni sapuk osirieki.
- Teniyyeu: impichai e engarriyano enkop te mila oo Irmaasai naidikore sayansi orreje le enkop
- Teniyyeu: impichai oo irbalosini losiligi tolosho le Afrika.

### Inareta oo Looiteng'eni/Ingardasini Kunyinyi

- Engardasi oo arkalamu

Dakika

### Maudhui



- 3 **Maelezo ya kufundisha:** Kwa kuanza na swali kuhusu mabadiliko ya tabianchi, inawaalika wanafunzi kuzingatia uhalisia wa suala hilo katika maisha yao. Hii inaweza kujumuisha taswira dhahiri ya kile kinachoweza kutokea kutokana na mabadiliko ya tabianchi. Jambo la msingi ni kuunda muunganisho wa kihisia na mvuto, na kusababisha udadisi kuhusu mada hiyo. Hata hivyo, epuka kufanya hivi kupita kiasi kwa njia inayochochea wasiwasi kuhusu tabianchi.
- Je, umewahi kujiuliza nini kingetokea ikiwa halijoto ya Dunia ingeendelea kuongezeka, au ikiwa hali ya hewa yetu itanza kubadilika kwa njia ambazo hatungeweza kutabiri?

### Content



- Wutarot e engiteng'ena:** Teninteru te enkilikwanata naipirita nkibelekenyat orreje le enkop nitinyiku loiteng'eni pee edamu esipata inaa bae te enkishu enye. Idimayi nitushulu enalio tina naidim aayeu torbae loo nkibelekenyat orreje le enkop. Ore em'bae e tipat naa engitobirunoto naporoo iltauja oo esirai, oo nkililikwant tena kiteng'ena. Kake, mias sii ena aitulus pee meyau orkirutoto loo orreje le enkop.
- Amaa, nkiliwkana aikata kewon aajo kanyoo napuku tenaa akepona ake engirowaj e enkop arashu/Dunia arashu teniiterr aibelekenya m'baa engijape aang too nkoitoi nemikiyolo?

## Confirmation/Kipa Imara

- Fikiria mafuriko, ukame, na dhoruba kali zikizidi kuwa nyingi— ulimwengu wetu ungeonekanaje basi?
- Vipi kama hili tayari lingekuwa linatokea, na ni jukumu letu kusaidia kulizuia?
- Nini kitatokea wakati mazingira hayo yanapoanza kubadilika kwa njia ambazo hatutarajii?

*Ikiwa mwalimu hajui maarifa ya kitamaduni ya mazingira ya Wamaasai, kama vile malisho ya mzunguko na mwitikio wa mvua, tafadhali soma taarifa kwa walimu katika Rasilimali, Sura ya 16.*

### Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)

- .25
- Hebu tuchunguze jinsi sayansi ya tabianchi inavyoweza kutusaidia kuelewa mabadiliko haya na kutafuta njia za kulinda mtindo wa maisha wa Wamaasai.



- 12 **Mapitio:** Pitia dhana za msingi za sayansi ya tabianchi, ikiwa ni pamoja na ufafanuzi wa mabadiliko ya tabianchi/ongezeko la joto duniani, maana ya athari ya blanketi (linalozuia joto), na gesi za kawaida za ongezeko la joto duniani. Tumia mifano inayohusiana na muktadha wa Wamaasai, kama vile mabadiliko ya mifumo ya mvua, ukame, na upatikanaji wa ardhi ya malisho.

## Mabadiliko ya Tabianchi na Ongezeko la Joto Duniani

### Mapitio

Hebu tupitie dhana zetu kuu za sayansi ya tabianchi.

- Nani anaweza kunipa ufafanuzi wa **mabadiliko ya tabianchi**?



- M'birribirra ngariak sapukin naana'gari, alamei, oo osiwuo sapuk tenepona—kaja etiu olosho lang'?
- Oo naai tenetupukutuo kuna, naa yook enyeuni pee kiretoo aibok?
- Kanyoo napuku teniiter enkop aibelekenya too nkoitoi nemikijo eponu?

*Tenemeyolo alaiteng'enani engarriyano e kimila oo Irmaasai naipirita enkop, anaa emanaroto oo n'daat, inaasi tarbe le en'chan, isoma lomom ta alaiteng'enani te enaret natii ematwa e tomon ooile (16).*

### Ilomon lenkidikidikoto (enkidikidikoto Altarge oo Em'bae Kitok)

- Matujurr siye eniko sayansi orreje le enkop neretoki yook pee kiyolou kuna nkibelekenyat niking'oro nkoitoi nikirripie orkwak le enkishui oo Irmaasai.



- Imai:** Imai nkibirribirrat e tipat e sayansi orreje le enkop, aa tenebo oo enkitalalaunoto oo nkibelekenyat orreje le enkop/emponata engirowaj te Deunia, kanyoo ena naji n'golikinot naayeu orbirangeti (ooibok engirowaji), oo iregesii le Dunia oopon engirowaj te enkop/dunia. Tolimu nkitanyenyukieta naipirita orkwaak loo Irmaasai anaa nkibelekenyat orreje le enchan, olamei, oo entumoto enkop naramatishoreki (n'daat).

## Nkibelekenyat Orrje le Enkop oo Emponata Engirowaj te Dunia

### Naaimaari

Maimai siye nkibirribirrat ang' kituak e sayansi orreje le enkop.

## Confirmation/Kipa Imara

- Mabadiliko ya tabianchi yanarejelea mabadiliko ya muda mrefu katika halijoto, mvua, mifumo ya upepo, na vipengele vingine vya mfumo wa tabianchi wa Dunia.
- Inajumuisha michakato ya asili na shughuli za binadamu zinazobadilisha tabianchi ya Dunia kwa muda mrefu.
- Hii ni mchakato wa asili unaoweka Dunia joto la kutosha kwa maisha. Hata hivyo, **mabadiliko ya tabianchi yanaendeshwa hasa na shughuli za binadamu:**
  - Kama vile kukata miti (kupunguza uchukuaji wa CO<sub>2</sub>), uchimbaji madini, mbinu mbaya za kilimo ikiwa ni pamoja na matumizi ya mbolea ya kemikali kupita kiasi.
  - Na kuchoma mafuta ya visukuku (petroli, mafuta, makaa ya mawe) ambayo hutoa gesi za ziada zinazoongeza joto Duniani angani.
- Hii husababisha Dunia kunasa joto nyingi kupita kiasi, na kusababisha **ongezeko la joto duniani na mabadiliko ya tabianchi, kama blanketi.**
  - Hii ni neno gumu (na ngeni) katika maeneo ambayo hakuna nyumba za kijani kibichi.
  - Katika muktadha wa Wamaasai, tunaweza kufikiria "athari ya blanketi" kwani blanketi huweka joto ndani.

## Maarifa Mapya

- **Sasa dhana mpya: Mabadiliko ya tabianchi** ni tofauti na ongezeko la joto duniani.
  - **Ongezeko la joto duniani** ni jambo kubwa linalochangia hali pana ya mabadiliko ya tabianchi, lakini mabadiliko ya tabianchi pia yanajumuisha mabadiliko yasiyohusiana na halijoto, kama vile mabadiliko ya mifumo ya mvua, uongezaji wa asidi baharini, na mengineyo.
  - **Ongozeko la joto duniani** linarejelea ongezeko la wastani wa halijoto ya uso wa Dunia kutokana na shughuli za binadamu, hasa utojaji wa gesi zinazoongeza joto duniani.

- Kang'ai naaidim aishoo enkitalalaunoto oo **nkibelekenyat orrje le enkop?**
  - Ore nkibelekenyat orrje le enkop naa nkibelekenyat enkata naado to orreje le engirowaj, enchan, m'baa osiwuo, oo kulie baa orreje le enkop te Dunia.
  - Itushulu nkiasini e asili oo nkiasin oo iltung'anak naaibelekeny orreje le enkop te Dunia te enkata naado.
  - Ore ena naa nkiasin e asili naapik Dunia engirowaj naidip te enkishui. **Kake, ore nkibelekenyat enkop neeyau naleng' nkiasin oo iltung'anak**, anaa:
    - En'dung'oto oo irkeek (nitong'orr enkibibiata e kabon/CO<sub>2</sub>), enturunoto oo soitok (le madini), engariyano ng'ejuk enturore tenebo epiki mboleani naata esayet naleng'.
    - Oo empejoto oo iila e petrol, n'nguk-soitok) naaitau irgesii oopon ongirowaj talaing'ange le Dunia.
  - Neyau ena mibung'a Dunia engirowaj sapuk naleng'/natuluso neyau **emponata engirowaj te Dunia oo nkibeleknayat orreje le enkop** anaa orbiranget.
    - Ore ena naa en'joto nagol (amu meyoloi) too wejitni nemetii nkajiji-enyorijishu (nijo naaunieki irmauya).
    - Ore too nkwapi oo Irmaasai nikiin'dim aibirribirra nikijo "enkirowaj o-oribirangeti" amu iibok orbirengeti engirowaj.

## Engariyano Ng'ejuk

- **Engibirribirrata ng'ejuk:** Ore **nkibelekenyat enkop** nepaasho oo emponata engirowaj te dunia.
  - Ore **emponata engirowaj te dunia** naa em'nbae sapuk nayeu orreje alala oo nkibelekenyat orreje le enkop, kake ore nkibelenyat orreje le enkop nitushulu sii nkibelekenyat nemipirare orreje le enkirowaj, nijo anaa nkibelekenyat orreje le enchan, emponata le enkissij te enaipasha oo kulie.
  - **Ore emponata engirowaj te dunia** naa emponata erishata orreje le engirowaj to olchoni le enkop neyau nkiasin oo iltung'anal, isulaki engitaunoto oo irgesii oopon engirowaj te dunia/enkop.

### **Mapitio Zaidi**

- Nani anaweza kunipa ufafanuzi wa **athari ya blanketi?**
  - Athari ya blanketi (pia huitwa athari ya gesi za joto) ni wakati uso wa Dunia unapopata joto.
  - Hutokea wakati baadhi ya gesi zinazoongeza joto duniani katika angahewa ya Dunia (pia hujulikana kama gesi zinazoongeza joto duniani) hunasa joto kutoka kwa jua.
  - Gesi huruhusu mwanga wa jua kuingia lakini huzuia baadhi ya joto la Dunia kutoroka kurudi angani, hivyo kuifanya dunia iwe na joto zaidi kuliko ingekuwa vinginevyo.
- Nani anaweza kuniambia baadhi ya gesi zinazoongeza joto duniani?
  - Gesi hizi ni pamoja na kaboni dayoksaid/gesi ya kabon (CO<sub>2</sub>), methane (CH<sub>4</sub>), na mvuke wa maji (H<sub>2</sub>O).
  - Haijulikani sana na haina umuhimu mkubwa kwa somo hili:
    - Gesi ya Naitrojeni (N<sub>2</sub>O): Gesi hii hutolewa kutokana na shughuli za kilimo, hasa matumizi ya mbolea za viwandani, na kutokana na uchomaji wa mafuta ya visukuku.
    - Gesi zenye florini: Gesi hizi zinazotengenewa, na zinazotumika katika viwanda na majokofu, zina uwezo mkubwa wa ongezeko la joto duniani lakini zipo kwa kiasi kidogo.

### **Mapitio Zaidi**

- Nani anaweza kuniambia baadhi ya **athari za mabadiliko ya tabianchi?**
  - **Ongezeko la halijoto:** Shughuli za binadamu kama vile kuchoma mafuta ya visukuku hutoa CO<sub>2</sub> na gesi zingine zinazoongeza joto duniani angani, na hivyo kukamata joto na kusababisha halijoto duniani kuongezeka. Hii huvuruga mifumo ya asili ya tabianchi na kusababisha matukio ya mara kwa mara na makali ya hali ya hewa.

### **Emponata oo Nkiimarot**

- Ke-ng'ai naaidim aishoo enkitalalaunoto oo **inaayau orbiranketi?**
  - Ore inaayeu orbiranketi (eji sii inaayeu irgesii le engirowaj) naa enoshikata tenirowaju olchoni le Dunia/Enkop.
  - Nelotu ena tenkata naibung' irgesii oopon engirowaj te dunia to oloing'ange le Dunia (neji sii irgesii oirowaje enkop) engirowaj naing'waa engolong'.
  - Isho kule gesii ewang'an e engolong' metijing'u kake iibok engirowaj e Dunia/enkop meshuko aajing' alaing'ange, nisho ena Dunia mirowaja naleng' aalang' enaishaakinore.
- Ke-ng'ai naaidim aatoliki iregesii oopon engirowaj te dunia?
  - Ore lelo gesii naa tenebo oo kabon (CO<sub>2</sub>), methane (CH<sub>4</sub>), oo engirebuk/empurwo e engare (H<sub>2</sub>O).
  - Irgesii lemeyoloi naleng' neme tipata naleng tena kisoma (tele somo):
    - Oresi le Naitrojen: Ore ele gesi neyau nkiasin e enturore, naleng empikata oo mboleani oo nkiwandani oo empejoto oo iila e petrol.
    - Irgesii le Florin: Ore kulo naa irgesii loo nkiwandani oo frijini, neeta engidimata sapuk naponie engirowaj te dunia kake etii te enkutishu.

### **Emponata oo Nkiimarot**

- Ke-ng'ai naaidim aatoliki inaayeu **nkibelekenyat orreje le enkop?**
  - **Emponata orreje le engirowaj:** Eyau nkiasin oo iltung'anak nijo anaa empejoto oo iila e-petroli naitatu orgesi le Kabon (CO<sub>2</sub>) oo kulie gesii oopon engirowaj e dunia to olaing'ange, metaa eibung' engirowaj neyau orrjele enkirowaj te dunia metoponai. Niinyal m'baa e-asili orreje le enkop neyau mpukunot kumok oo naagolo orreje le engijape.
  - **Nkibelekenyat oo m'baa/orrje le enchan:** Ore torbae loo nkibelekenyat orreje le enkop, meekure ibala orreje le enchan, neyau alamei oo ngarika sapukin naanang'ari.

- **Mabadiliko ya mifumo ya mvua:** Kwa mabadiliko ya tabianchi, mvua zimekuwa zisizotabirika zaidi, na kusababisha ukame au mafuriko.
- **Matukio mabaya ya hali ya hewa,** kama mafuriko au ukame yanaweza kuharibu mazingira, na kuharibu zaidi usawa wa asili.
- **Upungufu wa rasilimali:** Ongezeko la halijoto na ukame wa muda mrefu huchangia uharibifu wa maeneo ya malisho kwa kulisha kupita kiasi.
- **Usumbufu wa mfumo ikolojia:** Halijoto ya juu na mabadiliko ya mifumo ya mvua huathiri mifumo ikolojia, na kusababisha upotevu wa makazi, uhamiaji wa spishi, na mabadiliko katika minyororo ya chakula. Usumbufu huu huharibu bioanuwai na usawa wa mifumo asilia.
- **Upotevu wa bioanuwai:** Kadri tabianchi inavyobadilika, baadhi ya spishi ambazo haziwezi kuishi katika mifumo ikolojia yenye joto au iliyovurugika.
- **Mabadiliko ya bahari:** Ongezeko la joto na ongezeko la viwango vya CO<sub>2</sub> husababisha ongezeko la joto la bahari na asidi, ambayo huharibu mifumo ikolojia ya baharini, ikiwa ni pamoja na miamba ya matumbawe.
- **Kuyeyuka kwa barafu na kuongezeka kwa bahari:** Ongezeko la joto la tabianchi husababisha barafu na vifuniko vya barafu kuyeyuka, na kuchangia kuongezeka kwa viwango vya bahari. Hii inavuruga mifumo ikolojia ya pwani na kutishia jamii za binadamu na wanyamapori.
- **Mpukonot torrok orreje le engipae,** anaa ngarika sapukin naanang'ari arashu alamei neidim niinyal enkop, neinyal oleng' erisoroto e asili.
- **Eng'orunot oo n'dupot e asili:** Ore emponata orreje le engirowaj oo alamei le enkata naado neyau enginyala oo wejitin oo n'daat itadaki eramatare metuluso.
- **Enkinyalatata oo m'baa e ikolojia:** Ore engirowaj sapuk oo nkibelekenyat orreje le enchan niinyal m'baa e ikolojia neyau enkiminata e manyisho, enkidurata oo ntokitin naishu, oo nkibelekenyat too m'baa en'daa. Ore ena kinyalata nitarrwooo iseuseu oo erisoroto oo m'baa e asili.
- **Enkiminata e iseuseu:** Ore anaa enaibeakenya orreje le enkop, niimin kulie tokitin naishu (nkitobirat) nemeidim aatopok te ikolojia nairowa arushu natarweyye.
- **Nkibelekenyat e enaipasha:** Ore emponata e engirowaj oo emponata sapuk o orgesi la kabon (CO<sub>2</sub>) neyau emponata e engirowaj te enaipasha, oo enkissij, neitarruo orreje le ikolojia le enaipasha, naa tenebo oo ngapuniak e aatwa engare.
- **Eshola arbarafu neponaa enaipasha:** Ore emponata engirowaj to orreje le enkop neshol arbarafu nepon engare te enaipasha. Niinyal ena orreje le ikolojia oo m'bat oo nkariak niture/nitan'yamal iltung'anak oo lowarak lo sero.

## **Mapitio: Athari za Mabadiliko ya Tabianchi kwa Wamaasai**



- 7
- Sasa, hebu tupitie baadhi ya athari hizi za mabadiliko ya tabianchi na jinsi zinavyowaathiri **Wamaasai wafugaji.**

## **Engiimaroto: Inaayau Nkibelekenyat Orreje le Enkop too Irmaasai**

- Onaa, maimai siye e kuna baa naayau nkibelekenyat orreje le enkop too **Irmaasai aramatak.**

- Kati ya mambo tuliyoyataja hivi punde, ni nani anayeweza kuniambia jinsi Wamaasai watakavyoathiriwa? Nataka kusikia kutoka kwa wengi wenu kwa dhana moja kila mmoja.
  - **Ongezeko la halijoto:** Hii huvuruga mifumo ya asili ya tabianchi na husababisha matukio ya hali ya hewa ya mara kwa mara na kali zaidi, ikiwa ni pamoja na ukame unaopunguza maeneo ya malisho.
  - **Matukio ya hali ya hewa kali,** kama mafuriko au ukame yanaweza kuharibu mazingira, na kuharibu zaidi upatikanaji wa maliasili ambayo maisha ya wafugaji hutegemea.
  - **Mabadiliko ya mifumo ya mvua:** Wamaasai hutegemea mvua za msimu zinazotabirika kwa ajili ya kulisha mifugo yao.
    - Usumbufu wa upatikanaji wa malisho na maji unatishia moja kwa moja uhai wa mifugo yao, ambayo ni muhimu kwa utamaduni na uchumi wa Wamaasai.
    - Ili kukabiliana na maeneo ya malisho na vyanzo vya maji vilivyopunguzwa, Wamaasai wanaweza kulazimika kuhamisha mifugo yao mara nyingi zaidi au kwa umbali mrefu zaidi.
  - **Upungufu wa rasilimali:** Ongezeko la halijoto na ukame wa muda mrefu huchangia uharibifu wa maeneo ya malisho kwa kulisha mifugo kupita kiasi, unaosababishwa na hitaji la watu wa Wamaasai kupata malisho ya kutosha.
  - **Upotevu wa bayoanuwai:** Kadri tabianchi inavyobadilika, baadhi ya spishi ambazo ni muhimu kwa mfumo ikolojia wa Wamaasai zinaweza kuwa hatarini au kutoweka. Upotevu huu wa bayoanuwai huvuruga usawa dhifu wa asili ambao Wamaasai wamedumisha kwa muda mrefu, na kuathiri kila kitu kuanzia mifumo ya malisho hadi upatikanaji wa mimea ya dawa.
  - **Usumbufu wa mfumo ikolojia:** Halijoto ya juu na mifumo ya mvua iliyobadilika huathiri mifumo ikolojia, na kusababisha upotevu wa makazi, uhamiaji wa spishi, na mabadiliko katika minyororo ya chakula.
- Amaa too m'baa naatolimwoki tena kata, ke-ng'ai naaidim aatoliki enyamali natumito Irmaasai? Ayeu naning' too irkumok tiatwa ndai te engibiribrata nabo to oltung'ani obo.
  - **Embonata orreje le engirowaj:** Ore ena niinyal irrejei la asili orreje le enkop neyau mpukunot orreje le engipaje naigiligil negol naleng, aa tenebo oo alamaei oitong'orr n'daat oo eramatare.
  - **Mpukunot naagol orreje le engijape,** anaa ngariak supukin naanang'ari arashu alamei niidim aitawei enkop, neinyal oleng' entumoto oo n'dupot-e-asili naing'orr enkisui oo laramatak.
  - **Ngibelekenyat orreje le enchan:** Ore irmaasi niing'or/nisiligil nkataitin enchan naaibala/naayoloi torbae loo n'daat eramatare/ngishu enye.
    - Ore enyamali entumoto oo n'daat oo engare nature oleng' enkishui eramatare enye, naata tipat te mila/orkwaak oo en'golon (oo ngohola) oo Irmaasai.
    - Ore peye iirish eng'orikinoto oo wejitin oo n'daat oo ngonyek oo ngarikiak, iidim Irmaasai aidurrie eramatare enye ngataitin kumo naleng' arashu enelakwa naleng.
  - **Eng'orikinoto oo n'dupot-e-asili:** Ore emponata lo orreje le engirowaj oo alamei le enkata naado neyauu enkinyala oo wejitin oo n'daat irrireyeki eramatare aitulus naleng', nayau eyunoto entumoto oo ngujit naabaiki.
  - **Enkiminata e iseuseu:** Ore anaa enaibelekenya orreje le enkop, etii nkitobirat naishu e tipat too m'baa e ikolojia oo Irmaasai naaidim ainoto enyamali arashu aimina tukul. Ore ena kiminata e isesuseu niinyal erisoroto nashal e asili natobikie Irmaasi te enkata naado, niinyal ntokitin pookin aiterr orreje loo n'daat metabaiki entumoto oo nkeek-oo-irkeek (naara alchani oishiunye iseseni).
  - **Enyamali oo m'baa e ikolojia:** Ore orreje le engirowaj sapuk oo orreje le enchan oibelekenye niinyal m'baa e ikolojia, neyau engiminata e manyisho, enkidurrata oo nkitobirat, oo nkibelekenyat too m'baa en'daa.

## Maarifa Mapya: Athari za Mabadiliko ya Tabianchi kwa Binadamu



- 5
- Hapo awali tumezungumzia kuhusu athari za mabadiliko ya tabianchi kwa asili na mifumo ikolojia.
  - Hapa kuna taarifa mpya. Wanasayansi wanasema kwamba mabadiliko ya tabianchi yatawaathiri wanadamu kwa njia nyingi, ikiwa ni pamoja na:
    - Njaa na ukosefu wa usalama wa chakula, kutokana na ukame na mafuriko yanayoharibu mazao.
    - Uhaba wa maji safi/maji ya kunywa.
    - Matatizo ya kiafya.
      - Malaria zaidi na magonjwa mengine yanayohusiana na tabianchi.
      - Ubora duni wa hewa husababisha magonjwa ya kupumua.
    - Mawimbi ya joto ambayo ni marefu na ya joto zaidi kuliko kawaida ambayo husababisha:
      - Matatizo ya kiafya yanayohusiana na joto, hasa kwa wanawake wawazito na wazee.
      - Vifo kwa watu walio katika mazingira magumu, hasa wagonjwa na wazee.
    - Uharibifu wa nyumba, kutokana na mafuriko na hali mbaya ya hewa.
    - Uhamiaji au "wakimbizi wa mabadiliko ya tabianchi" unaosababishwa na ukosefu wa maji, kuharibika kwa mazao, hali mbaya ya hewa, n.k.

## Mifano ya Maisha Halisi

- Je, kuna yeyote kati yenu aliyepitia baadhi ya athari hizi mbaya kutokana na mabadiliko ya tabianchi katika familia yenu? (Mifano inaweza kujumuisha mabadiliko ya mvua, ukame, mafuriko, au mabadiliko ya halijoto.)

## Engarriyano Ng'ejuk: Inaayeu Nkibelekenyat Orreje le Enkop too Iltung'anak

- Ore te engaiterr kiroro enaipirita inaayau nkibelekenyat orreje le enkop te asili oo m'baa e ikolojia.
- Etii ene lomom ng'ejuko. Ejo Irmaasai ore nki nkibelekenyat orreje le enkop neyaki enyamali iltung'anak too nkoitoi kumok, aa tenebo oo:
  - Esumash oo elaunoto eseriani-e-en'daa (kiti e'ndaa), tarbae la alamei oo ngarika sapukin naanang'ari neinyal in'daikin oo nkurman.
  - Eng'orikinoto e engare sidai/engare nawoki.
  - Enyamali em'bitotishu o osesen.
    - Emweyan engajang'ani oo kulie mweyaretin naipirare orreje le enkop.
    - Ore engipage neme sidai neyeu mweyaretin ormuumwa.
  - Orkutati le engirowaj le enkata naado nirouwa aalang enaishaakinore neyeu:
    - Enyamali em'biotishu oo seseni naayeu engijape nairouwa, isulaki too ndasati naara ndwaan oo naara morwak.
    - Eeya/engeeya too iltung'anak ootii wejitini naagol, isulaki iltamweya oo irmorwak.
  - Enginyalata oo nkajijik, tarbae loo ngarika sapukin naanang'ari oo orreje torrongo le engijape.
  - Engidurakinoto arashu "ilaisikak loo nkibelekenyat orreje le enkop" nayeu elaunoto o engare, enginyalata oo n'daikin, orreje torrongo le engipae oo ngulie.

## Nkitanyanyukot e Enkishui Nasipa

- Amaa, ketii tiatwa nday oloimaye kuna golikinot torrok naayeu nkibelekenyat orreje le enkop tarmarei linyi? (Ore nkitanyanyukot niidim nitushulu nkibelekenyat enchan, alamei, ngariak sapukin naanang'ari, arashu nkibelekenyat orreje le engirowaj.)

- Je, 2 au 3 kati yenu mnaweza kutushirikisha muhtasari mfupi wa uzoefu wenu?

*Waalike 2 au 3 kushiriki. Hii ni muhimu ili kufanya tatizo liwe halisi kwa wote darasani, hata hivyo kutumia muda mwingi hapa hakutatatua matatizo. Somo linahitaji kuendelea na maarifa na suluhisho mpya.*

## Maarifa Mapya: Kupunguza au Kukabiliana na Hali?



- 5 *Kupunguza hali kulianzishwa kwa ufupi katika Somo la 2 kama kupunguza mabadiliko ya tabianchi.*

Kuna tofauti gani kati ya kupunguza na kukabiliana na hali?<sup>1</sup>

### Kupunguza

- Hatua za kupunguza athari ni zile hatua zinazochukuliwa ili kupunguza uzalishaji wa gesi zinazoooneza joto duniani. Mifano:
  - **Malisho Endelevu:** Eleza jinsi malisho kupita kiasi yanavyodhuru ardhi na kuchangia mabadiliko ya tabianchi. Fundisha jinsi malisho ya mzunguko yanavyoweza kuzuia uharibifu wa udongo.
  - Linda nyasi ambazo ni bora katika kuhifadhi CO<sub>2</sub> kuliko misitu! (Tazama maelezo zaidi katika Rasilimali, Sura ya 17.)
  - Hii ni taarifa muhimu ya kisayansi inayounga mkono ufugaji wa nyasi kutoka kwa Christina Nunez, “Habari na Ukweli wa Nyasi,” Mazingira, Machi 15, 2019.<sup>2</sup>
    - “Nyasi hupatikana ambapo hakuna mvua ya kutosha ya kawaida kusaidia ukuaji wa msitu, lakini si kidogo sana kiasi kwamba jangwa huundwa. Kwa kweli, nyasi mara nyingi hulala kati ya misitu na jangwa.”
    - “Kulingana na jinsi yanavyofafanuliwa, nyasi zinachangia kati ya asilimia 20 na 40 ya eneo la ardhi

- Amaa, kiidim aare (2) arashu okuni (3) tiatwa nday aatoliki yook te en'dorrop nena niimaitie?

*Ntinyiku lelo 2 arashu 3. Tipat ena pee isho em'bae/enyamali metisipai te pookin ta aldarasa, kake ore eyaroto enkata naado nemeeku alchani loo n'golikinot/nyamalaitin. Ishaakinore enkisoma/osomo pee elo dukuya king'oru engarriyano oo alchani ng'ejuk.*

## Engarriyano Ng'ejuk: Engitong'orata oo Engirishata Orreje

*Ore engitongoroto orreje niterwaki te en'dorrop to osomo le are (2) ana engitong'orata oo nkibeleyenat orreje le enkop.*

Knanyoo epaashare engitong'oro oo enkirishata orreje?<sup>1</sup>

### Engitong'ortao

- Ore nkoitoi naitong'orieki en'yamali naa nena oitoo naasuji pee itong'ori engitaunoto oo irgesii torrok oopon engirowaj te dunia. Ngitenyanyukot:
  - **N'daat naabikoo:** Tolimu eniko en'daata natuluso pee iinyal enkop neyeu nkibeleyenat orreje le enkop. Nteng'enu eniko n'daat naama niidim aibooi enkinyalata e enkulukoni.
  - Torripo ngujit sidan naashum kabon (CO<sub>2</sub>) aalang' ntimi! (Ng'urai ewutaaroto too nareta, te emwata e 17.)
  - Ore kulo naa lomom le tipat e sayansi oirukore eramatare elimu Christina Nunez, “Lomon oo Esipata oo Ngujit,” Enkop, Alapa le Okuni ntareeni 15, 2019.<sup>2</sup>
    - “Etumoi ngujit teweji nemetii enchan nabaiki/sapuk naretoki em'bulunoto e entim, kake mee kinyi naleng' naidim aitobiru orpura. Ore tesipata, ore ngujit naa netii erishata oo nditmi oo irpurai.”

duniani. Kwa ujumla ziko wazi na tambarare, na zipo katika kila bara isipokuwa Antaktika, jambo linalozifanya ziwe katika hatari ya kukabiliwa na shinikizo kutoka kwa watu.”

- “Vitisho kwa nyasi asilia, pamoja na wanyamapori wanaoishi juu yake, ni pamoja na kilimo, ufugaji kupita kiasi, spishi vamizi, uwindaji haramu, na mabadiliko ya tabianchi.”<sup>3</sup>
- **Upandaji Miti Upya (Upandaji Miti):** Jadili jinsi kupanda miti husaidia kunyonya kaboni dioksidi na kupunguza mabadiliko ya tabianchi.
- **Ufanisi wa Nishati:**
  - Tumia majiko ya kuni yanayotumia mbao kidogo katika maboma ya kitamaduni, ambayo:
    - Hupunguza uhomaji wa kuni kwa 60% (kazi ndogo ya kukusanya na kubeba kuni, na hutoa CO<sub>2</sub> inapochomwa) na
    - Hupunguza moshi nyumbani kwa 90% (magonjwa machache ya kupumua) na
    - Hupunguza idadi ya watoto wanaochomwa na moto wa kupikia.
    - Tazama picha katika Rasilimali, Sura ya 17.
  - Kutumia **nishati ya jua** na kupunguza matumizi ya nishati ambayo inaweza kusaidia kupunguza utegemezi wa mafuta ya visukuku na biomasi (ambayo hutoa CO<sub>2</sub> inapochomwa).
- **Kupunguza, Kutumia tena, au Kurejesha Plastiki:** Kupunguza matumizi ya (yaliyotengenezwa kwa mafuta ya visukuku) na kutochoma chupa za plastiki (ambayo huweka CO<sub>2</sub> na kemikali nyingine mbaya sana yenye sumu kwenye mazingira, ambayo ni mbaya sana kwa afya ya binadamu na wanyama).

### Marekebisho

- Hatua za marekebisho zinatokana na kupunguza uwezekano wa kuathiriwa na athari za mabadiliko ya tabianchi.

- “Ore anaa enaitalalauni, eya nguji eweji naba 20 oo 40 e iip (100%) te enkop pookin. Netii wejitin wasin oo neisyaja netii ioloshon pookin meteleku olosho le Antaktika, neyaki ena peeku aatwa enyamali pee iirish enkumoi oo iltung’anak.”
- “Ore inaitureisho too wasin oo ngujit e asili oo lowarak lo osero oomanya nena wasin, naa tenebo oo enturore, eramatare natuluso, nkitobirat naidurraki, eerata oo lowarak nenemeyeuni, oo nkibeleyenat orreje le enkop.”<sup>3</sup>

- **Eunoto Ng’ejuk oo Irkeek (Eunoto oo Irkeek):** Eimaki eniko eunoto oo irkeek neretoo eibibya kabon (CO<sub>2</sub>) nitong’orr nkibeleyenat orreje le enkop
- **Enkishaa/Esidano e Nishati:**
  - Taasishore irrupieta loo rkeek ooya m’mbaon kuti tiatua nkang’itie e mila, naake:
    - Itong’orr empejore oo rkeek ntomoni ile tiatua iip (60%) (eeku esiaai elototo oo rkeek kiti, oota kabon tenepeji) ore ake
    - Itong’orr ntomoni naaudo tiatua iip empurwo 90% (Imweyaratin kuti ormuumwa)
    - Itong’orr nkera naapej enkima nayierishoreki.
    - N’gurai empicha tiatua dupoto, orkereri le tomon oopishana 17.
  - Eesishore e nishati enkolong’ nitong’orr nkiasin e nishati naaidim aataretoki enkitong’orota oo nkiasin oo iila e petroli (naaitau kaboni tenepeji)
- **Enkitong’orota, oo mpirai oo nkariak:** Enkitong’orota oo (iila e petroli, oo empejore oo mpirai oo nkariak naake eewu kabon oo nkulie sayieti torrok oleng’ te enkop, naake torrono oleng’ tem’biotishu oo iltung’anak oo lowarak).

### Nkitobirat

- Ore nkitobirat nepukunye enkitong’orota e nkidimata entorrone oo ntorrok oo nkibeleyenat orreje le enkop.

- **Kwa jamii ya Wamaasai**, kuzoea mabadiliko ya tabianchi kunahusisha kutekeleza vitendo vinavyoendana na desturi zao za kitamaduni huku wakiunganisha mbinu za kisasa ili kuhakikisha uendelevu. Hapa kuna baadhi ya vitendo ambavyo Wamaasai wanaweza kuchukua:
  - **Matumizi bora ya maji:**
    - **Sakinisha mifumo ya kuvuna maji ya mvua:** Kusanya na kuhifadhi maji ya mvua kutoka kwenye paa na nyuso zingine kwa kutumia matangi au matangi. Maji haya yanaweza kutumika wakati wa kiangazi kwa ajili ya kunywa na kumwagilia.
    - **Tengeneza mabwawa na mabwawa:** Jenga mabwawa madogo au mabwawa ya maji au “mashimo ya tabasamu” (tazama Rasilimali, Sura ya 17) ili kunasa na kuhifadhi maji yanayotiririka kutoka kwa mvua. Miundo hii inaweza kusaidia kujaza maji ya chini ya ardhi na kutoa maji wakati wa kiangazi.
    - **Kukuza ufanisi wa matumizi ya maji:** Kuelimisha jamii kuhusu mbinu za kuokoa maji, kama vile kurekebisha uvujaji, kutumia vifaa vinavyotumia maji kwa ufanisi, na kupunguza matumizi ya maji inapowezekana.
    - **Boresha ujenzi wa visima:** Kuimarisha visima vya kitamaduni kwa vifaa vya kisasa ili kupunguza uvukizi na uchafuzi. Hakikisha matengenezo sahihi ili kuongeza muda wa kuishi kwao.
    - **Umwagiliaji wa matone:** Tumia mifumo ya umwagiliaji wa matone kwa shughuli zozote za kilimo, ambazo hutoa maji moja kwa moja kwenye mizizi ya mimea, na kupunguza upotevu wa maji.
  - **Boresha malisho ya mzunguko:**
    - **Boresha mbinu za kitamaduni za malisho ya mzunguko** ili kuhakikisha kwamba malisho yanapewa muda wa kutosha kupona. Tekeleza mifumo inayozunguka maeneo ya malisho mara kwa mara kulingana na afya ya mimea na hali ya udongo.
- **Ore too Irmaasai**, ore emokunoto oo nkibelekenyat orreje le enkop naa tenebo oo nkiasin orkwaak lenye lemila oo enkidikidikoto oo nkoitoi e kisasa peebikoo. Neena matwa oo m'baa naaidim Irmaasai aataas:
  - **Nkiasin sidan e-engare:**
    - **N'tobira wuejitin nihumie engare enchan:** Iwou nishum engare enchan naing'waa arbati arashu nkulie wuejitin, iwouonye Iltengii. Ore eniare nidimi aataasishore tengata alamei pee ewoki, arashu itooki iwuejitin.
    - **N'tobira Iturot oo irbwaan:** Teheta irbwaan kutiti arashu irbwaan loo nkariak arashu iwululuni enchipai (Tujurro n'dupot, tenkurasa etomon oo pishana 17) piiwuou nishum engare enchan. Ore ena niidim aataretoki aiganya engare aabori enkop nitau engare talamei.
    - **Peeponi engarriyano eesishore sidai oo nkariak:** Aiteng'en iltung'anak nkoitoi sidan naashumie nkariak, nijo enchumata sidai too wuejitin nemibukoo nkariak, nitong'orr nkiasin engare tenidimai.
    - **N'tagolo esidai enchatare oo rkisimani:** n'taheiki irkisimani lemila too nareta e kisasa piitong'orr entorroni/enyamali. Tanywaa enkitobirata sidai pee ebikoo engata naado.
    - **Em'bukokinoto oo rkitong'at:** Taasishore m'baa em'bukokinore oo rkitong'at too nkiasin pookin oo nkurrman, naake itau engare too ntana oo nkujit, nibooyo engare pee mibukori.
  - **N'tagolo n'daat naamanikini:**
    - **N'tagolo nkoitoi e mila too n'daat naamanikini** pee etum n'daat nkataitin naaishaakinore pee enaru. N'tagolo aigiligil wuejitin naamanita n'daat enaa enatiu eseriani oo nkujit oo enkulukoni.

- **Panda mbegu upya na urejeshe ardhi iliyoharibika:** Panda aina za nyasi zinazostahimili ukame na urejeshe malisho yaliyoharibika ili kuboresha uzalishaji na ustahimilivu wao.
- **Fuatilia na udhibiti ufugaji wa mifugo kupita kiasi:** Tumia mbinu za kisayansi kufuatilia hali ya maeneo ya malisho na kudhibiti ukubwa wa mifugo ili kuzuia ufugaji kupita kiasi na uharibifu wa ardhi.
- **Panda na uhifadhi malisho:** Lima mazao ya malisho yanayostahimili ukame na uyahifadhi kwa matumizi wakati wa kiangazi. Hii inahakikisha kwamba ng'ombe wana lishe ya kutosha hata wakati malisho ni machache.
- **Kujenga miundombinu** ili kustahimili hali mbaya ya hewa, kama vile kujenga nyumba zenye paa imara ili kustahimili dhoruba.
- **Kuendeleza utalii wa mazingira:** Kukuza mipango ya utalii wa mazingira ambayo hutumia urithi wa kitamaduni na mandhari asilia wa Wamaasai, kutoa chanzo mbadala cha mapato huku ikihifadhi mazingira.
- **Bidhaa za ufundi na ufundi:** Kuhimiza uzalishaji na uuzaji wa ufundi wa kitamaduni wa Wamaasai na bidhaa za ufundi, ambazo zinaweza kutumika kama chanzo cha mapato na kuhifadhi urithi wa kitamaduni.
- **Kilimo cha misitu:** Kuunganisha miti na vichaka katika mifumo ya kilimo ili kuboresha rutuba ya udongo, kupunguza mmomonyoko, na kutoa vyanzo vya ziada vya mapato.

## **Muhtasari wa Kupunguza na Kukabiliana na Mabadiliko**

- Hivyo, kupunguza makali kunalenga kupunguza sababu za mabadiliko ya tabianchi.
- Kukabiliana na mabadiliko kunalenga kuwafanya watu wawe na ustahimilivu zaidi au wasio na hatari kubwa (hatari ndogo) kutokana na athari za mabadiliko ya tabianchi.

- **Tuuno empeu aigil nintopok enkop nainyale:** Tuuno nkujit naaitu alamei piin'topok n'daat nainyalate piin'tosidan engishui oo en'goloto enye.
- **Tanywaa n'tong'oro eramatare kumok naleng':** Taasishore nkoitoi e sayansi too wuejitin oo n'daat nin'tong'orr eramatare kumok pee miinyal enkop.
- **Tuuno nirrip n'daat:** Tuuno n'daikin oo n'daat/eramatare naaitu alamei nishum pee enya m'masaa talamei. Ore ena neretoki ajo eeta nkishu en'daa sapuk hata tengata nemetii/kuti n'daikin eramatare.
- **Teheta nchetat sidan/ineesheta:** amuu inakata eretokisho too nkataitin torrok/naagol enkijape, nijo enchetata oo nkajijik naata humaroto sidai pee kiretoki tenkata en'goloto.
- **Emponoto/eshumuni Italii te enkop:** N'choo eyai dukuya m'baa oo Italii le enkop naasishore n'jung'ot e mila oo m'baa e asili oo Irmaasai, peeyau dupoto nerrip sii enkop.
- **M'baa oo fundii:** N'choo egolieki enkitobirunoto oo emirare oo m'baa e asili oo Irmaasai naidimi aanotie dupoto nerripieki n'jung'ot e mila/asili.
- **Enturore naitushulu n'daikin oo rkeek:** Akitushulu rkeek oo oserok/n'daikin ten'turore piitosidan enkulukoni sidai, nitong'orr em'bobolota oo nkulukok, neyau enkulie oitoo en'jung'ore.

## **En'dorropo Enkitong'orata oo Enkirishata too Nkibelekenyat**

- Neeku, ore enkitong'orata en'golon naa akipirita enkitong'orata oo nkibelekenyat orreje le enkop.
- Ore enkirishata oo nkibelekenyat naa akipirita piitaa iltung'anak minoto orng'iria oleng' arashu pee metum entorroni sapuk (entorroni kiti) torbae loo nkibelekenyat orreje le enkop.

**3) UCHUNGUZI** ufafanuzi au tafakari ya maudhui ya msingi

7 **Kuunganisha Sayansi ya Tabianchi na Maarifa ya Mazingira ya Jadi ya Wamaasai**

**Marekebisho ya Wamaasai**

- Kutokana na mabadiliko ya tabianchi, wafugaji wanaunganisha sayansi ya tabianchi na kuendeleza yafuatayo:
  - **Ufugaji Endelevu:** Wamaasai wanaweza kulazimika kuhamisha mifugo yao mara nyingi zaidi au kwa umbali mrefu. Wanabadilika kwa kuingiza utabiri wa hali ya hewa wa kisasa na maarifa ya jadi ili kupanga vyema malisho na matumizi ya maji.
  - **Mifumo ya Malisho Isiyostahimili Ukame:** Kuunda mifumo ya malisho ambayo inaweza kustahimili ukame kunaweza kusaidia kudhibiti rasilimali chache kwa ufanisi zaidi.
  - **Juhudi za Uhifadhi wa Maji/ Matumizi Bora ya Maji:** Wamaasai wanachunguza mbinu mpya za kuhifadhi maji, kama vile kuvuna maji ya mvua na kuboresha ujenzi wa visima vya jadi ili kupata usambazaji wa maji wa uhakika zaidi wakati wa kiangazi. Kuboresha mbinu za kuhifadhi na kutumia maji, kama vile kujenga visima vyenye ufanisi zaidi na kutumia teknolojia za kuokoa maji, kunasaidia usimamizi wa rasilimali za maji.
    - Tazama “Mashimo ya Tabasamu” katika Rasilimali, Sura ya 17.
  - **Nishati ya Kijani:** Katika juhudi za kupunguza uchomaji wa kuni, ambayo hutoa gesi inayoongeza joto duniani, CO<sub>2</sub>, baadhi ya Wamaasai wanatumia:
    - Majiko yanayotumia mafuta kwa ufanisi, ambayo:



**3) ENGING'URAROTO** enkitalalaunoto arashu engibirribirr e engiteng'ena e tipat

**Enkidikidikoto e Sayansi Orreje le Enkop oo Engarriyano Enkop e Mila oo Irmaasai**

**Nkitobirat too Irmaasai**

- Ore enaa nkibelekenyat orreje le enkop, idikidik ilaramatak sayansi orreje le enkop nees kuna:
  - **Eramatare Nabikoo:** Idurrie Irmaasai eramatare enye inelakwa naleng' too nkataitin kumok. Akibelekenya enaa enaikununo orreje le enkijape e kisasa oo engarriyano e mila pees esidai m'baa oo n'daat oo nkiasin engare.
  - **N'kiasin oo N'daat Nemiitieu Alamei:** Tenitobiri n'daat naaitieu alamei niidim aataretoki peesishoreki esidai oleng' n'dupot kuti.
  - **Nywaat Enchumare Engare/Nkiasin Sidan Engare:** Ejurrito Irmaasai enkoitoo ng'ujuk nashumieki engare, nijo ewokunoto engare enchan oo enchatare olorresho/rkisimani le asili peetumi engare naibala oleng' tengata alamei. Neeku, tenitobiri nkoitoo naashumieki neesishoreki engare, nijo enchatare oo rkisimani/olorresho sidan oleng' oo enchumata engare sidai, neretoki enkitahieikino oo n'dupot engare.
    - Tujurro “Iwululuni enchipai” too n'dupot, enkurasa etomon oo pishana 17.
  - **Enishati Nanyori:** Ore too nywaat enkitong'orata empejore oo rkeek, ooyau empurwo napon enkirowuaj te enkop, kaboni, neesishore matwa oo Irmaasai kuna:
    - Irrupyeita oo sishore eilata esidai, naake:

- Hupunguza uchomaji wa kuni kwa 60% (kazi ndogo ya kukusanya na kubeba kuni) na
  - Hupunguza moshi nyumbani kwa 90% (magonjwa machache ya kupumua) na
  - Hupunguza idadi ya watoto wanaochomwa na moto wa kupikia.
  - Tazama Rasilimali, Sura ya 17.
  - Seliumeme za jua.
  - **Maisha Mseto:** Katika kukabiliana na mabadiliko ya hali, Wamaasai wanaangalia kubadilisha vyanzo vyao vya mapato na chakula, ikiwa ni pamoja na kuunganisha mbinu mpya za kilimo, kama vile kilimo cha mazingira, au vyanzo vya ziada vya mapato ili kupunguza utegemezi wao kwa ufugaji wa kitamaduni pekee.
  - **Kuelimisha Jamii ya Wamaasai** kuhusu sayansi ya tabianchi na athari zake kunakuza uelewa wa kina wa jukumu lao kama watunzaji wa ardhi. Elimu hii inawasaidia kufanya maamuzi sahihi yanayoheshimu majukumu yao ya uwakili huku wakizoea mabadiliko ya mazingira.
  - **Utunzaji/Usimamizi wa Uumbaji:** Wamaasai—hasa vijana—wanaendeleza uelewa wao kwamba kuwa wakili wa uumbaji wa Mungu kunamaanisha kuunganisha mafundisho yao ya sayansi ambayo yanahimiza kushiriki kikamilifu katika juhudi za uhifadhi wa mazingira, kama vile kujitolea kwa miradi ya usafi, kushiriki katika mipango ya upandaji miti, au kujiunga na miradi ya mazingira.
- 3
- **Mapitio:** Tafakari jinsi mlinzi wa dunia anavyosisitizwa katika Biblia (k.m., **Mwanzo 2:15**, ambapo Mungu anamweka Adamu katika Bustani ya Edeni ili “aifanyie kazi/aitumikie na kuitunza”).
    - Agizo la kibiblia la “kuifanyia kazi/kuitumikia na kuitunza” linaonyesha wito wa usimamizi hai na wenye uwajibikaji.
  - Jadili jinsi Wamaasai wanavyoweza kutumia kanuni hizi kulinda mazingira yao sambamba na utunzaji wa uumbaji wa kibiblia.
- 
- Itong'orr ntomoni lle empejore oo rkeek 60%) (neeku esiaai elototo oo rkeek kiti)
  - Nitong'orr ntomoni naaudo empurwo tiang' 90% (imueyiaratin kuti ormuumwa)
  - Nitong'orr esiana oo nkera naapej enkima nayierishoreki.
  - N'gurai n'dupot, tematwa etomon oo pishana 17.
  - Nishati engolong'.
  - **Enkibelekenyata Orreje Lenkishui:** Ore tenkirishata oo nkibelekenyat orreje le enkop, egira Irmaasai aing'uraa eniko piibelekeny ntumot oo n'dupot oo n'daikin, aa tenebo oo enkidikidikoto oo nkoitoi ng'ejuko enturore, nijo enturore enkop, nkulie oitoo oo n'dupot pee meeku eramatata e asili ake ing'orita openy.
  - **Ore Enkiteng'enare oo Itung'anak loo Irmaasai** e sayansi orreje le enkop oo ntorrok enyena nitaasapuk eyoloto e tipat enkitanapata enye enaa ilarripok le enkop.ore ena kiteng'enare neretoki pees inaaairuko esidai naaiyenyit nkiasin enye erripore egira aamoku nkibelekenyat orreje le enkop.
  - **Erripore/Enkitaheikinore oo Nkitobirunot:** Ore Irmaasai—aisulaki irkijanani—neponita yolounot enye aajo ore piiyaku alakili loo nkitobirunot Enkai naa enkidikidikoto oo nkiteng'enat enye e sayansi naake itanapisho eesata sidai tiatua nywaat erripoto enkop, nijo ntawuu oote too nkiasin enkitobirata enkop, iyaku tenebo too nkiasin ewunore oo rkeek, arashu iyaku tenebo too nkiasin enkop.
- **Nkiimat:** M'birribirra eniko alarripo le enkop itanapitai tiatua Biblia (nijo., **Enkiterunoto 2:15**, naake etipika Enkai Adamu aatwa Bustani e Edeni “pee eesye esiaai/peesishore negolie”)
    - Ore enkitanapata e Biblia e “eesishore esiaai/peesishore negolie” nitodolu enkitanapata enkitaheikinoto naishu.
  - N'gurai eniko Irmaasai teneesishore kuna baa pee errip enkop enye negolie nkitobirunot e Biblia.
    - Ore too Irmaasai, nitodolu ena aajo eesishore orkwaak lenye le mila tenebo oo engarriyano e kisasa ng'ejuk naaipirita erripoto enkop.

- Kwa Wamaasai, hii ina maana ya kuendelea na desturi zao za kitamaduni huku wakikumbatia maarifa na teknolojia mpya zinazounga mkono uendeleu wa mazingira.

## Muhtasari

- Mikakati ya kupunguza na kukabiliana na mabadiliko katika kupambana na mabadiliko ya tabianchi.
- Jamii ya Wamaasai inaweza kuchangia katika hatua nzuri za mabadiliko ya tabianchi kwa kuchanganya desturi za kitamaduni na sayansi ya kisasa ya tabianchi.

## Angalia Inaendelea: Tumaini

### *Tumaini katika Sayansi ya Tabianchi*

- 8
- Wanasayansi wa tabianchi wanasisitiza muunganiko wa wanadamu na asili na kuangazia hitaji la haraka la kuchukua hatua ili kulinda dunia. Ujumbe kutoka kwa sayansi ya tabianchi unafanana na wito wa kibiblia wa utunzaji wa uumbaji, ukisisitiza jukumu la ubinadamu katika kudumisha afya ya mazingira na kuhakikisha uendeleu.
  - Kwa mtazamo wa wanasayansi wa tabianchi, kuna matumaini kwamba tukibadilisha tabia zetu—kupitia mazoea endelevu, teknolojia za kijani kibichi, na juhudi za uhifadhi—tunaweza kubadilisha au kupunguza baadhi ya uharibifu uliofanywa kwa dunia.
    - **Tumaini liko katika uwezo wetu wa pamoja wa kutunza mazingira kwa njia ambayo inahakikisha vizazi vijavyo vinaweza kufurahia ulimwengu unaostawi na wenye afya.**
  - **Wangari Maathai**, mshindi wa Tuzo ya Nobel na mwanamazingira wa Kenya, aliandika katika *The Challenge for Africa*: “Maarifa na mila za asili zinaweza kutufundisha masomo muhimu katika utunzaji wa mazingira na jinsi ya kuishi kwa amani na ardhi, tukiheshimu uumbaji na Muumba.”



## Ten'dorrop

- Nkiasin enkitong'orata oo enkirishata oo nkibelekenyat tiatua enkirishata oo nkibelekenyat orreje le enkop.
- Ore iltung'anak loo Irmaasai niidim aayau nkibelekenyat sidan orreje le enkop tenkitushulata orkwaak le mila oo sayansi e kisasa orreje le enkop.

## Nekiin'gill Aing'uraa: Osiligi

### *Osiligi tiatua Sayansi Orreje le Enkop*

- Itanapisho ilang'eni lorreje le enkop naboishu/enkidikidikoto oo iltung'anak oo asili pee ing'uraa m'baa etipat erripoto e dunia. Ore orkilikwai oing'waa ilang'eni le sayansi lo orreje le enkop nenyanyuk oo enkitanapata e Biblia erripoto oo nkitobirunot, itanapisho esiaai oo iltung'anak terripoto eseriani nabikoo enkop.
- Ore too n'dwaat oo lang'eni le sayansi lorreje le enkop, netii osiligi aajo tenekim'belekeny irrejeita lang—too mokunot naabikoo, kisasa enyoriji oo nkujit, oo nywaat erripoto—nekiin'dim aibelekenya arashu kin'tong'orr matwa oo nkinyalat naatasaki te dunia.
  - **Etii osiligi aatwa enkidimata aang' enaboishu erripoto enkop te enkoitoi naretoki enkishui nasuju peetum enchipai te enkop nanyori neeta eseriani.**
- **Wangari Maathai**, alarikoni loo m'baa e Nobel oo m'baa enkop e Kenya, etisira tiatua N'golikinot e Africa: Ore “engarriyano e mila e asili niidim aiteng'ena iyook irmasomo le tipat terripoto enkop oo enikoni pee etumi eseriani te enkop, kiyanyit nkitobirunot Alaitobirunoni/Enkai.”

## Tumaini la Biblia

- Kupitia maandiko, tunakumbushwa kwamba Mungu ameahidi kutowahi kuacha uumbaji na atasababisha upatanisho wake wa mwisho na urejesho.
  - **Mungu wa tumaini hataacha kamwe uumbaji:**
    - Jua kwamba Mungu ndiye Muumba na Mtegemezi wa ulimwengu, ambaye hataacha kamwe uumbaji wa Mungu lakini ataunganisha vitu vyote na Yesu Kristo. **Wakolosai 1:15–20**
    - Jua kwamba "tumaini" katika Biblia si mawazo ya kutamani, bali ni matarajio ya matumaini kwamba kile ambacho Mungu ameahidi kitatimizwa (na utukufu ulioahidiwa utafunuliwa). **Warumi 8:19–25**
  - **Ustahimilivu wa uumbaji wa Mungu:**
    - Tambua kwamba kuna ustahimilivu wa ajabu katika uumbaji wa Mungu. Licha ya athari kubwa na zinazoendelea za mabadiliko ya tabianchi yanayosababishwa na binadamu, tumeitwa kuendelea kwa uaminifu na agizo la utunzaji wa uumbaji la **Mwanzo 2:15** ili kukuza urejesho.
    - Jua kwamba utunzaji wa uumbaji unafanya kazi, tunahitaji zaidi. Ili watu wengi wanaofanya kazi pamoja kwa njia ndogo waweze kufanya mabadiliko makubwa.
    - Tambua kwamba juhudi zetu za kushughulikia mabadiliko ya tabianchi ni sehemu ya kufanya kazi kuelekea mustakabali wa matumaini wa Mungu huku tukiwa waaminifu kwa agizo la Mungu la kutunza uumbaji.
  - **Nguvu ya ulimwengu ya Roho Mtakatifu kwa ajili ya mabadiliko na uumbaji upya:**
    - Elewa kwamba changamoto kubwa zaidi si ukosefu wa sayansi, teknolojia, au rasilimali, bali ni uchoyo na kutojali—na hizi zinahitaji mabadiliko ya kiroho kwa nguvu ya Roho Mtakatifu.
    - Jua kwamba nguvu iliyomfufua Kristo kutoka kwa wafu inapatikana kwetu sisi tunaoamini. **Waefeso 1:19–20**
    - Jua kwamba Mungu atarejesha uumbaji Yesu Kristo atakaporudi. **Warumi 8:21; Ufunuo 21:1–5**



## Osiligi le Biblia

- Ore enaa rkigerot, nitadamutai iyook aajo Ming'waa aikata Enkai nkitobirunot enyena, osotwa lenye le engiting'oto oo engitapuata.
  - **Ore Enkai osiligi neming'waa aikata nkitobirunot:**
    - Tayelo aajo Enkai alaitabirunoni oo alaing'urani le enkop, nemeing'waa aikata nkitobirunot Enkai kake idikidik n'tokiting pookin oo Yesu Kristo. **Ilkolosai 1:15–20**
    - Tayelo aajo ore "osiligi" tiatua Biblia mee nkibirribirrat niyeu, kake nkisiligat osiligi aajo ore enatejo Enkai nitabaari (neboluni enkitoo naisiligwaki). **Iroma 8:19–25**
  - **Orngi'ria loo nkitobirunot e Enkai:**
    - Tayelo aajo etii enkirishata oleng' aatwa nkitobirunot Enkai. Ore enakee etii en'goloto sapuk oo nkibelekenyat orreje le enkop naayau iltung'anak, neton ake etii, ipotoki iyook peekiaas tenganyit erripoto oo nkitobirunot empalai **Enkiterunoto 2:15** pee kiyau eng'ejuko.
    - Tayilo aajo ore erripoto oo nkitobirunot neesita esiaai, nekiyeu oleng' pee eretoki iltung'anak kumok oosita esiaai tenebo too nkoitoi kuti pee eyau nkibelekenyat sapukin.
    - Tayelo aajo ore nywaat ang' eepareto oo nkibelekenyat orreje le enkop naa ewueji eyasata esiaai tosiligi le Enkai kiaku aasipak tenkitanapata Enkai le erripoto oo nkitobirunot.
  - **En'golon olosho e Engiyang'et Sinyati tenkaraki nkibelekenyat oo nkitobirunot te ng'ejuk:**
    - Tayilo aajo ore n'golikinot sapukin naleng' nemelaunoto e sayansi, Eng'eno oo yasat, arashu dupoto, kake empiani oo makewon—ore kuna naa akeyau nkibelekenyat oo ltauja tenkidimata Roho Mtakatifu.
    - Tayelo aajo ore en'golon naitopiwo Kristo ing'waa lootwata netumoi teyook oota enkirukoto. **Ile Efeso 1:19–20**
    - Tayelo aajo eshuku Enkai nkitobirunot teneshukunye Yesu Kristo. **Iroma 8:21; Embolunoto 21:1–5**

## Kutia Moyo

- Dkt. Katharine Hayhoe, mwanasayansi wa tabianchi, anaelezea: “Kutunza dunia ni kielelezo cha upendo wetu kwa Mungu na kwa majirani zetu, na kunapaswa kuwa sehemu muhimu ya misheni ya Kikristo duniani.”
- Kama vile Biblia inavyotuita kuwapenda majirani zetu na kutunza uumbaji wa Mungu, sayansi ya tabianchi inaonyesha kwamba kuchukua jukumu la afya ya mazingira ni muhimu ili kuhakikisha ustawi wa vizazi vya sasa na vijavyo.



## Shughuli

5

*Wagawe wanafunzi katika vikundi vidogo huku nusu wakishughulikia **kupunguza** athari na nusu wakishughulikia **kukabiliana** na tabianchi.*

*Wape wanafunzi dakika 5 kufikiria njia wanazoweza kuchangia kupunguza athari na kukabiliana na mabadiliko ya tabianchi **katika maisha yao wenyewe.***

*Dhibiti muda ili kuruhusu mwandishi wa habari wa kikundi kushiriki na darasa zima, labda dakika 8, kwa hivyo mwambie mwandishi wa habari ajiandae mahususi: labda sentensi 3, au sekunde 30, kulingana na idadi ya vikundi.*

## Kupunguza

- Tengeneza mpango wa utekelezaji wa kutekeleza mikakati ya kupunguza athari kwa familia yako.
- Fikiria faida za mkakati wako (k.m., kupunguza matumizi ya mafuta ya visukuku, kupunguza uzalishaji wa kaboni, n.k.).
- Jiandae kuwasilisha mpango wako darasani.



## Enkitagoloto oo Itauja

- Dkt. Katharine Hayhoe, engang'eni e sayansi orreje le enkop, elikioo aajo: “ore erripoto e dunia/enkop nitodolu enyorrata aang' te Enkai oo lelo lelatia aang', naake eyeuni peeku ewueji etipat oo rkirisano te enkop.”
- Enaa enaipotito iyook Biblia pee kinyorr ilelatya nekirrip nkitobirunot Enkai, itodolu sayansi orreje le enkop aajo ore tenirrip eseriani enkop naa tipat oleng' torbae lembuan/em'bulunoto engishui etaata oo enasuju.



## Esiaai

*Tirisha ilooiteng'eni too lturrurri kutiti ees matwa **enkitong'orota** oo n'golikinot, nelimu irkulie **enkirishata** orreje le enkop.*

*N'choo ilooiteng'eni ildakikani imiet 5 mibirribirra nkoitoo naaidim aatolimu piitong'orr n'golikinot neepare nkibeleyenat orreje le enkop **tengishui enye oopeny.***

*Tagolie enkata pee etum ilasirak loo lturrurri enkata nalimunye toldarasa olulung'a, ildaikani isiet 8, neeku tiaki alasirani loiturrurr mitanapai esidai: m'baa wuni ake 3, arashu sekundeni osom 30, enaa eneba lturrurri.*

## Enkitong'orata

- N'tobira em'bae naitodolu enkitong'orata oo n'golikinot tormarei lino.
- M'birribirra n'dupot (nijo., enkitong'orata oo iila e petroli, enkitong'orata oo m'baa e kabon, n.k).
- Ntamayanakinoo piilikioo nena toldarasa pookin.

## **Marekebisho**

- Buni mikakati ya kukabiliana na hali halisi kwa ajili ya familia yako.
- Fikiria faida za mkakati wako (k.m., uvunaji bora wa maji, nyumba zinazostahimili hali mbaya ya hewa, n.k.).
- Jiandae kuwasilisha mpango wako darasani.

## **Hitimisho**

- Ni hatua gani *moja* utachukua katika wiki zijazo ili kusaidia kushughulikia mabadiliko ya tabianchi (k.m., kupanda mti, kuhifadhi maji, kupunguza matumizi na uchomaji wa chupa za plastiki).
- Ninakutia moyo ushiriki mawazo yako na familia zao na wanajamii.

## **Uandishi wa Nyimbo**

Au  
15

- Jiunge katika vikundi vile vile kuanzia somo la kwanza, endelea kuandika wimbo wako kwa wimbo uleule wa kitamaduni wa Wamaasai. Una dakika 10 za kufanya kazi pamoja.
- Ubeti wako wa kwanza ulikuwa kuhusu Mungu kutuagiza kutunza uumbaji mzuri wa Mungu.
- Ubeti wa pili ulikuwa kuhusu maarifa na desturi za kitamaduni za kimazingira za Wamaasai ambazo pia ni njia bora za kupunguza mabadiliko ya tabianchi (kupunguza).
- Sasa, andika ubeti wa tatu wa wimbo kuhusu njia bora za kupunguza mabadiliko ya tabianchi (kupunguza) na/au kukabiliana na hali (ustahimilivu) ambazo ni: 1) zinazotokana na sayansi ya tabianchi na 2) zinazofaa kwa muktadha wa kitamaduni wa Wamaasai.
- Au unaweza kuandika ubeti kuhusu jinsi tunavyoweza kupata kitu tunachokipenda na kufanya kazi na marafiki, ili kwa pamoja tuweze kuleta mabadiliko. Na tunaweza kupata matumaini tukijua kwamba vikundi vingine vingi vidogo duniani kote vinaungana nasi kufanya mabadiliko katika kutunza uumbaji wa Mungu. Chaguo hili linaweza pia kuwa ubeti wa nne!

*Baada ya dakika 10:*

## **Nkitobirat**

- N'gurai eningo eniyau enkirishata tormarei lino.
- M'birribirra n'dupot ina kirishata ino (nijo, enchumata sidai engare, nkajijik naaidim airisha nkataitin naagol/orreje torrono lenkijape, n.k.).
- N'tayanakinoini piilikyoo nena baa toldarasa pookin.

## **En'dung'oto**

- Kaa rishata nabo iyas too nkolong'i naaponu pee eretoki ayau nkibeleyenat orreje le enkop (nijo., ewunoto oo rkeek, enchumata engare, nin'tong'orr nkiasin empejore oo mpirai oo nkariak).
- Awomonu piiliki armarei lino n'dwaat inono oo rkulie tung'anak.

## **En'dung'unoto oo Sinkolioitin**

- N'notore aladuo turrurr linterutwa tenkisoma enkaiterr, enyiaaki entisirr aladwoo sinkolio linyi le asili oo Irmaasai, iyatata ldakikani tomon liasiesie esiaai tenebo.
- Ore duo orbeti linyi lenkaiterr nipirita aajo itanapa iyook Enkai pee kirrip nkitobirunot sidan Enkai.
- Ore orbeti liare nipirita engarriyano oo rkwaak le mila enkop oo Irmaasai naake sii nkoitoi sidan naaitong'orr nkibeleyenat orreje le enkop (enkitong'orota).
- Ore taata, tisira orbeti liokuni losinkolio oipirita nkoitoi sidan naaitong'orr nkibeleyenat orreje le enkop (enkitong'orata) arashu enkirishata orreje (enkitagoluoto) naa kuna: 1) naapukunye sayansi orreje le enkop, 2) naanare torkwaak le mila oo Irmaasai.
- Arashu iin'dim aatisira orbeti oipirita eneking'o enekitum em'bae nekinyorr nekiaas esiaai oo lcherweti, pee kiyau nkibeleyenat tenebo. Nekiin'dim aanoto osiligi kiyolo aajo ore lturrurri kulie kumok te enkop pookin netii tenebo oo yook aayau nkibeleyenat te erripoto oo nkitobirunote e Enkai. Ore ena gelunoti niidim sii ataa orbeti liong'wan!

*Ore teniiting' ldakikani tomon 10:*

## Confirmation/Kipa Imara

- Je, tunaweza kuwa na kikundi 1 au 2 kushiriki ubeti wao nasi?
- Jitolee tu ikiwa uko tayari na unaweza kuuimba bila kuchelewa.

*Baada ya mistari kushirikiwa:*

- Ninakutia moyo ufanye kazi ya kutengeneza wimbo wako.

**Mwisho: Kumbuka, kila mtu anayefanya kazi pamoja anaweza kuleta mabadiliko makubwa!**

### Maombi

- 5 Muumba wa Mbinguni,  
Asante kwa hekima na maarifa tuliyopata leo. Tupe nguvu na ujasiri wa kutumia masomo haya katika kutunza uumbaji wako. Tusaidie kutumia mila na desturi zetu mpya kulinda mazingira yetu na kuleta mabadiliko chanya katika jamii. Tuongoze katika kila hatua tunayochukua, na ubariki juhudi zetu za kufuata njia zako.  
Katika jina la Yesu tunaomba. Amina.

- Amaa, kekiin'dim aanoto olturrurr obo1 arashu aare 2 orany orbeti lenye tenebo oo yook?
- N'tau kewon tenitii tayari arashu teniin'dim aataranya tenkata dorrop.

*Tenidipi aatarany:*

- Awomonu taasa esiaai en'dung'unoto osinkolio lino.

**Enabayie: Tadamu, ore oltung'ani ooas esiaai tenaboishu niidim aayau nkibelekenyat sapuki!**

### Enkomono

Olaitobirani le Shumata,  
Ashe te ng'eno nikinoto taata. Nchoo iyook en'golon enkitahoto nekiasishore kuna kiteng'emat te erripoto oo nkitobirunot inono. Taretoki iyook mataasishore mila oo rkwaak lang' ng'ejuk pee kirrip enkop ang' nekiyau nkibelekenyat sidan tiatua olosho. Torikoi iyook too rarwat pookin, nimayan nywaat ang' esujata oo nkoitoi inono.  
Tengarna e Yesu kiomonu. Essaay.

60

**Mwisho wa Somo**

**Engiting'oto Osomo/Enkisoma**

### Bibliography

<sup>1</sup> "Climate Change Mitigation and Adaptation: Simple Guide to Schools in Africa" (UNESCO, United Nations Educational, Scientific and Cultural Organization, 2019), 13, <https://unesdoc.unesco.org/ark:/48223/pf0000372168>.

<sup>2</sup> Christina Nunez, "Grasslands Information and Facts," *Environment*, March 15, 2019, <https://www.nationalgeographic.com/environment/article/grasslands..>

<sup>3</sup> Nunez.

**Part 3:  
Lessons for Women's Bible Study Groups  
(Kiswahili/Maa)**





## 6. Women's Groups Lesson 1: Kiswahili/Maa

# Biblical Creation Care Utunzaji wa Uumbaji wa Kibiblia Erripoto oo Nkitobirunot anaa te-Biblia

### Hoja Kuu

Enkiroroto kitok

Matokeo ya Kujifunza

Kujua



**Mungu ametuamuru (ametuagiza) kutunza uumbaji mwema wa Mungu.**

Kama matokeo ya somo hili, mwanafunzi atafanya yafuatayo:

### Mamlaka ya Kibiblia

- Fahamu kwamba Mungu aliumba ulimwengu, na ulikuwa mzuri sana (**Mwanzo 1:31a**); na Mungu anaupenda (**Yohana 3:16**).
- Elewa kwamba tumepewa agizo (tumeagizwa au tumeagizwa) la kutunza kile ambacho Mungu ameumba (**Mwanzo 2:15**).
- Elewa kwamba ulimwengu umeharibika kwa sababu ya dhambi ya mwanadamu (hasa inavyodhihirika katika ubinafsi na uchoyo).
- Kujua kwamba kutopendana ni dhambi (**Mathayo 22:37–39**), kwa hivyo kuharibu maliasili ambazo zingeweza kutumiwa na wengi ni dhambi.
- Tambua kwamba Yesu alikufa kwa ajili ya ulimwengu wote—si wanadamu tu.
- Tambua kwamba ingawa Mungu ana udhibiti wa hali ya hewa, lakini Mungu aliwapa wanadamu jukumu la kutunza mazingira.
- Fahamu kwamba Mungu atarejesha uumbaji wakati Yesu Kristo atakaporudi.



**Itanapa iyook Engai pee kirrip ingitobirunot sidan e Engai.**

Ore ntilat ena kisoma naa pee iidim oloiteng'eni aataasa kuna:

### Engitoria e Biblia

- Neyolou aajo itobirua Engai enkop, naa sidai apa naleng' (**Engiterata 1:31a**); nenyorr Engai (**Yohana 3:16**).
- Neyolou aajo itanapaki iyook (Itanapaki iyook) peekirrip ingitobirunot e Engai (**Engiterata 2:15**).
- Neyolou aajo etarrueyie enkop torbae loong'ok oo iltung'anak (nisulaki torbae letung'anishu oo empiani).
- Neyolou ajo ore engiba naa eng'oki (**Matayo 22:37–39**), metaa ore enginyalata oo n'dupot e asili naaret irkumok naa eng'oki.
- Neyolou aajo etua apa Yesu torbae lolosho pookin—mee iltung'anak ake.
- Neyolou aajo oo enakee eeta Engai engitoria oo m'baa engijape, kake ishoo iltung'anak engitoria pee errip enkop.
- Neyolou aajo eshuku Engai ingitobirat, teneshukunye Yesu.



## Utangulizi wa Mabadiliko ya Tabianchi

- Tambua kwamba wanadamu wamesababisha uharibifu kwenye dunia.
- Kumbuka njia mbalimbali ambazo dunia imeharibiwa na shughuli za binadamu na uchoyo (dhambi).
- Tambulisha kwamba maarifa ya kitamaduni ya mazingira ya Wamaasai ni njia nzuri za kutunza uumbaji (zaidi katika somo la 2).
- Eleza maarifa ya msingi ya sayansi ya tabia nchi, kama vile gesi zinazoongeza joto la dunia (GHG au gesi za ongezeko la joto la dunia) (zaidi katika somo la 3).



## Tumaini

- Fahamu kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu na hatauaacha kamwe.
- Kwa maarifa ambayo Mungu amewapa wanadamu, mazingira yanaweza kutunzwa kwa njia zinazokuza upya na urejesho wa uumbaji.



## Enaituruku oo Ngibelekenyat Orreje le Enkop

- Neyelou aajo eyautwa iltung'anak enginyala te enkop.
- Nedamu ngoitooi naapaasha nainyalieki enkop too nkiasin e tung'anishu oo iltung'anak oo empiani (eng'oki).
- Nelikyoo aajo ore eng'eno oo orkwaak lemaa torbae le enkop naa ngoitooi sidan naarrip ngitobirunot (Isulaki tengiteng'ena o somo le okuni 3).
- Nelikyoo engarriyano e sayansi orreje le enkop, anaa engijape torrono, (arashu engijape emponoto engirowaj enkop) (isulaki tengiteng'ena o somo le okuni 3).

## Osiligi

- Neyolou aajo ore Alaitobirunoni lang', Engai Osiligi/Naisiligai, enyorr enkop nemeingw'aa aikata.
- Ore te engarriyano naishoo Engai iltung'anak, neidimi aatorrip enkop too ngoitooi naaitubulu teng'ejuko oo enchukunoto oo ngitobirunot.

### Hisi



Wanafunzi watatafakari kuhusu jukumu lao katika uumbaji wa Mungu.

- Wamebarikiwa na uumbaji mzuri wa Mungu.
- Wameheshimiwa kutumwa na Mungu kutunza uumbaji.
- Wamejitolea kutunza uumbaji wa Mungu.

N'choo ibirrbirr ilooiteng'eni m'baa naaipirita ngiasin enye tiatua ngitobirat Engai.

- **Etamayana nin'che** ngitobirat sidan Engai.
- **Iyanyita** Engai nirriwaa nin'che pee errip ngitobirunot Engai.
- **Itautuo oote** pee errip ingitobirunot Engai.

### Fanya



Wanafunzi katika vikundi vidogo watafanya hivi:

- Kubainisha nyimbo na desturi za kitamaduni zinazoonyesha kwamba Wamaasai wanamtambua Mungu kama muumbaji;
- Kutunga wimbo mpya ubeti mmoja kutoka kwa maudhui ya somo hili;
- Kisha kuimba wimbo huo.



Nn'choo ees iloiteng'eni kuna toolturrurri loo iltung'anak kuti:

- Itodolu isingolioitin oom'baa e mila naaitodolu aajo eyielo Irmaasai Engai anaa Alaitabirunoni;
- Nessiru/nedung'u osingolio ng'ejuk orbeti obo oipirita ena kisoma;
- Neranyi ilo singolio.

**Vidokezo kwa Walimu**

- Maneno yaliyoandikwa kwa herufi za italiki ni mwongozo kwa walimu.
- Walimu wanahimizwa kutumia mbinu za kujifunza kwa vitendo badala ya kutoa mihadhara. Hii inajumuisha majadiliano na mazoezi ya vikundi vidogo.
- Dakika za kila shughuli zinapendekezwa katika safu wima ya kushoto ili kuendana na somo la dakika 60.
- Tazama nyenzo zingine nzuri katika Sura ya 22 ili kumpa mwalimu ujuzi kabla ya kufundisha somo.
- Kiswahili Biblia kutoka SRUV, [Mwanzo 1 | SRUV Bible | YouVersion](#);

**Vifaa vya Kufundishia Vinahitajika**

- Chati ya mabadiliko ya tabianchi yanayosababishwa na binadamu (kwenye ubao mweusi au karatasi kubwa)

**Vifaa vya Wanafunzi / Vipeperushi vya Karatasi**

- Biblia
- Ubao laini/wa matangazo ukutani na kifaa cha kubania karatasi au pini au utepe wa kubandika karatasi kubwa ukutani
- KITABU: Chati ya mistari ya Biblia au vipande vya karatasi vyenye mistari ya Biblia: Mwanzo 1:31; Mwanzo 2:15; Zaburi 24:1–2; Yohana 3:16
- TUMAINI: Vipande vya karatasi vyenye mistari ya Biblia: Warumi 8:19–21; Wakolosai 1:15–17; Ufunuo 21:1–5

**Iyolot oo Rmalimuni/Ilaiteng'enak**

- Ore isirat oolwaa naa akeutaa ilaiteng'enak.
- Eyeuni ilaiteng'enak pee eesishore olosek leng'iteng'enare naipirr iasat aalang' irorei ake. Ore ena nitushulu ingirorot oo ngiasin oo ilturrurri kutiti.
- Ore engata naya esiai nesira tenchoto ekedianye pee ishaakinore engisoma oo ldakikani indomoni-ile.
- Ing'urai ingulie nareta engiteng'enare tematwa etikitam oare pee isho alaiteng'anani/engaiteng'anani engarriyano eton itu iteng'enisho.
- Biblia Sinyati naing'waa <https://www.bible.com/bible/1816/GEN.1.MBS>

**Eyewuni Inareta Naaiteng'enishoreki**

- Ore isirat loo nkibelekenyat orreje le enkop naayau ingiasin oo iltung'anak (nesira torkibao orok arashu tengardasi sapuk nagol)

**Inareta oo Looiteng'eni/Ingardasini Kunyinyi**

- Biblia
- Orkibao onana/loo nkitayelounot torkibao oti esundai oo engeene naeniki ingardasini arashu orpinyo arashu naaibung'ieki engardasi sapuk tesundai.
- ENGITABU: Isirat oo rorei le Biblia arashu ingardasini naasira irorei le Biblia: Engiterata 1:31; Engiterata 2:15; Orkerembe 24:1–2; Yohana 3:16
- OSILIGI: Ore ingardasini oororei le Biblia: Irumii 8:19–21; Irkolosai 1:15–17; Em'bolunoto 21:1–5



## Hadithi za Maa, Maelekezo ya Kitamaduni, na Namna za Utunzaji wa Uumbaji



- 5
- Hadithi za Wamaasai zinaonyeshaje kwamba Mungu ndiye muumbaji na mmiliki wa uumbaji?
  - Wanafunzi wanahimizwa kuandika maelezo kwa ajili ya marejeleo ya baadaye.

*Wanafunzi wabainishe na kushirikisha maarifa na desturi za kitamaduni zinazochochea utunzaji wa uumbaji, kama vile:*

- Kanuni na miiko ya kitamaduni inayotetea utunzaji wa uumbaji,
- Mafundisho ya kitamaduni katika makundi rika mbalimbali yanayosisitiza utunzaji wa uumbaji, au
- Vitendo vya kila siku maishani vinavyotambua umuhimu wa utunzaji wa uumbaji.

### Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)

- 1
- Utajiri wa Maarifa ya kitamaduni ya Wamaasai kama tulivyosikia—juu ya wema wa uumbaji wa Mungu na wajibu wa mwanadamu katika matumizi na utunzaji sahihi wa uumbaji—yanaendana vyema na mafundisho ya Biblia.
  - Hebu tuangalie pamoja baadhi ya maandiko muhimu katika Biblia.

## Ngapa/Ngatinin oo Irmaasai, Ilikoorot/Iutarot e Mila, oo Erripoto oo Ngitobirunot

- Kamaa ngapa/ngatinin oo Irmaasai kanyoo naitodolu aajo ore Engai naa ninye alaitobirunoni oo loopeny loo ngitobirunot?
- Eyeuni ilooiteng'eni pee esirr kuna limunot peyie eigili aing'uraa tengaikata.

*In'choo itodolu loiteng'enti engarriyano oo rkwaaki lemila oinasaa/oitagol/ooon erripoto oo ngitobirunot, nijo kuna:*

- Iutarot oo n'turuja e mila naaretoo/naakeshaa erripoto oo nkitobirunot,
- Nkiteng'emat e mila tiatua ilturrurri loo rkamban/sirito naapaasha naaitagol erripoto oo nkitobirunot, arashu
- Nkiasin e kutwa tenkison naayielo esidano oo erripoto oo nkitobirunot enkop.

### Iomon lenkidikidikoto (enkidikidikoto Altarge oo Em'bae Kitok)

- Ore dupoto oo engarriyano orkwaak loo Irmaasai enaa enekitoning'o—tengipirata oo esidano oo ngitobirunot e Engai oo ngiasin o ltung'ani eesishore o erripoto nasipa oo ngitobirunot—naa irukore esidai ngiteng'emat e Biblia.
- Maing'urai sindai tenebo matwa oo m'baa etipat tiatua Biblia.

**2) KITABU**

uchunguzi wa Biblia na/ au maudhui ya msingi

## Majadiliano ya Biblia

15

*Unda vikundi vidogo vyenye wanafunzi watatu hadi*

*wanne kila kimoja. Vikundi vimepewa jukumu la kusoma na kujadili mojawapo ya mistari ifuatayo. Maswali yanapatikana kwenye ile karatasi yenye mistari ya Biblia.*

- Ubeti huu wa Biblia unasema nini kuhusu Mungu?
- Ubeti huu wa Biblia unasema nini kuhusu uumbaji wa Mungu?
- Ubeti huu wa Biblia unasema nini kuhusu uhusiano kati ya wanadamu na uumbaji wa Mungu?
- Chagua mwandishi kwa ajili ya kikundi chako ili aandike mambo muhimu na awe tayari kushiriki maarifa yako kwa darasa lote.

*Maandishi ya Biblia kutoka SRUV isipokuwa kama yametajwa vinginevyo.*

- **Mwanzo 1:31a** Mungu akaona kila kitu alichokifanya, na tazama, ni chema sana.
- **Mwanzo 2:15** BWANA Mungu akamtwa huyo mtu, akamweka katika bustani ya Edeni, ailime na kuitunza. (7בָּרָךְ ni neno la Kiebrania linalomaanisha kazi na kuitumikia.)
- **Zaburi 24:1** Nchi na vyote vilivyomo ni mali ya BWANA, / Dunia na wote wakao ndani yake.
- **Yohana 3:16** Kwa maana jinsi hii Mungu aliupenda ulimwengu, hata akamtoa Mwanawe pekee, ili kila mtu amwaminiye asipotee, bali awe na uzima wa milele. (“Ulimwengu” katika Kigiriki cha Agano Jipya ni ulimwengu, ulimwengu wote uliombwa, ikiwa ni pamoja na uumbaji usio wa kibinadamu.)

*Kila mwandishi wa habari wa kikundi hutoa muhtasari wa dakika 1 hadi 2 wa mambo muhimu. Ikiwa kuna vikundi vingi, basi watu wa*



**2) ENKITABU**

enking'uraroto arashu engiteng'ena e tipat

## Nkiorot e Biblia

*Indobira ilturruri kutiti oo looiteng'eni okuni metabaiki oong'wan*

*toiturrur obo. Ore tiatua lelo turrurri neishooki esiai pee eisom neimaki orkereri obo te kulo kererini. Etumoi iswalii/ nkikilikwanat tiatua napa ardasini naata irkererini le Biblia.*

- Kejaa ele kereri le Biblia naipirita Engai?
- Kejaa ele kereri le Biblia naipirita nkitobirunot e Engai?
- Kejaa ele kereri le Biblia naipirita enebaikinore iltung'anak oo ngitobirunot e Engai?
- Edegelu alarirani loiturrur linyi pee esirr im'baa etipat niiruk pee elikyoo nena baa taldarasa pookin.

*Isirat le Biblia oing'aa SRUV meteleku eneimakaki te enkai mwa.*

- **Enkiterunoto 1:31a** Nedol Engai pooki toki naitobirua ajo aisdai katukul.
- **Enkiterunoto 2:15** Neya Olaitoriani Engai ilo tung'ani apik ninye enkurma e Eden peyie etur neramat sii. (7בָּרָךְ oreori leburania oipirita esiai oengitaheikinoto.)
- **Olkerempe le Nkai 24:1** Eno Laitoriani enkop o ntokitin pooki naabore, / enkop o lelo oomanya;
- **Yohana 3:16** Amu etonyorra Engai enkop aiko nji o meishoru Enkerai enye nabo, paa ore pooki ng'ae oiruk nemeimin kake netum enkishui nemeish. (“Olosho” ore te Kigiriki to Osotwa Ng'ejuk naa olosho, olosho pookin oitobirwa Engai te enebo oo nkitobirunot neme iltung'anak.)

*Elikioo alarirani lo oiturrur m'baa etipat ten'dorrop to aldakika obo (1) metabaiki aare (2). Tena kumok ilturrurri nitinyikuni iltung'anak*

*kujitolea wanaweza kualikwa kushiriki na vikundi vingine kuongeza (bila kurudia) habari.*

*Kusanya mambo muhimu yatakayoambatanishwa kwenye ubao wa ukutani.*

## **Jambo Muhimu: Jukumu la Mungu la Kutunza Uumbaji**

- 5 *Dokezo kwa mwalimu: Wamaasai wanaelewa kijadi kwamba Mungu anadhibiti hali ya hewa. Pia kuna mafundisho ya kibiblia kuhusu uhuru wa Mungu juu ya hali ya hewa. Hata hivyo, ikiwa wazo hili lilitumika kwa mabadiliko ya tabianchi, basi baadhi ya wanafunzi wanaweza kufikiri kimakosa kwamba hatuwezi kufanya chochote kupunguza athari mbaya za mabadiliko ya tabianchi (ambayo ni tofauti na hali ya hewa, kama ilivyoainishwa hapa chini). Kwa hivyo, masomo haya yanalenga kuthibitisha uhuru wa Mungu huku pia yakitambua kwamba Mungu ametuagiza kutunza uumbaji, ambao pia unaweza kupunguza athari mbaya za mabadiliko ya tabianchi. Tafadhali shikilia mvutano huu na mawazo yenye mantiki katika ufundishaji wako.*

Biblia inasisitiza kwamba wanadamu wamepewa jukumu la kutunza dunia. **Mwanzo 2:15:** “BWANA Mungu akamtwaa huyo mtu, akamweka katika bustani ya Edeni, ailime na kuitunza.” Neno la Kiebrania kutoka Biblia linalotafsiriwa kama “kazi” linaweza pia kumaanisha “kutumikia,” ambalo linaonyesha jukumu la kuhudumia uumbaji kwa njia tofauti na kuwa na mamlaka juu yake au kutawala juu yake.

*ooyieu peelikioo nena baa etipat neponaa ilkulie turrurri (kake migili) m'baa.*

*Inturrurro m'baa etipat naaidikidiki tenebo torkibao le esundai.*

## **Em'bae Etipat: Esiai e Engai Terripoto oo Inkitobirunot**

*Eutaaroto to alaiteng'enani: Eyielo Irmaasai temila aajo Engai naitaheki orreje le ekijape enkop. Etii sii nkiteng'emat e Biblia naaipirita eyeunoto e Engai tialo orreje lenkijape enkop. Kake, tenetaasishoreki apa enakibirribirrata too nkibelekenyat orreje le enkop, neidim matwa oolooiteng'eni aibirribirra tempong'oto/tempong'ori aajo mekiin'dim aataas oonyoo naaitong'orr entorroni naye nkibelekenyat orreje le enkop (naa epaasha oo enkijape e enkop, enaa enaibalunyeji tiabori tene). Neeku ore ena kiteng'enare naa ipirita aitodolu enkitoria e Engai nitodolu sii aajo itanapa yook Engai pee kirrip inkitobirunot, niidim ina aitong'oro entorroni naye nkibelekenyat orreje le enkop. M'bung'a aakurraki ena yiataaroto oo nkibirribirrat naata tipat tenkiteng'enare ino.*

Itirish Biblia aajo ishoki iltung'anak esiai pee errip enkop.

**Enkiterunoto 2:15** Neya Olaitorani Engai ilo tung'ani apik ninye enkurma e Eden peyie etur neramat sii. Ororei le Eburania tiatwa Biblia olikyoori enaa “enkias” eidim sii aitashe enaa “aisiyaki” naake itodolu sii esiai engitaheikinoto oo nkitobirunot too nkoitoi napaasha oo enkitoria oo enkitashekinoto tiatua nena.

## Mfano wa Mungu

*Mwezeshaji anapaswa kuwaongoza wanafunzi kugundua uelewa wa mwanzo wa **Mwanzo 1:27**, kwamba wanadamu wameumbwa “kwa mfano wa Mungu.”*

- Fungua Biblia yako kwenye **Mwanzo 1:27**. Nani atasoma kwa ajili ya darasa?
  - Mungu akaumba mtu kwa mfano wake, kwa mfano wa Mungu alimwumba, mwanamume na mwanamke aliwaumba.
- Inamaanisha nini kwamba wanadamu wameumbwa “kwa mfano wa Mungu” kuhusiana na kutunza uumbaji?
  - Mungu alijifunua kupitia asili/uumbaji.
  - Binadamu ni wawakilishi wa kutunza na kutunza ulimwengu ambao Mungu anaupenda.
  - Yesu alifanyika/ alijifanya sehemu ya uumbaji.

*Majadiliano yanaweza pia kutafakari jinsi wanaume na wanawake katika nafasi mbalimbali za kijamii katika jamii ya Wamaasai wamechukua jukumu la kuonyesha “mfano wa Mungu.”*

- Hata hivyo, ulimwengu umeharibiwa kwa sababu ya dhambi ya mwanadamu—hasa inavyodhihirishwa katika ubinafsi na uchoyo.
- Ambapo ni kinyume na mafundisho ya Yesu katika **Mathayo 22:37–39**, ambayo inaamuru upendo kwa Mungu na upendo kwa wengine.
  - [Yesu] Akamwambia, “Mpende Bwana Mungu wako kwa moyo wako wote, na kwa roho yako yote, na kwa akili zako zote. Hii ndiyo amri iliyo kuu, tena ni ya kwanza. Na ya pili yafanana nayo, nayo ni hii, Mpende jirani yako kama nafsi yako.”

## Enkitanyanyukoto e Engai

*Eyieuni alaiteng'enani peerikoo looiteng'eni peetum eyielounoto enkitabu enkiterunoto **Enkiterunoto 1:27** Metaa eitayio Engai oltung'ani te nkitanyaanyukoto enye makewan. Te “nkitanyaanyukoto Engai” eitayio ninye ninche, olee o eng'oruoi.*

- Tabolu Biblia ino enkitabu **Enkiterunoto 1:27**. Ke ng'ai naisomaki aldarasa/yook?
  - Itobirwa Engai oltung'ani tenkitanyanyukiet enye, nitobiru tengitanyanyukiet Engai, itobirwa olee oo engitok.
- Kanyoo elikioo ele rorei ojo itobirwaki iltung'anak “tengitanyanyukiet Engai” tenkipirata erripoto oo nkitobirunot?
  - Itodolua Engai kewon tiatua nkitobirunot.
  - Ore iltung'anak naa ilakilini/laramatak oing'uraa nerrip olosho onyorr Engai.
  - Itaaki Yesu/itaa kewon eweji oo nkitobirunot.

*Eidim sii nkirorot aibirribirra enetiu ilewa oo ngitwaak, too ng'asiat naapaasha to olosho tiatwa Irmaasai, eesita esiai naitodolu “enkitanyanyukoto Engai.”*

- Kake, inyalaki enkop tenkaraki oo ng'ok oo iltung'anak—aisulaki itodolu emakewon/tung'anishu oo empiani.
- Naake epaashare enkiteng'enare e Yesu tiatua **Matayo 22:37–39** (tikitam oaare, orkereri le osom oopishana metabaiki osom ooudo), naake elikioo enyorrata te Engai oo enyorrata toorkulikai).
- [Nejoki Yesu], “Tonyorra Olaitoriani Engai ino to Itau lino pooki ote nkishui ino pooki o te ng'eno ino pooki. Ena kitanapata ene dukuya naa ninye naisul. Ore eni are nenyanyukie naa ena, 'Tonyorra ole latia ino anaa kewon'.”

## Utangulizi wa Mabadiliko ya Tabianchi

3

*Uzalishaji wa maarifa kupitia maswali ya haraka na majibu mafupi.*

- Wamaasai wanaelewaje dhana ya mabadiliko ya tabianchi?
- Ni athari gani za mabadiliko ya tabianchi tunazoziona sasa ambazo ni tofauti sana na zile tulizonazo katika hadithi zetu za kitamaduni?

Hapa kuna taarifa za mwanzo kuhusu jinsi sayansi inavyoweza kutufahamisha nini? Zinazounda uelewa wetu wa kutunza uumbaji wa Mungu. Hapa kuna taarifa za awali kuhusu jinsi sayansi inavyoweza kukuza/kuunda uelewa wetu wa kutunza uumbaji wa Mungu. Tutapitia na kuongeza taarifa zaidi katika somo la tatu.

## Ufafanuzi wa Mabadiliko ya Tabianchi

(Hoja muhimu!)

7

- Mabadiliko ya tabianchi yanarejelea mabadiliko ya muda mrefu katika halijoto, mvua, mifumo ya upepo, na vipengele vingine vya mfumo wa tabia nchi wa dunia.

### **Mabadiliko ya Tabianchi ni:**

- Mchakato wowote unaosababisha marekebisha kwenye mfumo wa tabianchi unaweza kuelezewa kama unaosababisha “mabadiliko ya tabianchi.” Michakato hii inajumuisha mlipuko wa volkeno hadi mabadiliko ya mzunguko katika shughuli za jua. Tabia nchi ya dunia imekuwa ikibadilika kila mara kwa wakati wa kijiolojia.
- Hata hivyo, kipindi cha sasa cha ongezeko la joto kinatokea kwa kasi zaidi kuliko matukio mengi ya zamani. Wanasayansi wana wasiwasi na ongezeko la joto la haraka linalosababishwa na binadamu kwa sababu ya athari kubwa kwa uthabiti wa tabia nchi ya dunia.
- Hata hivyo, leo, msemu huo mara nyingi hutumika kama kifupi cha mabadiliko ya tabianchi yanayosababishwa na binadamu—kwa



## Enaituruku oo Nkibelekenyat Orreje le Enkop

*Eiunoto/Enkitobirunoto enkarriyano naimu nkilikwanat oo wolikinot dorropu.*

- Kanyoo eyielo Irmaasai te enkibelekenyata orreje le enkop?
- Kanyoo eyeu enkibelekenyata orreje le enkop nekidolita taata naapaasha naleng' oo napa tiatua ngapa/ngatinin aang' e mila?

Etii ene irkiliku lenkiterunoto oipirita aajo ketyaa mwa eidim sayansi aatoliki iyiook? Im'baa naisho yook eyielounoto nekirripie nkitobirunot e Engai. Etii ene irkiliku lenkiterunoto oipirita aajo ketyaa mwa eidim sayansi aitubulu eyielounoto aang' e erripoto oo nkitobirunot e Engai. Kiimaa nekipon irkiliku tiatwa osomo le okuni.

## Elimunoto oo Nkibelekenyat Orreje le Enkop

(Entilata e tipat!)

- Ore enkibelekenyata orreje le enkop naakelikioo nkibelekenyat enkata naado tiatua enkata enkima/enkirowaj, enchan, nkataitin osiwuo, oo nkulie baa orreje le enkop te enkop.

### **Ore Nkibelekenyat Orreje le Enkop naa:**

- Esiaai akeyie nayeu nkitobirat tiatwa orreje le enkop neidimi aatolikyoi aajo enayeu 'nkibelekenyat orreje le enkop'. Ore enarishata naa tenebo oo enkima enkidiridiroto te enkop, metabaiki nkibelekenyat emanaroto too m'baa enkolong'. Ore orreje le enkop/e dunia naa akibelekenya aigiligil tenkata en'chula oo ntokiting' pookin te enkop.
- Kake, ore tenarishata etaata natopone enkirowaj naake epuku tesyooroto sapuk aalang' ingiasin kumok e apa. Ore ilang'eni le sayansi neeta arngash tengaraki emponata enkima/enkirowaj tesyooroto nayeu iltung'anak tenkaraki entorroni sapuk oonkibelekenyat orreje le enkop/e dunia.
- Kake, ore taata, ore ilo rorei naleng' naa eji ten'dorrop nkibelekenyat orreje le enkop naayeu Iltung'anak—ore tengaimwa, nkibelekenyat

maneno mengine, mabadiliko ya tabianchi yanayosababishwa na binadamu. Njia kuu ambayo wanadamu wanayoathiri tabia nchi ni kupitia kutolewa kwa gesi zinazozuia joto angani, kama vile kuchoma mafuta ya visukuku (mafuta, makaa ya mawe, gesi, plastiki).<sup>1</sup>

### Gesi Zinazoongeza Joto Dunia

- Je, umesikia kuhusu ongezeko la joto dunia au “gesi chafu” hapo awali? (“Gesi chafu” si lugha inayopendelewa katika kitabu hiki.)
- Hizi ni gesi zinazozuia joto; zinazonyonya na kunasa mionzi ya jua katika angahewa ya dunia—kama blanketi—hivyo joto haliwezi kutoroka.<sup>2</sup>
- Kwa hivyo, dunia inapata joto—kama mtu aliyevaa blanketi.
- Lakini dunia inapata joto sana na kusababisha athari kama:<sup>3</sup>
  - Kupanda kwa usawa wa bahari;
  - Hali mbaya ya hewa kama mafuriko katika baadhi ya maeneo na ukame katika maeneo mengine; na
  - Na ukame huu unaweza kuharibu uoto wa asili na mazao.
  - Kuna athari zaidi ambazo zitajadiliwa zaidi katika Somo la 3.

### Mabadiliko ya Tabianchi Yanayosababishwa na Binadamu (Anthropogenic):

- Uchoyo na ubinafsi huwafanya viwanda viendeleo kuchoma mafuta ya visukuku ili kupata pesa badala ya kutunza mazingira.
- Ingawa tunajua la kufanya ili kupunguza athari mbaya za mabadiliko ya tabianchi, maarifa hayatuwezeshi kuyafanya. Dhambi za ubinafsi, uchoyo, na kutojali ni kubwa sana. Ukosefu huu wa upendo ni kwenda kinyume na amri kuu ya kupendana. **Yohana 13:34–35:** [Yesu alisema,] “Amri mpya nawapa, Mpendane. Kama vile nilivyowapenda ninyi, nanyi mpendane vivyo hivyo. Hivyo watu wote watatambua ya kuwa ninyi mmekuwa wanafunzi wangu, mkiwa na upendo ninyi kwa ninyi.”

orreje le enkop naayeu nkiasin oo iltung’anak. Ore enkoitoi sapuk nainyalye iltung’anak orreje le enkop naa enkitaunoto empuruo/irgesii ooiibok enkirowaj talaing’ang’e, nijo kuna, (empejore eilata, nkuk, irgesii, mpirai).<sup>1</sup>

### Irgesii Oopon Enkirowaj te Dunia/te Enkop

- Itoning’o aikata emponata enkima/enkirowaj tedunia/enkop arashu irgesii torrok te apa?
- Ore kulo naa irgesii/irmuumwani oibooyo enkirowaj/enkima; oobibi eohoto enkolong’ tiatwa olaing’ang’e le enkop—lijo orbiranketi—neeku miidim enkirowaj aaima.<sup>2</sup>
- Neeku aketum enkop enkima/enkirowaj—anaa oltung’ani oishopito/oimulumulare orbirangeti.
- Kake irowaju enkop naleng’ neyeu n’golikinot nijo kuna:<sup>3</sup>
  - Enkilepunoto engare too rbalibali /enaipasha;
  - Enkata torrongo enkirowaj nijo enang’unoto oo nkariak toonkulie wejitin, oo alameyu too nkulie wejitin; naa
  - Eidim elamei ainyala m’bulunot easili oo n’daikin oo nkurman.
  - Etii nkulie golikinot naaimakini tosomo le okuni (3).

### Nkibelekenyat Orreje le Enkop naayau Tung’anishu/Iltung’anak

- Ore empiani oo tung’anishu/makewon ninche naayaki inkiwandani metapejo iila e petroli pee etum impesai aalang’ errip enkop.
- Ore enakee kiyielo enekinko pee kintong’orr entorrone oo nkibelekenyat orreje le enkop, meretoki iyook enkarriyano peekias nena. Ore ng’ok e tung’anishu/makewon, o empiani oo elaunoto en’chilaaroto naa kumok oleng’. Ore enemetii enyorrata neeku empaashata enkitanapata kitok najo entonyorrata. **Yohana 13:34–35** [Etejo Yesu] “Aisho intae enkitanapata ng’ejuk, entonyorrata anaa enatonyorra nanu intae. Te ina eyiolou pooki aajo, irara looiteng’eni laainei, ti niatata enyorrata olikae o likae.”

**3) UCHUNGUZI** ufafanuzi au tafakari ya maudhui ya msingi

## Muktadha wa Wamaasai

- 10 Wamaasai wana msemu “*melaikinoi ororei te enkigwena,*” unaomaanisha, kupitia mijadala ya mikutano kila tatizo hupata suluhisho lake.



### Athari za Mabadiliko ya Tabianchi kwa Wamaasai

- Kwa Wamaasai, mabadiliko ya tabianchi hutokea kama mabadiliko makubwa katika mifumo ya hali ya hewa yanayoathiri mtindo wao wa maisha wa kitamaduni.
  - Kwa Wamaasai, mabadiliko ya tabianchi yanamaanisha mabadiliko katika mifumo ya hali ya hewa, kama vile mvua kidogo, ukame zaidi, na misimu isiyotabirika.
  - Mabadiliko haya hufanya iwe vigumu kupata maji na nyasi kwa ajili ya wanyama wao.
  - Wamaasai wanaona hili kama suala la kiroho linalohusiana na Engai na matokeo ya matendo ya binadamu.
- Athari kwa Wamaasai zitajadiliwa zaidi katika somo lijalo.

### Utunzaji wa Uumbaji wa Kibiblia

#### Unaendelea

- 5
- Mungu ametupa Biblia ili ituongoze katika njia zetu zote. Kwa hivyo, wakati Maa wanapokuwa na mikutano ya Biblia inayolenga kutafuta suluhisho na mwongozo, Roho Mtakatifu atatutia nguvu na kutuongoza. Neno la Mungu lina nguvu ya kubadilisha ambayo inaweza kututia moyo!
  - Fikiria tena mahali pazuri zaidi katika eneo lako ambapo unataka kuhifadhi.



**3) ENGING'URAROTO** enkitalalaunoto arashu engibirribir e engiteng'ena e tipat

## Orkwaak le Maa

Eeta Irmaasai ororei ojo “*melaikinoi ororei te enkigwana,*” ake elikyoo ele rorei aajo, ore too nkirrot te nkigwana netum inaagol pookin nkirragat/enedung'yeki.

### Entorrioni oo Nkibelekenyat Orreje le Enkop too

#### Irmaasai

- Ore nkibelekenyat orreje le enkop too Irmaasai naa akepuku enaa nkibelekenyat sapukin tiatwa orreje le enkijape naainyal orkwaak/oreje lenye le mila.
  - Ore nkibelekenyat orreje le enkop too Irmaasai, naa nkibelekenyat tiatwa orreje lenkijape, nijo anaa; en'chan kinyi, alamei sapuk/oodo, oo nkataitin nemeyelounoi.
  - Ore kuna kibelekenyat nitagol entumoto oo nkariak, oo nkujit eramatere enye.
  - Edolita Irmaasai ena anaa em'bae naipirita Itauja oo Engai oo nkiasin e tung'anishu (oo iltung'anak).
- Ing'uraari entorrioni too Irmaasai tosomo osuju.

### Erripoto Oonkitobirunot e Biblia

- Ishoo iyook Engai Biblia pee erikoo iyook too nkoitoi aang' pookin. Neeku, ore too nkataitin naata Irmaasai nkigwanat e Biblia naaipirita enging'orunoto enkirragata oo eutaaroto, neisho iyook Engiyang'et Sin'yati en'golon nerikoo iyook. Eeta ororei le Engai en'golon naidim aayau enkibelekenyata neidim aitagologo iyook!
- Inyaaki im'birribirra ewuei sidai oleng' toltirren lino niyiewoki erripoto.

- Fikiria wanyama wa porini kwenye vichaka na mazingira yao wanaohitaji ulinzi.
- Usisahau udongo ambao unahifadhi kila wakati ili kuepuka mmomonyoko wa udongo.
- Ukweli ni kwamba, hatufanyi hivi kwa ajili ya wanadamu tu bali pia kwa ajili ya Mungu ambaye aliupenda ulimwengu sana na akafa ili kupatanisha ulimwengu na Mungu mwenyewe.

*Wanafunzi watatafakari nafasi yao katika uumbaji wa Mungu.*

- Fikiria jinsi unavyohisi wakati uumbaji unakupa kila kitu unachohitaji.
  - **Umeharikiwa** na uumbaji mzuri wa Mungu.
- Fikiria nafasi ambayo mwanadamu anayo kama alivyokabidhiwa na Mungu.
  - Taja kazi za wazee wa Maa, viongozi, mashujaa, wanaume, wanawake na wazazi na watoto zinazohusu utunzaji wa uumbaji.
- Fikiria kusudi la Mungu katika kukuweka katika nafasi hiyo katika uumbaji wa Mungu.
  - **Umeheshimiwa** kuagizwa na Mungu kutunza uumbaji.
- Fikiria mwikio wako wa dhati kwa Mungu kwa baraka kama hiyo.
  - **Umehitolea** kutunza uumbaji wa Mungu.

### **Hii ni hatua ya kwanza.**

- Katika somo letu la pili kati ya masomo 3, tutaangalia NJIA nzuri za asili za Wamasai za kutunza uumbaji wa Mungu.
- Katika somo letu la tatu na la mwisho, tutaangalia zaidi NJIA ambazo tunaweza kwa vitendo ili kutunza uumbaji wa Mungu.
- Kwa sasa, hebu tutafakari zaidi kuhusu KWA NINI hili ni muhimu na JINSI sisi, watu wa Mungu, tunavyoweza kuleta mabadiliko.

- Im'birribirra ilowarak losero too irkun'dun lenye ooyeu sii ninche erripoto.
- Mirikino enkulukoni nashumisho too nkataitin/toorishat pookin peyiee metumi em'bobolata enkop.
- Ore esipata naa, mekiasita kuna tenkaraki oo iltung'anak ake, kake te nkaraki Engai natonyorra apa olosho naleng' neye pee itaiki osotwa olosho oo e Engai openy.

*N'choo ibirribirr ilooiteng'eni eng'asiata enye tiatua nkitobirunot e Engai.*

- M'birribirra siye enining'ito tiatwa yie tenekincho nkitobirunot intokiting' pookin niyieu.
  - **Kitamayana** inkitobirunoto sidan e Engai.
- M'birribirra eng'asiata naata oltung'ani enaa enaishoo Engai.
  - Tolimu inkiasin oo irpayani loo Irmaasai (le maa), ilarikok, Ilaisulak ilewa, nkitwaak, oo ntoivo oo nkera naaipirita erripoto oonkitobirunot.
- M'birribirra entilata e Engai pee kipik ina ng'asiata too nkitobirunot Engai.
  - **Kiyanyitaki** kindanapa e Engai pee irrip nkitobirunot.
- M'birribirra eng'amunoto ino nasipa te Engai temayani nijo ina.
  - **Intawuo kewon** pee irrip nkitobirunot e Engai.

### **Ore ena naa enaituruku.**

- Ore tiatua enkisoma aang' eare, tiatua somoi okuni (3), kipuo aing'uraa nkoitoi sidan orkwak le maa naarrip nkitobirunot e Engai.
- Ore tiatua osomo lang' le okuni oo alabayie, kipuo aing'uraa naleng' inkoitoi nekiin'dim too eyasat pee kirrip nkitobirunot e Engai.
- Ore tenarishata maibirribirra oleng' aajo, kanyoo tipat naata ena, oo nkoitoi nekiin'dim iyook iltung'anak le Engai aayau nkibeleyenat.

## Tumaini

7 *Matokeo: Jua kwamba Muumba wetu, Mungu wa Tumaini, anaupenda ulimwengu na hatauacha kamwe.*

- Wape wanafunzi 3 karatasi yenye mistari yote mitatu 3 ya Biblia na uwaombe wawe tayari kuisoma kwa darasa zima.
  - **Warumi 8:19–21**
  - **Wakolosai 1:15–17**
  - **Ufunuo 21:1–5**
- Wamaasai au watu wengine wanaposikia kuhusu mgogoro wa mabadiliko ya tabianchi, wanaweza kufadhaika au kuwa na wasiwasi. Hii inaitwa wasiwasi wa tabia nchi.

*Wakumbushe wanafunzi jinsi Engai anavyoshughulikia uumbaji kwa huruma kupitia hadithi za Wamaasai.*

*Kwa mfano, kumekuwa na vipindi vya vita vya kutisha miongoni mwa makundi ya Wamaasai, magonjwa katika historia yaliyoua karibu mifugo yote ya Wamaa, ukame mkali uliowanyima utajiri wa Wamaasai na kusababisha mateso; lakini Mungu ni Mungu wa matumaini, na Mungu hatawahi kuacha uumbaji wa Mungu.*

- Hata hivyo, ni muhimu kuwa na matumaini!
- Kwanza, Mungu ni Mungu wa matumaini anayependa na kutegemeza ulimwengu! Na Mungu ameahidi kutouacha bali kuurejesha! Hebu tuangalie mifano 3 ya mistari ya Biblia.

*Mwanafunzi aliyeteuliwa asome ubeti wa Biblia kwa darasa zima. Hapa chini kuna maandishi ya kuongoza majadiliano.*

- **Warumi 8:19–21** Kwa maana viumbe vyote pia vinatazamia kwa shauku nyingi kufunuliwa kwa wana wa Mungu. Kwa maana viumbe vyote pia vilitiishwa chini ya ubatili; si kwa hiari yake, ila kwa sababu yake yeye atiyevitiisha katika tumaini; kwa kuwa viumbe vyenyewe navyo vitawekwa huru na kutolewa katika utumwa wa uharibifu, hata viingie katika uhuru wa utukufu wa watoto wa Mungu.



## Osiligi

*Entilata: Tayelo aajo Alaitabirunoni lang', Engai Osiligi, enyorr olosho/enkop nemaing'waa aikata.*

- N'choo iloo iteng'eni okuni mpala//nkardasini naata irkererini pookin okuni le Biblia niomon pee irruk aisoma taldarasa pookin.
  - **Rumi 8:19–21**
  - **Ilkolosai 1:15–17**
  - **Embolunoto 21:1–5**
- Ore Irmaasai arashu irkulie tung'anak tenening' ilarrabali loo nkibelekenyat orreje le enkop, neidim aatan'yamala arashu etum orkirutoto. Ore ena naa akeji orkirutoto lo eorreje le enkop.

*Ntadamu iloitent'eni eniko Engai eneesishore orng'urr toonkitobirunot tiatua ngatinin e Irmaasai.*

*Engitan'yany'uket, eetai nkataitin alarrabal torrok tiatua irgilat le Irmaasai, imweyaretin teapa naamutt ermatare pookin oo Irmaasai, ilameitin sapukin oitaa Irmaasai menat (torrobo) neyau engilishoto; kake ore Engai naa Engai osiligi, nemeing'waa aikata Engai nkitobirunot enyena.*

- Ore ake sii, tipat oleng' teneetai osiligi!
- Ore Engai naa Engai osiligi nanyorr niibung' olosho! Nishorwa Engai osiligi n'jere meing'waa kake peeshuku! Maing'urai siye ngitenyanyuketa uni oo irkererini le Biblia.

*N'choo iisom oloiteng'eni obo otuutaki orkereri le Biblia to oldarasa pookin. Etii abori tene isirat ooutaa ngirorot.*

- **Iroma 8:19–21** Keanyita seseni pooki toki naitayioki, te yieunoto kitok, metaboluni nkera e Nkai. Amu etipikaki iseuseu erruoroto, neme nkaraki naa enkop nayieu, kake to siligi, amu keyookini aalaku iseuseu pooki aaitung'uaa rrindikisho enye e nkidaaroto, neng'amu elakunoto e nkitoo oo nkera e Nkai.
  - Itoning'o? Ore nkitobirunot nitaai metaa huru metupuku tiatua enkinyala natong'wa.

- Umesikia? Uumbaji utawekwa huru kutoka katika utumwa wake wa kuoza.
- **Wakolosai 1:15–17** Naye ni mfano wa Mungu asiyeonekana, mzaliwa wa kwanza wa viumbe vyote. Kwa kuwa katika yeye vitu vyote viliumbwa, vilivyo mbinguni na vilivyo juu ya nchi, vinavyoonekana na visivyoonekana; ikiwa ni vitu vya enzi, au milki, au enzi, au mamlaka; vitu vyote viliumbwa kwa njia yake, na kwa ajili yake. Naye amekuwako kabla ya vitu vyote, na vitu vyote hushikana katika yeye.
  - Hapa tunasoma kwamba Mungu ndiye Muumba na Mlinzi wa ulimwengu hataacha kamwe uumbaji wa Mungu bali ataunganisha vitu VYOTE na Yesu Kristo. Hatuelewi jinsi hili litakavyotokea, lakini tunaziamini ahadi za Mungu.
  - Kwa hivyo, tunajua kwamba Yesu anaratibisha vitu vyote—ikiwa ni pamoja na dunia pamoja.
- **Ufunuo 21:1–5** Kisha nikaona mbingu mpya na nchi mpya; kwa maana mbingu za kwanza na nchi ya kwanza zimekwisha kupita, wala hakuna bahari tena. Nami nikauona mji ule mtakatifu, Yerusalemu mpya, ukishuka kutoka mbinguni kwa Mungu, umewekwa tayari, kama bibi arusi aliyekwisha kupambwa kwa mumewe. Nikasikia sauti kubwa kutoka katika kile kiti cha enzi ikisema, Tazama, maskani ya Mungu ni pamoja na wanadamu, naye atafanya maskani yake pamoja nao, nao watakuwa watu wake. Naye Mungu mwenyewe atakuwa pamoja nao. Naye atafuta kila chozi katika macho yao, wala mauti haitakuwapo tena; wala maombolezo, wala kilio, wala maumivu hayatakuwapo tena; kwa kuwa mambo ya kwanza yamekwisha kupita. Na yeye aketiye juu ya kile kiti cha enzi akasema, Tazama, nayafanya yote kuwa mapya. Akaniambia, Andika ya kwamba maneno hayo ni amini na kweli.
  - Hapa, lugha ya asili ya Kigiriki ina maana ya dunia iliyofanywa upya na si mpya. Ndiyo, Mungu ameahidi kutoacha uumbaji wa Mungu bali kuufanya upya!
- **Hii ni habari njema!** Hii ni habari tunayoweza kuiamini, kwa sababu inatoka kwa Mungu wetu anayeaminika. Msingi wa tumaini letu si mawazo ya kutamani, bali ni Mungu anayeaminika na mwenye upendo.
  - Katika somo letu la tatu, pia tunajifunza kuhusu tumaini kutoka kwa wanasayansi.
- **Ilkolasai 1:15–17** Ninnye nyaanyukie e ina Ai nemelioo, olkikau le pooki toki naitayioki; te nkaraki ninnye pee eitayioki ntokitin pooki, naatii shumata o naatii enkop, inaaliioo o nemelioo te naa lorikan loo looitoreisho, aashu nkitoriat, aashu looishoro engolon e nkitoria, te ninnye eitayioki ntokitin naa ninnye eitobirakaki. Ninnye otii enkiterunoto oo ntokitin pooki, naa atua ninnye eitasheyie aatumokino ntokitin pooki.
  - Kisomita tene aajo, ore Engai naa ninnye alaitabirunoni o alarriponi le enkop meing'waa aikata nkitobirunot Engai kake idikidik ntokitin pookin oo Yesu Kristo. Mekiyolo aajo tiamwa eesai kuna, kake kiata enkirukoto oo osiligi le Engai.
  - Neeku, kiyelo aajo eesita Engai isiaitin pookin—aatenebo oenkop.
- **Embolunoto 21:1–5** Naitoki adol keper ng'ejuk o enkop ng'ejuk. Amu ore keper e dukuya o enkop e dukuya neidipa aatulusoi, meekure eetae enaiposha. Nadol ina anasa sinyati, Yerusalem ng'ejuk edou te shumata eing'uaa Engai, eitobiraki anaa esiankiki naikodokini olpayian lenye. Naning oltoilo kitok oing'uaa olorika le nkitoo ejo, “Ng'ura etii emanyisho e Engai te nebo iltung'ana. Keton ninnye te nebo ninche neaku iltung'ana lenyena. Ore Engai kewan neaku ketii te nebo ninche; naa kejut ninnye pooki kiyioi too nkonyek enye, ore keeya nemeitokini ae kata aata aashu eitokini aata olkiyioi, aashu enkishirata aashu emion ae kata. Amu etulusoitie intokitin pooki e dukuya.” Ore ilo otonita to lorika le nkitoo nejo, “Ng'ura, ekaitaa intokitin pooki ng'ejuko.” Nejo sii, “Ngero ena, amu ore kulo rorei naa keisiligayu nesipa.”
  - Ore tene, enkutuk e asili e kigiriki naa enkop naitang'ejukoki maake ng'ejuk. Ee, ishorwa e Engai osilig aajo meing'waa aikata nkitobirunot enyena kake piitaa ng'ejuko!
- **Ore kuna naa m'baa sidan!** Ore ena naa em'bae nekiin'dim airuko, amu ing'waa Engai aang' naisiligai. Ore entanata osiligi lang' neme nkibirribirrat orng'warr kake Engai naisiligai neeta enyorrata.
  - Ore tiatua enkisoma aang' euni, kinteng'enuo sii osiligi oing'waa lang'eni le sayansi.

**4) KUTUMIA**

kufanya au kutumia mafunzo

## Uangalizi wa Uumbaji katika Wimbo



- 6
- Pamoja na mwenzako au kikundi kidogo, jikumbusheni zile nyimbo na desturi za kitamaduni zinazoonyesha kwamba:
    - Wamaasai wanamtambua Mungu kama muumbaji na zile zinazomsifu Mungu kwa uumbaji wa Mungu na kwamba wanaomba Mungu aingilie kati wakati wa ukame mkali.
    - Katika mojawapo ya nyimbo hizo za kitamaduni, andika ubeti mpya kutoka kwa maudhui ya somo hili.
    - Imba wimbo.

### Uandishi wa Nyimbo

*Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni programu nzuri sana, inahitaji muda wa kutosha kuikamilisha vizuri.*

- Katika mojawapo ya nyimbo hizo za kitamaduni, andika ubeti mpya kutoka kwa maudhui ya somo hili. Pitia na uzingatia hoja kuu: Mungu ametuamuru (ametuagiza) kutunza uumbaji mwema wa Mungu.
- Imba ubeti mpya.

### Shughuli Nyingine Zinazoweza Kufanyika

1. Zungumzia jambo moja au mawili muhimu ambayo una hamu ya kuwafundisha watoto wako au wajukuu zako kuhusu utunzaji wa uumbaji.
2. Jadili na mwenzi wako/kikundi kidogo kuhusu mazingira mazuri katika kijiji chako, sifa zake, na faida ambayo yanatoa kwa watu na wanyama. Tambua jinsi jamii ilivyochukua hatua za kuyahifadhi.

**4) EESISHOREKI**

eesata arashu eesishoreki engiteng'ena

## Enging'urata oo Nkitobirunot tiatua Osingolio

- Tenebo ooilo lithahre, arashu olturrur kinyi entadamu lapa singolioitin oo orkwaak le mila ootodolu aajo:
  - Ore Irmaasai neyielo Engai enaa alaitobirunoni, oo lelo kulie ooisis Engai too nkitobirunot Engai, naa n'jere eomonito Engai pee edamu nin'che tenkata olamei sapuk/opi.
  - Ore obo le lelo singolioitin lemila, tisira orbeti obo ng'ejuk oing'waa ena kisoma.
  - Taranya osingolio.

### Esirare oo Isingolioitin

*Ore ena siai neidimi neya ildakikani tomon metabaike tomon oo imet (10–15). Neeku, ore aana ormuradi sidai naleng', eyieu enkata sapuk pee idipai esidai.*

- Ore to osingolio obo le losingolioitin lemila, tisira orbeti obo ng'ejuk oing'waa ena kisoma. Iimai nishilaa en'jooto etipat: Irriiwua iyook Engai pee kirrip nkitobirunot sidan e Engai.
- Taranya ilo kereri ng'ejuk.

### Isiaitin Kulie Naaidimakinoo pee Eesi

1. Iroro em'bae nabo etipat arashu are nisirai pee inteng'en ingera inono e Kipaimara arashu nakuyani inono naaipirita erripoto oonkitobirunot.
2. Eroro/eimaki oo ilo lithahre/olturrur kinyi m'baa e nkop sidan te enkanasa/enkijiji ino, enkishaa enye, oo dupoto too

3. Zungumzia njia moja au mbili ambazo Mungu anawahusisha wanadamu katika kutunza uumbaji. Swali la 3 litaulizwa tena katika.

*Swali la 3 litaulizwa tena katika Somo la 3 ambapo tunaona njia mahususi za utunzaji wa uumbaji ambazo zinaweza kupunguza athari mbaya za mabadiliko ya tabianchi.*

*Kundi zima litaimba wimbo mmoja wa kitamaduni wa kumshukuru Mungu kwa mvua na nyasi.*

### **Maombi**

1 Mungu muumba wa mbingu na dunia, tunakushukuru kwa baraka ya uumbaji na heshima ya kuumbwa kwa mfano wako.

Asante kwa mvua na nyasi, maziwa, na watoto.

Tunaomba—kupitia neema na wema wako unaodumu milele—utuwezeshe kutimiza kazi yetu ya kutunza uumbaji wako. Tupe tumaini lisilotikisika katikati ya mabadiliko makubwa ya tabianchi. Kwa maana wewe ndiye kimbilio letu sasa na milele. Amina.

iltung'ana oo lowwarak. Tadwaa enikuna iltung'anak pee errip nena wejitin enkop.

3. Roro engoitoi nabo ashu are naaing'orie Engai iltung'anak erripoto oo nkitobirunot.

*Oswali le/enkikilikwanata e okuni okuni (3) tiatua enkisoma euni naa ake kidolita nkoitoi naaibala e erripoto oo nkitobirunot naaidim aitong'oro entorroni oo nkibeleyenat orreje le enkop.*

*Erany olturrur pookin osinkolio obo le mila olikinyeki Engai aashe tenchan oonkujit.*

### **Enkomono**

Engai, alaitabirunoni le shumata oo enkop, kiliki iyie aashe te emayani oo nkitobirunot oo enkanyit intobirua yook tenkitanyanyikiet ino.

Ashe te enchan oo nkujit, kule oo nkera.

Kiomonu—tiatua empiris oo esidano ino nabik ntarasi—n'dimie iyook pee kindambaya esiai aang' erripoto oo nkitobirunot inono. N'choo iyook osiligi leming'unung'un te empolos oo nkibeleyenat sapukin orreje le enkop. Aamu iyie enkwatikinoto aang' taata oontarasi. Eesaay.

### **Bibliography**

<sup>1</sup> “Climate Change Mitigation and Adaptation: Simple Guide to Schools in Africa” (UNESCO, United Nations Educational, Scientific and Cultural Organization, 2019), 4, <https://unesdoc.unesco.org/ark:/48223/pf0000372168>.



<sup>2</sup> “Climate Change Mitigation and Adaptation;” 4.

<sup>3</sup> “Climate Change Mitigation and Adaptation;” 8–12.



7. Women's Groups Lesson 2: Kiswahili/Maa

**Maasai Traditional Environmental Knowledge and Creation Care  
Ujuzi wa Asili wa Wamaasai kwa Ajili ya Utunzaji wa Uumbaji  
Engarriyano e Asili oo Irmaasai te Erripoto oo Nkitobirunot**

<p><b>Hoja Kuu</b> Enkironoto kitok</p>	<p><b>Mtazamo wa ulimwengu wa Wamaasai—wa utegemezi kati ya wanadamu, mazingira, na Engai—unafanana na “pembetatu ya uumbaji” ya Biblia.</b></p>	<p><b>In’dwaat olosho loo Irmaasai—oretoro oo iltung’anak, enkop, o Engai—akenyanyuk oo ewunishu oo nkitobirunot e Biblia.</b></p> 
<p><b>Matokeo ya Kujifunza</b></p>	<p>Kama matokeo ya somo hili, mwanawake atafanya yafuatayo:</p>	<p>Ore ntilat ena kisoma naa pee iidim oloiteng’eni aataasa kuna:</p>
<p><b>Kujua</b></p> 	<p><b>Biblia</b></p> <ul style="list-style-type: none"> <li>Fahamu kwamba “pembetatu ya uumbaji” ya kibiblia inarejelea uhusiano kati ya Mungu, ubinadamu, na uumbaji usio wa kibinadamu.</li> </ul> <p><b>Wamaasai</b></p> <ul style="list-style-type: none"> <li>Elewa kwamba mtazamo wa ulimwengu wa Wamaasai kuhusu umuhimu wa maelewano na Engai, wanadamu, na viumbe visivyo vya binadamu kwa ustawi wa binadamu ni sawa na “pembetatu ya uumbaji” katika Biblia.</li> <li>Dhana ya baraka (<i>empuris e Engai</i>) au laana (<i>eng’oki</i>) kama matokeo ya uhusiano wa uadui kati ya wanadamu na Mungu lakini pia kati ya wanadamu na viumbe visivyo wanadamu.</li> <li>Elewa mtazamo wa ulimwengu wa Wamaasai wa mfumo ikolojia.</li> </ul>	<p><b>Biblia</b></p> <ul style="list-style-type: none"> <li>Eyielou aajo “Ore empijataewunishu oo nkitobirunot” e Biblia naa king’uraa enebaikinore Engai, iltung’anak, oo nkitobirunot neme iltung’anak.</li> </ul> <p><b>Irmaasai</b></p> <ul style="list-style-type: none"> <li>Eyielou aajo ore n’dwaat olosho le maa te enkipirata eyeunoto olning’o te Engai, oo iltung’anak, oo nkitobirunot kulie neme iltung’anak te puaan oo iltung’anak nen’yen’yikie “ewunishu oo nkitobirunot” Engai tiatua Biblia.</li> <li>Ore enkibirribirrata e mayan (<i>empuris e Engai</i>) arashu en’diaa (<i>eng’oki</i>) enaa enayeu mang’atishu too iltung’anak oo Engai, oo too iltung’anak, oo nkulie kitobirunot neme iltung’anak.</li> <li>Neyielou en’dwaata olosho loo Irmaasai naipirita ikolojia (en’chula oontokiting’ pookin te enkop).</li> </ul>

- Fahamu kwamba maarifa ya kitamaduni ya mazingira ya Wamaasai ni njia nzuri za kutunza uumbaji. (Tazama sehemu ya rasilimali.)

### **Tumaini**

- Hivyo basi, tunaweza kukabiliana na changamoto za mabadiliko ya tabianchi kwa matumaini.
- Kwanza, tunajua kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu, na Mungu hatauacha kamwe.
- Pili, kama wafuasi wa Yesu Kristo, tumewezeshwa na Roho Mtakatifu kuwa baraka kwa wengine (haki ya kijamii) na uumbaji (mazingira).



- Neyielou aajo, ore enkarriyano e mila te enkop oo Irmaasai naa nkoitoi sidan naarrip nkitobirunot. (Ng'urai ewueji oo nareta engiteng'enare.)

### **Osiligi**

- Neeku naa kiin'dim airisha ng'olikinot oo nkibelekenyat orreje le enkop to osiligi.
- Enaituruku, kiyolo aajo ore alaitabirani lang', Engai o osiligi, enyorr olosho nemeing'waa aikata Engai oopii.
- Eniare, ore enaa ilaurukok le Yesu Kristo, nidimie iyook Enkiang'et Sinyati pee kiaku emayani too irkulikai (haki oo olosho) oo nkitobirunot (enkop).

#### **Hisi**



- Tuna sababu ya kujivunia kuwa Wamaasai, wanaodumisha bioanuwai, kulinda mifumo ikolojia, na kudumisha maisha endelevu ya kimazingira.

- Kiaata inekilwaare kira Irmaasai, oitahekito iseuseu enkop, nekirrip m'baa pooki, e ikolojia nekin'taheiki bikoto enkop.

#### **Fanya**



- Bainisha changamoto kadhaa zinazozuia utekelezaji wa maarifa ya jadi ya Wamaasai.
- Bainisha njia tatu za maarifa ya jadi ya Wamaasai na mbinu za utunzaji wa uumbaji ambazo pia ni mbinu bora za kupunguza na/au kukabiliana na athari za mabadiliko ya tabianchi.
- Bainisha njia moja au mbili mpya ambazo zinaweza kupanua utunzaji wa uumbaji wa jadi ya Wamaasai kwa madhumuni ya kupunguza na/au kuhimili athari za mabadiliko ya tabianchi.
- Andika ubeti mmoja wa wimbo kuhusu maarifa na mbinu za kitamaduni za mazingira za Wamaasai ambazo pia ni mbinu bora za kupunguza mabadiliko ya tabianchi. Tumia sauti ya kawaida inaojulikana na wanawake wengi.

- Tolimu n'golikinot kuti naaibokito iyasat enkarriyano orkwaak loo Irmaasai.
- Tolimu nkoitoi wuni enkarriyano orkwaak loo Irmaasai o olosek erripieki nkitobirunot naara sii losekin sidan naretoki oitong'orr/arashu orisheki entorroni neyeu nkibelekenyat orreje le enkop.
- Tolimu enkoitoi nabo arashu aare ng'ejuko naaidim aitalala erripoto oo nkitobirunot orkwaak le maa, temwa naaitong'orr/arashu nidimu entorroni nayeu nkibelekenyat orreje le enkop.
- Tisira orbiti obo lo osinkolio oipirita enkarriyano oo losekin le mila te enkop oo Irmaasai naara losekini sidan ooitong'orr nkibelekenyat orreje le enkop. Tipika oltoilo otamoo nkitwaak kumok.

**Vifaa vya Kufundishia Vinahitajika**

- Picha za athari za mabadiliko ya tabianchi
- Hiari: kigoda chenye miguu 3, *olorika*
- Chati mgeuzo, kalamu ya alama, klipu au tepu

**Eyewuni Inareta Naaiteng'enishoreki**

- Impichai entorroni oo nkibelekenyat orreje le enkop
- Olorika loo nkejek wuni/uni.
- Enkardasi sapuk naing'or abori, arkalamu osirieki

**Vifaa vya Wanafunzi / Vipeperushi vya Karatasi**

- Ubao wa karatasi au karatasi kubwa na kalamu za alama

**Inareta oo Looiteng'eni/Ingardasini Kunyinyi**

- Orkibao le enkardasi arashu empalai sapuk oo arkalamu osirishoreki

Dakika

**Maudhui**



- 4 Tutajaribu kujibu maswali machache ili kuona tunachojua kuhusu sekta ya utalii nchini Tanzania.

*Mwalimu atatoa jibu sahihi kila anapokosea.*

1. Ni eneo gani la Tanzania linalopokea watalii wengi zaidi?
2. Taja maeneo katika mkoa wa Arusha ambayo watalii hutembelea.
3. Ni kiasi gani cha mapato ya taifa la Tanzania (pato la taifa) hutokana na utalii?
4. Kwa nini unafikiri kwamba mapato mengi ya utalii yanaingia katika sehemu hii ya kaskazini mwa Tanzania?

**Majibu**

1. Arusha
2. Eneo la Hifadhi ya Ngorongoro, Hifadhi ya Taifa ya Arusha, Serengeti, Tarangire, Oldonyo le Nkai, Ziwa Natron na Maasai Manyata ambayo yapo katika maeneo mbalimbali. Tunaona kwamba vivutio 3 kati ya 5 bora vya utalii ni maeneo katika Maasailand!

*Tazama Rasilimali za Somo la 2, Sura ya 16 kwa maelezo zaidi.*

3. Zaidi ya 20%. Hii ina maana kwamba kila shilingi 10,000 ambazo serikali inapata, angalau shilingi 2,000 zilitokana na utalii. Hii ni

**Enaiteng'enuoi**



Kinyok aawolu irkutu swalii (nkikilikwanat) pee kidol aajo kanyoo kiyiolo naipirita esiaai oo iltalii tolosho le Tanzania.

*Tenepong' oltung'ani, nelimu ormalimui/alaiteng'enani owolet osipa.*

1. Kaloosho te Tanzania naiturukito eng'amu iltalii kumok oleng'?
2. Tolimu iwejitin to oltiren loo larusa naanyorr iltalii ashom.
3. Kebaa dupoto (ngohola) naang'amuni te Tanzania to orbae loo iltaliini?
4. Kanyoo imbirribirr aajo ore dupoto sapuk oo iltalii naa enaalo e kopkop e Tanzania epukunye?

**Woleta**

1. Arusha
2. Enkop oo ng'wesi te Ngorongoro, Serengeti/Siringet, Arusha, Tarangire/Taar e ngare, Oldonyo le Engai, Em'barbal e Natron oo e Manyata oo wejitin oo nkwapi oo Irmaasai naatii iwejitin naapaasha. Kidolita aajo ore nkituoni/wejitin wuni (3) tiatua imiet (5) sidani oo iltaliini naa nkwapi oo Irmaasai.

*Ng'urai isirat losomo leare (2), ematwa etomon oile*

3. Ake egiroo em'bata enabaya tikitam tepooki dupoto. Itodolu ena aajo ore too nkohola nkeek tomon naatum sirkale, ore nkeek are naa m'baa oo iltaliini epukunye. Ore kuna pesai/ngohola naa intrilionini isiet oo

shilingi trilioni 8.25 zilizozalishwa na watalii 1,790,301 waliotembelea Tanzania mwaka wa 2023 pekee.

4. Kwa hivyo, unaona kwamba watalii wengi zaidi wanakuja katika maeneo ya Wamasai, hii ni kwa sababu Wamasai hutunza mazingira yao ya asili vizuri.

**Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)**

- 1 • Sababu kuu kwa nini maeneo ya Wamaasai hutembelewa na watalii wengi ni uwepo wa mazingira ya asili porini.
- Hii inaonyesha ustadi wa Wamaasai katika kulinda mazingira na bioanuwai.
- Sasa hebu tuangalie jinsi Wamaasai wamekuwa wakishughulikia utunzaji wa uumbaji.



## Maarifa ya Jadi ya Mazingira ya Jamii ya Wamaasai



- 10 *Waambie wanawake waunde vikundi vidogo. Kuna mada 12 za majadiliano, ambazo zinaweza kugawanywa katika mada moja kwa vikundi 12 au mada mbili kwa vikundi 6, au chochote kinachofaa vizuri. Badilisha vikundi au tenga maswali inavyohitajika.*
  - Jadili maarifa ya jadi ya Wamaasai na mbinu za utunzaji wa uumbaji wa mada yako.
  - Mbinu za kitamaduni za Wamaasai za utunzaji wa mazingira zinazoonyesha heshima kubwa kwa asili na maisha endelevu. Hapa kuna baadhi ya njia za kitamaduni za Wamaasai za utunzaji wa mazingira:

mpointini are oo imiet naatupukunye iltalii emilion nabo, oolakin naapishana, oo ntomoni naaudo iip wuni oo nabo oo iltalii ootewo Tanzania ta alari loo nkalifun are oo otikitam ookuni (2023) openy.

4. Neeku, idolita aajo ore iltaliini kumok oleng' naa akeponu nkwapii oo Irmaasai, ore ena naa te nkaraki errip Irmaasai nkwapii enye easili esidai.

**Ilomom lenkidikidikoto (enkidikidikoto Altarge oo Em'bae Kitok)**

- Ore pee enyorr Italiini kumok nkwapii oo Irmaasai naa te nkaraki etii nkwapii easili toserok.
- Akitodolu ena enkariyano oo Irmaasai te erripoto enkop oo iseuseu (pooki naatii enkop).
- Maing'urari siye eniko Irmaasai enees erripoto oo nkitobirunot.



## Enkariyano e Mila Enkop to Olosho loo Irmaasai

- Tiaki nkitwaak/ntasati meitobiru lturrurri kutiti. Etii m'baa tomon oo are (12) naaimakini, naaidimi aatirish nishori nabo olturrurri tolturrurri tomon oo are (12) arashu, m'baa are too ilturrurri ille, arashu enaishaakinore sidai. M'belekenya ilturrurri arashu tirisha irswalii (nkilikwanat) anaa enayieuni.*
- M'birribirra enkariyano easili oo Irmaasai oo losekin lerripoto oo enkitobirunoto enkisoma ino.
  - Ilosekin le asili oo Irmaasai le erripoto enkop naaitodolu enkanyit sapuk te asili oo enkishon naado. Etii ene nk'uti oitoo e asili oo Irmaasai te erripoto enkop:

### 1. Matumizi ya Maarifa Asilia

Wamaasai hurithisha maarifa kutoka kizazi hadi kizazi kuhusu mimea ya eneo lao na wanyamapori, mimea asilia kwa ajili ya tiba, na kuepuka mbinu hatarishi za kuvuna ili kuhakikisha ustawi wao. Hii inasaidia bioanuwai na matumizi endelevu ya rasilimali.

### 2. Malisho ya Mzunguko

Wamaasai hugawanya ardhi katika sehemu kwa sababu maalum: *olopololi/osupuko* kwa ajili ya malisho ya msimu wa kiangazi, eneo la malisho ya msimu wa mvua la *oloisukut, orpurkel* kwa ajili ya malisho ya jamii. Hii huipa ardhi muda wa kupona na kuzuia malisho kupita kiasi, ambayo hulinda nyasi na kuzuia mmomonyoko wa udongo.

### 3. Utunzaji wa Maeneo ya Tambiko na Maeneo Matakatiifu ya Asili

Wamaasai wanachukulia baadhi ya maeneo asilia kuwa matakatiifu na kulindwa dhidi ya matumizi mabaya, ikiwa ni pamoja na miti (kama vile *oreteti*), vilima (kwa mfano, maeneo ya Oldonyolengai, Oldonyomorua, na Elerai), na vyanzo vya maji. Pia kuna sheria za kitamaduni za kulinda maeneo haya. Maeneo haya hutumika kama maeneo yenye bayoanuwai na huchangia katika uhifadhi.

### 4. Uhifadhi wa Maji

Wamaasai huepuka uchafuzi wa vyanzo vya maji asilia kama vile mito na vijito vya msimu, kwa sababu wanategemea hivyo kwa ajili ya kuishi kwa binadamu na mifugo. Badala yake, mara nyingi huchimba visima vidogo karibu na mito iliokauka ili kupata maji safi bila kudhuru mfumo ikolojia.

### 5. Uchomaji Uliodhibitiwa

Wamaasai hutumia uchomaji wa eneo uliodhibitiwa au uliopangwa mapema ili kudhibiti nyasi. Hii husafisha nyasi za zamani, kavu na kuhimiza ukuaji mpya, na kusaidia kudumisha mfumo ikolojia. (Mizizi ya nyasi husaidia kuhifadhi kaboni kwenye udongo kama ilivyoadiliwa katika somo la 3.)

### 1. Enaasyeki Enkarriyano e Asili

Itujung' Irmaasai eng'eno/engarriyano enye eishoi oo eishoi naipirita nkujit enkop enye oo ng'wesi naatii, nkujit easili torbae le eramatare oo seseni, nepaashare enkarriyano torrono naamut enkop pee edupoi enkushui/puan enye. Ore ena neretoki iseuseu (pooki naatii enkop) oo eesishore nabik oo n'dupot enkop.

### 2. N'daat Naamanikini/Naamanaa

Erish Irmaasai enkop torbae loo ntilat etipat: olopololi/alalili/osupuko too n'daat tenkata alamei, eweji oo n'daat tenkata en'chan/alari oo oloisukutuk, orpurkel torbae loo n'daat olosho. Ore ena nisho enkop enkata nanaru nemit en'daata natuluso, nerrip ena nkujit niibok em'bobolata enkop.

### 3. Erripoto oo Wejitin Esajare oo Wuejitin Sinyat e Asili

Iing'orr Irmaasai nkulie wuejitin easili naa wuejitin sinyat, nerripi pee meesishoreki ainyal, naa tenebo oo irkeek (lijo oreteti), ildonyo/in'donyo (anaa oldonyo le Engai, en'donyo oo irmoruak, oo Elerai), oo nkonyek oo nkariak. Etii sii ncheriani/iutarrot e asili naaripieki kuna wuejitin. Ore kuna wuejitin neesishoreki anaa iwuejitin naata iseuseu (ntokiting pookin naatii enkop) neretoki erripoto e enkop.

### 4. Erripoto e Engare

Ore Irmaasai elon'y enkinyalata oo nkonyek oo nkariak e asili nijo, irkejek oo yayat oo nkariak, Iturot oowoki talamei, aamu isilig ninje te enkishui oo iltung'anak oo ngishu/eramatare.

### 5. Empejore Naitashekioki

Epej Irmaasai iwuejitin naaiteng'elaki arashu nkaron pee i tagiligil nkujit, ore ena neretoki aita nkujit musan naatoito, nitelelek em'bulunoto oo nkujit ng'ejuko, neretoki erripoto e asili. (Ore ntana oo nkujit neretoki aatushum kabon te nkulukoni enaa enekiroro te enkisoma ewuni/3).

## 6. Kuheshimu Sheria za Asili/Sheria za Kitamaduni, Hadithi na Miiko

Wamaasai huheshimu sheria za asili/mila zinazolenga utunzaji wa uumbaji ili kupata baraka na kuepuka laana. Wamaasai wana mfumo wa kiumri wenye seti ya sheria za kitamaduni zinazokataza jaribio lolote lisilo la lazima. Vurugu dhidi ya bioanuwai kwa kawaida hufanywa na watoto hivyo wasiotahiriwa (*ilayok*) wanapaswa kutakaswa kupitia mila kabla na baada ya mila za tohara. Kwa hivyo, ni marufuku na ni aibu kwa wapiganaji (*ilmuran*) kuharibu bioanuwai bila sababu.

## 7. Mtindo wa Maisha wa Kiwango cha Chini

Wamaasai wanaishi maisha ya kuhamahama kidogo yenye athari ndogo ya kimazingira. Nyumba zao (*manyatta*) zimetengenezwa kwa nyenzo asilia, zinazoweza kuoza kama vile matope, vijiti, na kinyesi cha ng'ombe.

## 8. Mtindo wa Maisha wa Kupambana na Uchafuzi

Mtindo wa maisha wa kitamaduni wa Wamaasai hauzalishi taka ngumu na gesi hatari zinazodhuru mazingira.

## 9. Matumizi ya Rasilimali kwa Ushirika na Usimamizi wa Rasilimali Adimu

Maeneo yenye rutuba au yenye hali nzuri ya hewa lakini pia vyanzo vya maji na mimea ni adimu sana katika Maasai, na hivyo, yanamilikiwa kwa pamoja. Hakuna umiliki kupita kiasi wa watu wachache.

## 10. Kufuga Wanyama wa Nyumbani

Wamaasai hawau au kula wanyama wa porini. Kwa hivyo, wao si wawindaji haramu.

## 11. Hifadhi Miti na Vichaka

Kijadi, Wamaasai hawakati miti hai. Wanakusanya kuni zilizokufa kwa ajili ya kupikia (na sasa kuna harakati za kuelekea matumizi ya majiko yanayotumia nishati kidogo). Wamaasai hutumia mimea kwa ajili ya

## 6. Eanyitata oo Ncheriani/Iutarot e Asili/Ncheriani/ Iutarot e Mila, Nkapa/Natinin oo Nturuja

Iyenyit Irmaasai ncheriani/iutarot e asili/mila naaipirita erripoto oo nkitobirunot pee etum imayianat nepaashare oldeket/eng'oki. Eeta Irmaasai iltimito loo lajjjik osuj orreje le asili nemit m'baa pooki nemetipat. Ore m'baa naainyal iseuseu naa nkera nememurrata (*ilayok*) oas, naake ishaakinore pee emayiani te mila eton itu ejing' oo idipe emurati e mila. Neeku mishoruno naa esulare too irmurran teniinyal iseuseu metii tipat.

## 7. Orreje le Enkishui e Abori

Ore maisha oo irmaasai naidurrudurr penyo neeta enkinyala kiti/kinyi te enkop. Ore nkajjik enye (manyisho/engang') nwitobirwaki too nareta e asili naidimakinoo peeng'wei, nijo anaa nkulukok, nkeek, oomodiok oonkishu.

## 8. Orreje le Enkishui Opaashare Enkinyala

Ore orreje le maisha e asili oo Irmaasai nemeiu/nemeyau altaka ogol o irgesii torrok ooinyal enkop.

## 9. Eng'arata oo N'dupot oo Enkitashekinoto oo N'dupot Kuti

Ore iwuejitin naatii entulugumi arashu naatii enkijape sidai enkop, oo nkonyek oonkariak naa kuti naleng' tiatua wuejitin oo Irmaasai, neeku akerripitoo pookin tenebo. Metii sii iltung'anak kuti laa ninje oitore n'dupot enkop aalang' irkulikai.

## 10. Eramatare Teaang'

Meerr Irmaasai ilowuwarak loserok/ing'wesi nemenya sii. Metaa mera nin'je ilainyamok torrok (oos ilowarak).

## 11. Erripoto oo Irkeek lo Osero Ooirkudun

Ore te mila, nemedung' Irmaasai irkeek ooshal. Ake iturrurr irkeek ootoito pee eyerihore (ore taata neetai enkitayanakino pee eesishoreke iljikoi le enishati kinyi). Eyasishore Irmaasai ilchanito lo oserok pee eramatie oote, ore irkeek naa torbae liang', oo nkujit te

dawa, miti kwa madhumuni ya nyumbani, na nyasi kwa mifugo yao, kwa hivyo wana sheria za kuhifadhi mimea.

**12. Majukumu ya Wazee na Viongozi**

Jukumu kuu la viongozi wa Wamaasai ni kuhakikisha mila na sheria zao zinazingatiwa kwa ustawi wa jamii. Hii inajumuisha sheria za mazingira, kwani wanaamini kwamba ili kuishi vizuri, lazima kuwe na mahusiano mazuri kati ya watu na mazingira.

**Sayansi**

- 20 Fikiria mbinu zifuatazo ambapo sayansi ya mazingira na tabianchi huthibitisha maarifa ya kitamaduni ya mazingira ya Wamaasai.

*Soma njia tano zifuatazo za kisayansi za kutunza mazingira. Baada ya kila moja, bainisha njia moja au mbili zinazoweza kuthibitisha na kuimarisha (kilichotambuliwa hapo juu) au pambanua utunzaji wa kitamaduni wa uumbaji wa Wamaasai kwa ajili ya kupunguza na/au kukabiliana na mabadiliko ya tabianchi.*

*Ikiwa kuna wanawake wa kutosha kuwezesha usomaji kwa kikundi kidogo, kuchapisha maandishi kwa kila moja ya njia 5 zifuatazo za kisayansi. Kisha wagawe wanawake katika vikundi vitano ili kusoma taarifa za kikundi chao. Kila kikundi kitajadili na kuwasilisha kwa darasa zima njia ambazo zinaweza kuthibitisha na kuimarisha (kile kilichoainishwa hapo juu) au kupanua utunzaji wa kitamaduni wa uumbaji wa Wamaasai kwa ajili ya kupunguza na/au kukabiliana na mabadiliko ya tabianchi. Waandike kwenye chati mgeuzo/ubao wa karatasi.*



nkaraki eramatara enye, neeku eeta ncheriani/iwutarot naarripie irkeek.

**12. Isiaitin oo Irpayiani oo Larikok**

Ore esiai sapuk oo larikok loo Irmaasai naa pee errip mila oo ncheriani/wutarot pookin oo Irmaasai tenkishon olosho. Ore ena nitushulu ncheriani/utarot enkop, aamu isilig aajo ore pee eetai enkison sidai nishaakinore netii eseriani too iltung'anak oo enkop.

**Sayansi**

M'birribirra kuna oitoo naa niche eesishore sayansi enkop oo orreje le enkop pee itodolu enkariyiano e asili enkop oo Irmaasai.

*Isoma kuna baa/oitoo imiet e sayansi naarrip enkop. Ore teniin'dip aisoma pookin, tolimu engoitoo nabo arashu are naaidim aitodolu neitasheki (nena naasira tehumata ten'de) arashu tolimu erripoto e asili oo nkitobirunot too Irmaasai naaitong'orr arashu nairisheki nkibelekenyat orreje le enkop.*

*Tenetii nkitwaak kumok pee idimie enkisoma to olturrurr kinyi, nesiri isirat/irkigerot le kila enkoitoo tiatwa kuna oitoo imiet (5) e sayansi. Tirisha nkitwaak too ilturrurri imiet pee iisom m'baa olturrurr lenye. Iro olturrurr nelimu taldarasa pookin nkoitoo naaidim aibalunye nitagol (nena naaitolimwoki teshumata tine) arashu enkitalala erripoto easili toonkitobirunot oo Irmaasai pee itong'orr/arashu irishi nkibelekenyat orreje le enkop. N'choo esiri to orkibao le enkardasi sapuk.*

Ufugaji endelevu <b>Eramatare nabikoo</b>	Kulinda bioanuwai <b>Erripoto oo iseuseu</b>	Kulinda mifumo ikolojia ikiwemo nyasi <b>Erripoto e ikolojia (nnatii enkop) oo nkujit</b>	Kuhifadhi nyasi <b>Erripoto oo nkujit</b>	Maisha endelevu ya mazingira <b>Enkishon nabikoo te enkop</b>
<i>Andika majibu kwenye chati mgeuzo.</i>				

## 1. Ufugaji Endelevu

- Ufugaji endelevu ni mfumo wa uzalishaji wa mifugo unaosimamia ardhi na mifugo kwa njia iliyopangwa ili kutoa faida ya kiuchumi, kijamii, na kimazingira.
- Ufugaji endelevu huchangia huduma za mazingira: kuhifadhi ardhi na mfumo ikolojia, uhifadhi wa bayoanuwai, usalama wa chakula na maji, na kusaidia riziki thabiti.
- Kuna dhana iliyoenea, “Wafugaji hugaribu mazingira kwa sababu wanahifadhi wanyama wengi.” Ushahidi wa kisayansi unaonyesha kwamba uharibifu hutokea wakati mifumo ya mali ya pamoja inapoanguka na katika maeneo ambapo mifugo huzuiwa kuhamia, jambo ambalo haliruhusu malisho kujihuisha upya.
- Hata hivyo, kulingana na Kifungu cha 3 cha Azimio la Umoja wa Mataifa kuhusu Haki za Watu wa Asili, Wamaasai wa Asili wana haki ya kujitawala. Hivyo, Wamaasai wafugaji wana haki ya kuendelea kusimamia mifugo yao kwa ufanisi na kusimamia ardhi yao ya malisho kwa uangalifu.
- Dhana nyingine iliyoenea: “Wafugaji huunda migogoro.” “Ufugaji duniani kote una sifa ya amani, kutokana na mila imara ya ushirikiano na ugawanaji wa rasilimali miongoni mwa jamii za wafugaji. Pale ambapo migogoro inatawala, kwa kawaida kuna sababu za msingi kama vile mmomonyoko wa mipango ya utawala wa ndani, unyang’anyi wa maliasili au kutengwa na huduma na kutoshirikishwa kufanya maamuzi. Migogoro kwa kawaida ni dhihirisho la kushindwa kutoa usalama na huduma za msingi, na kutetea haki za msingi, ikiwa ni pamoja na Haki ya Ardhi ya Pamoja.”
- Maadui wanne wa ufugaji: Unyang’anyaji wa ardhi kwa ajili ya uhifadhi, mabadiliko ya tabianchi, sera zisizo rafiki kwa wafugaji, na changamoto za idadi ya watu.

## 1. Erramatare Nabikoo

- Ore erramatare nabikoo naa em’bae naitaou ermatate naitasheki enkop oo oeramatate te enkoitoi naidanyaki natumieki dupoto too nkohola, to olosho, oo te enkop.
- Ore eramatate nabikoo neyau siaitin enkop: erripoto enkulukoni oo ikolojia,erripoto e iseuseu, entumoto en’daa o engare, neretoo ntumot esidai.
- Etii engibirribirr natii aajo, “Inyalita ilaramatak enkop torbae lermatate sapuk (ngishu/ndare kumok).” Itodolu shakenishu e sayansi aajo elotu enkinyalare teneurori/teneiting’mbaa oo n’dupot/malin naang’ari neeku emitikini eramatate idurraki, em’bae naake misho enkop metanaru (metubula).
- Kake, ore enaa anajo ematwa e wuni (3) le Enairukokinoteki te Enaboishu oo Loshon le Enkop naipirrita haki (enaishaakinore) oo iltung’anak le asili, eeta Irmaasai le asili haki narikie oote. Neeku, eeta Irmaasai ooramatiso haki naitaheki ermatate enye t esidano neitasheki enkop enye naramatishore te eng’eno.
- Ore engay kibirribirrata natii: “Eeu ilaramatak ilarrabali.” “ore eramatate te enkop pookin neeta eseriani, tarbae/tengaraki e mila sidai e oo erishata oo n’dupot too laramatak pookin. Ore tenetii ilarrabali, naa ake etii inaayetwa, nijo tenerrwoyo n’kidanyat erikore tiatwa armaa oo eworunoto oo n’dupot e asili, arashu egelariteramatata oo tenemetii irmaasai aatwa en’dung’oto oo m’baa’. Ore ilarrabali naake itodolu aajo metii eseriani nemetumitoo eramatata e tipat nitashekini haki e tipat naa tenebo oo Haki e Enkop e-Pooki ng’ai.”
- Irmang’ati oong’wan le eramatate: Eworunoto e enkop torbae le enkarna “erripoto,” nkibeleyenat orreje le enkop, iserai/n’cheriani torrok too ilaramatak, oo n’golikinot enkumoi oo iltung’anak.

## **2. Kulinda Bioanuwai**

- Kwa maneno rahisi, bioanuwai inamaanisha aina zote za maisha Duniani. Kulinda bioanuwai ni ulinzi kwa zaidi ya spishi milioni 100 zinazoishi duniani.
- Utofauti wa spishi (ikiwa ni pamoja na mimea, wanyama, bakteria, na kuvu) na mifumo ikolojia huweka mfumo ikolojia wa kimataifa katika usawa, na kutoa kila kitu katika asili ambacho sisi, kama wanadamu, tunahitaji ili kuishi, ikijumuisha chakula, maji safi, dawa, na makazi.
- Hapa kuna njia tano za kulinda bioanuwai:
  - Zuia ukataji miti.
  - Weka marufuku ya uwindaji wa wanyama wengi.
  - Tumia maliasili kwa ufanisi zaidi.
  - Dumisha maeneo yaliyolindwa kwa wanyama ambapo hakuna shughuli za kibinadamu zinazoruhusiwa.
  - Uwindaji haramu na uwindaji wa wanyama wa porini unapaswa kuzuiwa.

## **2. Erripoto oo Iseuseu (Oontokiting' Pooki te Enkop)**

- Ore too rorei oolelek, ore iseuseu naa enkishon pooki tolosho. Ore erripoto e seusu naa erripoto oo ntokitin naagiroo milionini iip (100) naishu te enkop.
- Ore etii ntokitin naishu napaasha (naa tenebo oo nkujit, ilowuarak, bakteria) oo m'baa e ikolojia nepik m'baa e ikolojia oo loшон pookini te esidano nitau ntokitin pookin e asili nekiyeu yook iltung'anak pee mekimuta, naa tenebo oo en'daa, engare sidai, irkeek/alchani,oo manyisho.
- Neena nkoitoi imiet naarripieki iseuseu (pookin naishu te enkop):
  - Mb'ooi en'dung'oto oo irkeek.
  - Tomito eerare oo ilowuarak kumok.
  - Taasishore dupot e asaili esidai oleng'.
  - Torripo wejitin naing'oreiki lowarak nemeesieki nkiasin oo iltung'anak.
  - Ishaakinore pee iboori ilainyamok ooar lowuarak loserok.

### 3. Kulinda Mifumo Ikolojia

- Tuanze mada hii ndogo kwa kupitia mtazamo wa ulimwengu wa Wamaasai wa mfumo ikolojia, pambetatu ya utegemeano wa pande zote.
  - **Upande wa kwanza:** Umuhimu wa ardhi (*Oldonyo le Engai* kwa ajili ya ibada), vyanzo vya maji, na hali nzuri ya hewa (*osupuko* na *orpurkel* kwa ajili ya malisho) kwa ajili ya kuishi kwa binadamu na mifugo.
  - **Upande wa pili:** Umuhimu wa mifugo na mimea (*irkeek*) kwa ajili ya kuishi kwa binadamu na kwa ajili ya ibada (mnyama kwa ajili ya kafara na mila, miti kwa ajili ya madhabahu, n.k.).
  - **Upande wa tatu:** Umuhimu wa mahusiano mazuri na wanadamu wenzake, Mungu, na uumbaji usio wa binadamu kwa ajili ya baraka na riziki ya Mungu kwa ajili ya uumbaji wa binadamu na usio wa binadamu.
- Sasa, hebu tuone jinsi dhana hii inavyofanana na dhana ya kisayansi ya mfumo ikolojia.
  - “Mfumo ikolojia ni eneo la kijiografia ambapo mimea, wanyama, na viumbe vingine, pamoja na hali ya hewa na mandhari, hufanya kazi pamoja ili kuunda kiputo cha uhai.”
  - Mifumo ikolojia ina viumbe hai na vitu visivyoo hai kama vile halijoto, unyevunyevu, na ardhi.
- Umuhimu wa mifumo ikolojia:
  - “Mimea na wanyama wote wa Dunia hutegemea mifumo ikolojia kutoa chakula na makazi. Mifumo ikolojia lazima idumishe usawa mzuri ili kubaki hai.” Kwa mfano, nyumbu wanaoishi katika mfumo ikolojia wa savannah wa Serengeti wanahitaji vyanzo vya maji na nyasi za kula. Ikiwa kundi la nyumbu litakula nyasi zote, litalazimika kutafuta nyasi kwingine hadi mvua itakaporudi na kuiboresha nyasi.
- Mifumo ikolojia ya dunia inweza kulindwa kupitia matumizi yanayofaa:
  - Hifadhi rasilimali za maji na uwajibikaji kuhusu matumizi ya maji.
  - Kuendeleza na kutumia usimamizi sahihi wa taka.
  - Epuka matumizi ya dawa za kuua wadudu za kemikali na kuendeleza matumizi ya dawa za kuua wadudu za asili.

### 3. Erripoto e Ikolojia

- Maiteru ena bae kiti naimu en’dwaata olosho loo Irmaasai te ikolojia (e’chula oo ntokitin te enkop, ewunishu naisiligaro n’jot pookin.
  - **En’choto naituruku:** entipato enkop (Oldonyo le Engai torbae le enkisiyaiare), nkonyek oo nkariak, enkijape sidai (osupuko o orpukel torbae le eramatare) te enkishui oo iltung’anak oo ermatare.
  - **En’choto e eare:** tipatishu eramatare oo nkujit (irkeek) torbae le enkishui oo iltung’anak oo enkisiyaiare (enkiteng e esajare oo e mila, irkeek torbae lo orkitaret).
  - **En’choto e wuni:** tipatishu e eseriani oo irkulie tung’anak, Engai, oonkulie kitobirunot neme iltung’anak torbae le emayiani nkishorunot e Engai te enkitobirunoto oltung’ani oo ineme otung’ani.
- Onaa, matodol siyie enkitanyanyukiet ena kibirribirrata oo enkibirribirrat e sayansi te ikolojia (en’chula oo ntokitin).
  - “Ore en’chula oo ntokiting pookin naa ewueji enkop naake, ore nkujit, ilowuarak pookin, oo nkulie kitobirunot oo orreje le enkijape oo enkop neesisho tenebo pee itobirru entumoto enkishui.”
  - Ore ikolojia neeta oo ntokitin naaishu, oo nemeishu, anaa enkirowuaj, en’chalan, oo enkop.
- Tipatishu e ikolojia (en’chula oo ntokitin):
  - “Ore nkujit oo lowuarak pookin le enkop ning’orita ikolojia (en’chula) te en’daa oo man’yisho. Eyieu ikolojia/en’chula erisoroto sidai pee ebik ishu.” Enkitanyanyukiet, ore iingatin oomanya aatua en’chula/ikolojia e was e siringet/Serengeti neyieu nkonyek oo nkariak oo nkujit naanya. Tenenya iingatin nkujit pookin, nepuku aapuo aing’oru te engay wueji oo meeu en’chan (oo metasha) nebulu nkujit.
- Oore ikolojia/en’chula e enkop nidimi aatorrip tiatua easishore naishaakinore:

## Women / Wanawake

- Panda spishi za asili.
- Shiriki katika upandaji miti tena ambapo miti imekatwa.
- Kuendeleza mifumo mbalimbali ya upandaji miti ili kusaidia kudumisha uzalishaji wa udongo na kuzuia mmomonyoko badala ya mfumo wa upandaji wa mazao ya aina moja.
- Tumia mbolea asilia na kupunguza matumizi ya mbolea ya kemikali.
- Kulinda wanyamapori katika eneo lako kwa kuheshimu makazi ya wanyamapori, kuripoti matukio ya biashara haramu ya wanyamapori au ujangili, na usiunge mkono shughuli za unyonyaji wa wanyamapori.
- Torripo n'dupot oo nkariak niasishore tenkoitoi sidai engare/nkariak.
- Enkitashekinoto sidai o olduruki/altaka (pee miinyal enkop).
- Tapaashare nipal ilchanito le esayet oar nkowarak niasishore alchanito le asili oar nkowarak.
- Tuuno n'daikin e asili.
- Tuuno irkeek iisul too wuejitin naatudung'oki irkeet.
- Ntubulai m'baa naapaasha e wunoto oo irkeek pee eretoki enkitobirunoto/erripoto enkulukoni niibok em'bobolota nemeeku ewunore oo n'daokin boo nabo ake.
- Taasishore embolea e asili nintong'orr iasishore embolea naata esayet.
- Torripo ng'wesi/lowarrak te ewueji ino niyanyit manyisho oo lowarak losero, tolimu/isitai ilainyamok le jurusishu torriono/iljangilini loo ng'wesi/lowarak, nemiindik engaina enkitaruooroto/erogon'yata oo lowarak lo osero.

#### 4. Kuhifadhi Nyasi

*Nyasi pia ni aina ya mfumo ikolojia, lakini itakuwa na mwelekeo maalum hapa katika muktadha wa Wamaasai.*

- “Nyasi za malisho hupatikana pale ambapo mvua ya kawaida haitoshi kuhimili ukuaji wa msitu, lakini si kidogo sana kiasi cha kuunda jangwa. Kwa kweli, nyasi za malisho mara nyingi ziko kati ya misitu na majangwa.”
- Nyasi za malisho ni vyanzo vyema vya kuhifadhi kabon. (Ikimaanisha zina uwezo wa kuhifadhi kiasi kikubwa cha kaboni kwenye mizizi yao ya kina na kuhamisha kaboni kwenye udongo.)
- Kuruhusu nyasi za malisho kupumzika wakati wa kiangazi (kwa kuhamia *osupuko*) na kurudi kutoka maeneo ya juu (*osupuko*) kwenda maeneo ya chini (*olpurkel*) mvua zinaporudi ni njia nzuri ya kudhibiti nyasi, miti, maua (mimea).
- “Nyasi za malisho huhifadhi takriban 34% ya akiba ya kaboni duniani kote...Tofauti na misitu ambapo mimea ndiyo chanzo kikuu cha uhifadhi wa kaboni, kaboni nyingi ya nyasi huhifadhiwa kwenye udongo.”
- “Kuongezeka kwa hatari ya ukame na moto kunafanya nyasi za malisho kuwa vyanzo vya kaboni vinavyotegemewa zaidi kuliko miti...Hata hivyo, Miti bado ni muhimu sana. [Utafiti] haupendekezi kwamba nyasi za malisho yanapaswa kuchukua nafasi ya misitu kwenye mandhari au kupunguza faida nyingine nyingi za miti.”
- “Vitisho kwa nyasi asilia, pamoja na wanyamapori wanaoishi juu yake, ni pamoja na kilimo, ufugaji kupita kiasi, spishi vamizi, uwindaji haramu, na mabadiliko ya tabianchi.”

#### 4. Erripoto oo Nkujit

*Ore sii nkujit naa nabo oo m'baa e ikolojia (en'chula), kake eeta en'joto naibala tiatwa Irmaasai.*

- Ore nkujit oo 'ndaat eramatare netumi tenesha en'chan nemeidim aitubulu ntimi, kake mee kinyi sii naleng'nayau alamei. Ore tesipata ore nkujit oo n'daat eramatare netii erishata oo ntimi oo irpurai.
- Ore nkujit oo n'daat eramatare nashum oleng'kabon. (Ake eeta enkidimata nashumie kabon sapuk too ntana enye adoru, nidurrakinye kabon aatwa enkulukoni.)
- Tenishori nkujit oo n'daat eramatare miyang'iyang'ata tenkata alamei (nidurrakini osupuko) neshukunyie too n'chumat (osupuko) aadoiki weijitin e abori (orpukel), tenelotu en'chan naa enkoitoi sidai naing'orieki nkujit, irkeek, irmauya (irkeek).
- “Ore nkujit oo n'daat eramatare nashum ematwa nabaya osom oong'wan (34%) e kabon te enkop pookin...epaaha oo ntimi naa nkujit naleng' naashum kabon. Ore kabon sapuk oo nkujit neshuma tiatua enkulukoni.”
- “Ore tenepona en'golikinoto alamei o enkima/enkirowaj, nisho nkujit oo n'daat metaa ninje niashoru kabon aisul aalang'irkeet...Kake, iletipat ake irkeek oleng'. [En'jurre] ore nkujit eramatare neya eng'asiata oo ntimi te enkop arashu itong'orr dupot kuliek kumok oo ikeek.”
- “Ore naaiture nkujit e asili tenebo oo ng'wesi/lowarak lo oserok oomanaya naa tenebo oo enturore, eramatare sapuk natuluso, ngujit naaing'waa kulye kwapi, eerare oo lowarak/ngwesi, oo nkibelekenyat oireje enkop.”

## **5. Maisha Endelevu Kiikolojia Yanayolingana na Mazingira**

- Kuishi kwa uendelevu “...kunajumuisha ujuzi, mali (nyenzo na kijamii) na mbinu zitakazotumiwa na watu binafsi na jamii ili kuishi. Kipengele cha maisha uendelevu kinamaanisha kwamba watu hawa au jamii wanaweza kukabiliana na kushinda nyakati za msongo wa mawazo na/au mgogoro, na kwamba wanaweza kudumisha au hata kuboresha ujuzi na mali za sasa na za baadaye bila kutumia rasilimali zao za asili.”
- Vitisho kwa usalama wa maisha endelevu ya mazingira vinajumuisha mambo ya nje, kama vile mabadiliko ya tabianchi, ukuaji wa idadi ya watu, na sera za serikali.
- Kuna rasilimali za msingi (“mtaji”) kwa maisha endelevu: rasilimali za asili, binadamu, kijamii, kimwili, na kiuchumi.

## **5. Enkishon Nabikoo, te Ikolojia Naarisioro/Naaishaakinore Enkop**

- Ore enkishui nabikoo “...itushulu enkarriyiano, n’dupot oo losekin oasishore iltung’anak makewon oo olosho te enkishui. Ore em’bae enkishui/enkishon nabikoo nitodolu aajo, ore kulo tung’anak arashu olosho, neidim airisha niisul nkataitin naagol oo nkibirribirrat arashu ilarrabali, naa eidim sii aatobikie arashu aaitaa sidai enkarriyiano oo n’dupot e taata oo ne ade itu eesishore n’dupot enye e asili.”
- Ore naaiture eseriani enkishui/enkishon nabikoo enkop tenebo oo m’baa e boo, nijo anaa: nkibeleyenat orreje le enkop, emponato oo iltung’anak/olorere, oo serai/n’cheriani e sirkale.
- Etii dupoto e tipat (“ormutaji”) te enkishon/enkishui nabikoo: n’dupot e asili, iltung’anak, tolosho, too seseni, oo too nkohola.

**3) UCHUNGUZI** ufafanuzi au tafakari ya maudhui ya msingi

## Wamaasai

- 5
- Kwa hivyo, hebu sasa tuunganishe mbinu hizi za kupunguza na kuhimili mabadiliko ya tabianchi na mtazamo mkubwa wa Wamaasai kuhusu ulimwengu (mtazamo wa ulimwengu).
  - Mbinu hizi za kitamaduni za maarifa ya mazingira za Wamaasai ni nzuri kwa utunzaji wa uumbaji.
    - Mbinu hizi za utunzaji wa uumbaji zinawakilisha uelewa wa Wamaasai unaozingatia utegemezi wa pande zote mbili na mazingira ambayo yameundwa na Engai—yanayoonekana katika kuwatunza watu, mifugo, viumbe vyote vilivyo hai, na ardhi (wanadamu na viumbe visivyo binadamu)—ambayo hudumisha maisha na riziki ya Wamaasai.
      - Kwa hivyo, Wamaasai wanaelewa kwamba ustawi wa binadamu maishani unatokana na uhusiano mzuri na 1) *Engai*, 2) watu wengine, na 2) viumbe visivyo binadamu.
      - Vipengele hivi vitatu vinaonekana kama kigoda chenye miguu mitatu, *olorika*.
      - Kwa kuwa ina miguu mitatu inakuwa na nguvu na imara—hata kwenye ardhi isiyo na usawa—na kufanya kazi vizuri zaidi.
    - Mtizamo wa Wamaasai wa baraka (*empuris e Engai*) au laana (*eng'oki*) kama matokeo ya uhusiano wa uadui kati ya wanadamu na Mungu lakini pia kati ya wanadamu na viumbe visivyo wanadamu.
      - Uliwafanya Wamaasai kuheshimu sheria za asili/sheria za kitamaduni zinazowataka kutunza uumbaji ili kupata baraka na kuepuka laana.
  - Wamaasai wana mfumo wa rika pamoja na sheria za kitamaduni zinazokataza jaribio lolote lisilo la lazima la kuvuruga bioanuwai na wapiganaji (*ilmuran*).



**3) ENGING URAROTO** enkitalalaunoto arashu engibirribirr e engiteng'ena e tipat

## Irmaasai

- Neeku, maitutumo siye kulo osekin ootong'orr niirish nkibelekenyat orreje le enkop oo enkibirribirrata sapuk naata Irmaasai to olosho (enkibirribirrata olosho).
- Ore kulo osekin le mila/orkwaak le enkariyiano enkop too Irmaasai naa sidan te erripoto oo nkitobirunot.
  - Ore kulo osekin le erripoto oo nkitobirunot naake itodolu eyelounoto oo Irmaasai naipirita eretoto oo n'chot pookirare oo enkop naitobirwa Engai—nalioo aajo eretokito iltung'anak, eramatare, n'tokiting pookin naishu oo enkop (iltung'anak oo ntokiting' neme iltung'anak)—naake itobik enkishui oo ntumot/en'daa oo Irmaasai.
    - Neeku, eyielo Irmaasai aajo ore empuan oo iltung'anak tenkishon tenetii esidai oo Engai (1), iltung'anak kulie, oo ingitobirat' neme iltung'anak (2).
    - Ore kuna kipengeleni wuni nelioo enaa olorika loo nkejek wuni (olorika le maa).
    - Ore aamu eeta nkejek wuni neeku eeta en'golon nitashe esidai—baiki te nkop nemerisyo—nees esiai esidai naisul.
  - Ore enkibirribirr oo Irmaasai te emayani (*empuris e Engai*) arashu oldeket (*eng'oki*) nayeu mang'atishu too iltung'anak oo Engai, oo ake sii too iltung'anak oo nkitobirunot neme iltung'anak.
    - Ishoo ena Irmaasai miyenyita n'cheriani/wutarot e asili/e mila naayieu nin'che pee errip nkitobirunot Engai pee etum emayani nepaash ildeketa.
- Eeta Irmaasai em'bae oo lajijik tenebo oo n'cheriani e mila naaibooyo m'baa pooki torrok naainyal sesuseu naa iljeshi (irmuran).

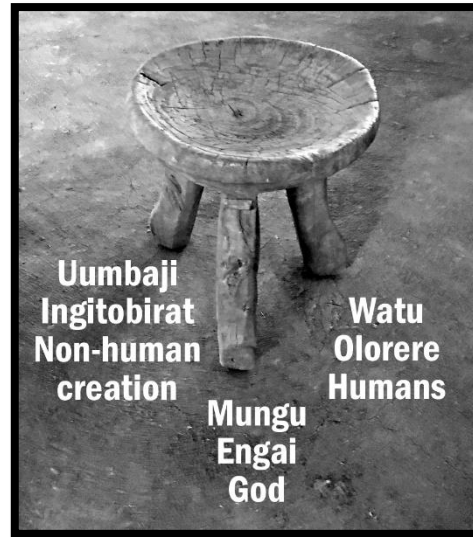
- Vurugu dhidi ya bioanuwai kwa kawaida hufanywa na watoto; wasiotahiriwa (*ilayok*) hata hivyo wanapaswa kutakaswa kupitia mila kabla na baada ya ibada za tohara. Kwa hivyo, ni marufuku na ni aibu kwa *ilmuran* kuharibu bioanuwai bila pasipo na ulazima.

- Ore ilarrabali oinyal iseuseu naa nkera oshi naas; nkera memurata (*ilayok*) nake, ishaakinore pee itisin'yi te mila oo enkisiyare eng'orr emurata, oo idipaki emurata. Neeku, entaboi naa esulare too irmuran te niinyal iseuseu (nkitobirunot enkop) tenemishaakinore.

## Pembetatu ya Uumbaji wa Kibiblia



- 5
- Uelewa wa Wamaasai kuhusu ulimwengu—unaowakilishwa na kiti chenye miguu mitatu (*olarika*)—unafanana na uelewa wa kibiblia kuhusu ulimwengu unaoonekana katika “pembetatu ya uumbaji.”
  - Wasomi wa Biblia wanaita hii “pembetatu ya uumbaji,” ambapo amani (*shalom* katika Kiebrania cha Biblia) hutokana na upatanisho na Mungu, wanadamu, na uumbaji usio wa kibinadamu.
  - Amani (*shalom*) hutokana na kupatanishwa (katika uhusiano sahihi) na Mungu ambao huishi kwa amani na wengine (haki ya kijamii) na amani na uumbaji (utunzaji wa uumbaji/mazingira).
  - Kwa hivyo, mtazamo wa Kikristo wa ulimwengu unazingatia injili—habari njema inayowapatanisha watu wenye dhambi na wenye ubinafsi na Mungu Muumba.
  - Nguvu ya injili huwezesha mabadiliko tuliyojadili katika somo la kwanza.
    - Ubinafsi, kutojali na uchoyo vinasababisha mgogoro wa mabadiliko ya tabianchi.
    - Sayansi nzuri haitoshi. Maarifa hayatuwezeshi kushinda ubinafsi na uchoyo wa kibinadamu.
    - Tunahitaji kubadilishwa! Tunahitaji kuwa na maana na kusudi maishani ambalo si tu uchoyo wa kibinadamu, ulaji, na kufanya



## Ewunishu e Enkitobirunoto te Biblia

- Ore eyelounoto oo Irmaasai too m'baa olosho nitodolu olorika loo nkejek wuni (*olorika*)—nnyanyikie, eyelounoto te Biblia te nkipirata olosho elioo tiatua “ewunishu oo nkitobirunot,” naa wore eseriani, (*shalom*) tiatua Brania te Biblia) naa tenkaraki osotwa te Engai, iltung'anak, oo nkitobirunot neme iltung'anak.
- Ore Eseriani (*shalom*) naa osotwa nayau (tiatua osotwa osipa) te Engai naboitare oorkulie tung'anak te eseriani (haki olorere/oloshu) oo eseriani too nkitobirunot (erripoto oo nkitobirunot/enkop).
- Neeku, ore enkibirribirr e Kirisianishu to olosho nesujita ewangelion, orerei sidai oitutum/oitaki osotwa iltung'anak loong'ok (aing'okok), oo le makewon, oo Engai Alaitabirunoni.
- Ore en'golon e Wangelion neeu nkibelekenyat nekiimakitia te enkisoma engaiterr/edukya.
  - Ore orreje le makewon, nemishilaarisho, oo empiani neyau alarrabal loo nkibelekenyat orreje le enkop.
  - Ore sayansi sidai nemeidip. Midimie iyiook enkariyiano maisula makewon oo empiani etung'anishu.
  - Kiyeu nkibelekenyat! kiyeu nekitum em'barakinoto oo entilata te enkishui, ne mee empiani etung'anishu ake, daare, nekias m'baa

mambo yanayopata pesa nyingi lakini pia yanachangia gesi zinazoozongeza joto duniani na, hivyo, mabadiliko ya tabianchi.

- Kuishi kama watu wanaozingatia injili kunatupa kusudi maishani la kuleta mabadiliko.
- Roho Mtakatifu hutuwezesha sisi na jamii zetu za Kikristo kuishi kulingana na imani zetu za kibiblia kwa njia ya kuwa baraka kwa ulimwengu.
- Kama wafuasi wa Yesu, tunaishi kulingana na imani yetu—tukiwezesha na Roho Mtakatifu—katika kuwahudumia wengine (haki ya kijamii) na kuwahudumia viumbe (mazingira).  
**Waefeso 1:18–21** [Naomba hivyo] “macho ya mioyo yenu yatiwe nuru, mjue tumaini la mwito wake jinsi lilivyo; na utajiri wa utukufu wa urithi wake katika watakatifu jinsi ulivyo; na ubora wa ukuu wa uweza wake ndani yetu tuaminio jinsi ulivyo; kwa kadiri ya utendaji wa nguvu za uweza wake; aliotenda katika Kristo alipomfufua katika wafu, akamweka mkono wake wa kuume katika ulimwengu wa roho; juu sana kuliko ufalme wote, na mamlaka, na nguvu, na usultani, na kila jina litajwalo, wala si ulimwenguni humu tu, bali katika ule ujao pia...”

## Tazama Inaendelea: Tumaini

- 2
- Hivyo, tunaweza kukabiliana na changamoto za mabadiliko ya tabianchi kwa matumaini.
  - Kwanza, tunajua kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu, na Mungu hatauacha kamwe.
  - Pili, kama wafuasi wa Yesu Kristo, tumewezeshwa na Roho Mtakatifu kuwa baraka kwa wengine (haki ya kijamii) na uumbaji (mazingira).



naata mpesai/nkohola kumok kake, eponita sii orgesi oyau enkirowaj sapuk te enkop, oon kibebekenyat orreje le enkop.

- Tenekiaku tenkishui enaa iltung'anak oosujita ewangelion, nikitum entilata naayau nkibebekenyat.
- Idimie iyook oo olorere lang'le Kirisianishu Engiyang'et Sinyati pee kiaku enaa enayew inkirukoto aang' e Biblia nekiaku emayiani tolosho.
- Ore enaa ilairukok le Yesu, nekitii anaa enayew engirukoto aang'idimie iyook Engiyang'et Sinyati—kiretoki irkulikai, (haki oo lorereni) oo erripoto oo nkitobirunot (enkop).  
**Ile Efeso 1:18–21** “Aomon pee eitawang inkonyek oo Itauja linyi pee itumutumu aatayiolo ilo siligi oipotokoki intae, aatayiolo aajo kebaa ina golon enye nemetemayu naa ninye naasisho ti atua iyook iloiruko, te risioroto easata enkidimata enye kitok. Enapa nataasishore ti atua Kristo pee eitopiu aitung'uaa enkeeya neisho metotona te nkaina enye e tatene too wuejitin e shumata. Te ine eitore tukul pooki ootoreisho, o nkidimat pooki, o engolon e nkitoria, neitoreisho oleng te shumata pooki arna naipoti neme kuna ake e na kata kake o ne idia nalotu.”

## Ng'urai Ake: Osiligi

- Neeku, kiin'dim aataapare/airisha n'golikinot oo nkibebekenyat orreje le enkop to osiligi.
- Enaituruku, kiyielo aajo, ore Alaitobirani lang', Engai o Osiligi, enyorr olosho, nemeing'waa aikata Engai.
- Eneare, ore enaa ilairukok le Yesu Kristo, idimie iyook Engiyang'et Sinyati pee kiaku emayiani too irkulikai (haki olosho/olorere) oo nkitobirunot (enkop).

#### 4) KUTUMIA

kufanya au kutumia mafunzo

14 *Maswali ya majibu mafupi.*

- Kwa nini ni muhimu kudumisha mifumo ikolojia?
- Ninawezaje kuhifadhi maji katika mazingira yangu?
- Ni miradi gani ya urejesho ambayo naweza kujiunga nayo?
- Ninaweza kufanya nini ili kulinda wanyamapori katika eneo langu?

*Saidia mazungumzo kama vile:*

- Kushiriki katika miradi ya urejesho:
  - Miradi ya urejesho wa mifumo ikolojia inalenga kuimarisha uadilifu wa ikolojia na kuboresha ustawi wa mifumo ikolojia na jamii za wenyeji.
  - Mashamba na miti huchukua jukumu muhimu katika ufyonzaji wa kaboni na kutoa makazi kwa wanyama.
- Kuelimisha na kuongeza uelewa:
  - **Endelea kupata taarifa:** Jijulishe kuhusu masuala ya mazingira, desturi za uhifadhi, na maendeleo ya kisayansi yanayohusiana na mifumo ikolojia.
  - **Shirikisha maarifa:** Ongeza uelewa miongoni mwa familia yako, marafiki, na jamii kuhusu umuhimu wa kudumisha mifumo ikolojia na hatua wanazoweza kuchukua.
  - **Shiriki katika programu za elimu ya mazingira:** Saidia au shiriki katika mipango ya elimu ya mazingira katika eneo lako: mipango inayokuza uelewa wa ikolojia na kutoa mafunzo kwa jamii za wenyeji kuhusu masuala kama vile kilimo endelevu.

#### Uandishi wa nyimbo

Au 14 *Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni programu nzuri sana, inahitaji muda wa kutosha kuikamilisha vizuri.*

#### 4) EESISHOREKI

eesata arashu eesishoreki engiteng'ena

*Ingikilikwanat oo wolikinot dorropu.*

- Kanyoo tipat nayeu erripoto e ikolojia (en'chula oontokiting pookin)?
- Kaja aiko paa ashum/arrip engare te enkop aai?
- Kakwa miradini le enkitapuata enkop aidim aatijing'a?
- Kanyoo aidim aataasa pee arrip ngw'esi e enkop te enkop aai?

*Taretoki nkirorot nijo kuna:*

- Enkidikore oo irmuradini ootopok enkop:
  - Ore irmuradini ootopok m'baa e ikolojia (en'chula oontokiting pookin te enkop) netil pee eretoo aitagol enkishaa e ikolojia (en'chula oo pookin te enkop) oo empuan oo m'baa e ikolojio oo olosho loo iloopeny.
  - Ore nkurrman oo irmitii neeta eng'asiata e tipat eibibi kabon lowuarak manyisho.
- Enkiteng'ena oo emponota eyolounoto:
  - **Tonyorrai pee itum ilomon linteng'enwo:** ntayolo kewon m'baa enkop, mila erripore enkop, oo dupoto/maendeleo e sayansi naaipirita m'baa e ikoloji (en'chula oo ntokiting' pookin te enkop).
  - **Tang'arie irkulikai enkariyiano/eng'eno:** topono eyelounoto tiatwa armarei lino, ilchorweta, oo olosho esidano erripoto e ikolojia (en'chula oo ntokitin pookin te enkop) oo m'baa naaidim aataas.
  - **Tijin'ga aatwa irmudadini le enkiteng'ena oo m'baa enkop:** Taretoki arashu tijing'a aatwa nkidan'yat enkiteng'enwo oo m'baa enkop tewueji/te enkop ino: Nkidan'yata naaponaa eyelounoto e ikolojia nitau enkiteng'ena too loopeny enkop anaa enturore nabikoo.

#### En'dungunoto/Enkitobirata oo Sinkolioitin

*Ore ena siai neidim aawa ildakikani tomon metabaiki tomon oo imiet (10–15). Neeku, ore enaake engiteng'ena/ormuradi sidai naleng', eyieu enkata naishaakinore naidipieki esidai.*

## Women / Wanawake

- Kila kikundi kidogo: Tengeneza maneno kwa ubeti mmoja wa wimbo kuhusu maarifa na desturi za kitamaduni za kimazingira za Wamaasai ambazo pia ni njia bora za kupunguza mabadiliko ya tabianchi. Tumia sauti ya kawaida inayojulikana na wanawake wengi. Wimbo wa Wamaasai wa kupokezan unaweza kuwa njia nzuri ya kuanzia. Kisha, kila kikundi kiimbe ubeti wao.
- Ore kila olturrurr kiti: Tudungu/ntobiru orbiti obo lo osinkolio oitodolu enkariyiano orkwaak le mila te enkop oo Irmaasai naara sii nkoitoi sidan naaitongorr' nkibeleyenat orreje le enkop. Taranye to-oltoilo otamoo nkitwaak kumok. Ore osinkolio loo Irmaasai ong'amakinoi neidim aataa enkoitoi sidai ninterunyene. N'choo erany kila oturrurr orbiti lenye.

1

**Maombi**

**Enkomono**

60

**Mwisho wa Somo**

**Engiting'oto Osomo/Enkisoma**

## 8. Women's Groups Lesson 3: Kiswahili/Maa

### Integrating Climate Science

# Kuunganisha Sayansi ya Tabianchi katika Muktadha wa Wamaasai Enkidikidikoto e Sayansi Orreje le Enkop to-Rkwaak loo Irmaasai

**Hoja Kuu**  
Enkironoto kitok

Kuunganisha sayansi ya tabianchi—ambayo inafaa kwa muktadha wa Wamaasai—kunaweza kusaidia kuzuia na kukabiliana na changamoto zinazotokana na mabadiliko ya tabianchi.



Enkidikidikoto e sayansi orreje le enkopnanare torkwaak lo Irmaasai — iidimaataretoki aiboo n'torrok— naapukunye nkibelekenyat orreje le enkop.

Matokeo ya Kujifunza

Kama matokeo ya somo hili, mwanafunzi atafanya yafuatayo:

Ore ntilat ena kisoma naa pee iidim oloiteng'eni aataasa kuna:

Kujua



### Sayansi ya tabianchi

- **Mapitio:** Kuelewa dhana kuu za sayansi ya tabianchi, yaani, mabadiliko ya tabianchi, athari athari ya blanketi, gesi zinazosababisha ongezeko la joto duniani zinazosababishwa na binadamu na athari zake kwa mifumo ikolojia na wanadamu.
- **Mapitio:** Elewa athari kuu za mabadiliko ya tabianchi kwa mifumo ya ikolojia na binadamu
- Fahamu tofauti kati ya kupunguza mabadiliko ya tabianchi (kinga) na kukabiliana nayo (kupunguza hatari ya athari mbaya).
- Elewa kanuni kuu za ufugaji endelevu.



### Wamaasai

- Fahamu mbinu bora za kukabiliana nayo zinazofaa kwa muktadha wa jadi ya Wamaasai.
- Fahamu mbinu bora za kukabiliana nayo kwa ajili ya ustahimilivu unaofaa kwa muktadha wa jadi ya Wamaasai.
- Fahamu changamoto zinazoendelea katika muktadha wa Wamaasai.



### Sayansi Orreje le Enkop

- **Nkiimat:** eyolounoto oo m'baa sapukin e sayansi orreje le enkop, enaa, nkibelekenyat orreje le enkop, entorroni nayau irgesii torrok (entorroni orbiranketi), irgesii oitaa sapuk em'ponoto engirowuaj te enkop naa iltung'anak ooyau oo n'golikinot enyena too m'baa pookin oo iltung'anak.
- **Nkiimat:** Tayelo n'golikinot sapukin oo nkibelekenyat orreje le enkop too m'baa pookin oo iltung'anak.
- Tayelo empaashata natii, tenkitong'orata oo nkibelekenyat orreje le enkop (enkibooroto) oo enkirishata (enkitong'oroto oo n'golikinot torrok).
- Tayelo nkoitoi sapukin eramatara nabikoo.

### Irmaasai

- Tayelo nkoitoi sidan enkirishata naaishaakinore torkwaak le asili oo Irmaasai.
- Tayelo nkoitoi sidan enkirishata tenkaraki orng'iria oishaakinore torkwaak le asili oo Irmaasai.
- Tayelo n'golikinot neton etii tiatua orkwaak loo Irmaasai.

### Pembetatu ya Uumbaji wa Biblia

- Elewa jinsi sayansi ya tabianchi inavyoweza kusaidia utunzaji wa uumbaji katika mapana yake ya kiroho na kimaadili ya uwakili wa mazingira yalivyoelezwa katika mafundisho ya Biblia.



### Tumaini

- Elewa kwamba wanasayansi wa tabianchi na wanamazingira wana matumaini kwamba juhudi za binadamu zinaweza kupunguza mabadiliko ya tabianchi, ambayo huhimiza matumaini.
- Fhamu maandiko muhimu ya Biblia yanayofundisha kwamba Mungu ameahidi kutowahi kuuacha uumbaji na kwamba hatimae uumbaji utapatanihwa na kurejeshwa kikamilifu.
- Tambua kwamba juhudi zetu za kushughulikia mabadiliko ya tabianchi ni sehemu ya shughuli inayopelekea hatima yenye tumaini kutoka kwa Mungu huku tukiwa waaminifu kwa agizo la Mungu la kutunza uumbaji.



### Ewunishu oo Nkitobirunot e Biblia

- Tayelo eniko sayansi orreje le enkop teneret erripoto oo nkitobirunot tiatua elalai enye oo ltauja oo rkwaak sidai too m'baa enkop enaa enalimuno too nkiteng'emat e Biblia.

### Osiligi

- Tayelo aajo ore ilang'eni le sayansi orreje le enkop oo lang'eni le enkop neeta osiligi aajo ore ny'waat oo iltung'anak neidim aaitong'oro nkibeleyenat orreje le enkop. Naake eyau osiligi.
- Tayelo irkigerot letipat le Biblia oo iteng'enisho aajo ming'waa aikata Engai nkitobirunot neeku ore nkitobirunot neitutumi nitopoki tesidano.
- Tayelo aajo ore nywaat ang' eepareto oo nkibeleyenat orreje le enkop naa tenebo oo m'baa naayau osiligi oing'waa Engai tenebo oo tenekiaku asipak torkilikwai le Engai lerripoto oo nkitobirunot.

### Hisi



- Wamepewa maarifa yanayofaa.
- Wamewezeshwa kupitia maarifa ya kupunguza na kuhimili mabadiliko ya tabianchi katika ardhi ya Wamaasai.
- Wana hamu ya kuleta mabadiliko.
- Wana wajibu wa kusababisha mabadiliko mazuri.
- Wana matumaini kwa mustakabali wao, kwa sababu Mungu anaupenda ulimwengu na hatauacha kamwe.

- Ishooki enkariyiano nanare.
- Idimieki tiatua enkariyiano enkitong'oroto oo rng'iria loo nkibeleyenat orreje le enkop te enkop oo Irmaasai.
- Eeta esirai peeyau nkibeleyenat.
- Ishaakinore pee eyau nkibeleyenat sidan.
- Eeta osiligi too m'baa enye, amuu enyorr Engai olosho nemeing'waa aikata.

### Fanya



- Chora jedwali lenye safu mbili na ibainishe baadhi ya mbinu bora za kupunguza mabadiliko ya tabianchi kwenye safu moja na za kukabiliana na hali kwenye safu ya pili (njia zinazofaa katika muktadha wa Wamaasai).
  - Bainisha njia 3 zinazofaa ambazo mtu anaweza kuleta mabadiliko katika kupunguza mabadiliko ya tabianchi (kupunguza) katika muktadha wa kitamaduni wa Wamaasai.

- In'geru isirat oojing m'bat are, nisirr matwa oo m'baa sidan naaitong'orr nkibeleyenat orreje le enkop tem'bata nabo, oo nenkirishata tengkayi bata (nkoitoi naaishaakinore torkwaak loo Irmaasai).
  - Tolimu nkoitoi wuni naaishaakinore naaidim oltung'ani aayau nkibeleyenat tiatua enkitong'orato oo nkibeleyenat orreje le enkop (enkitong'orata) tiatua orkwaak le asili oo Irmaasai.

**Vifaa vya Kufundishia Vinahitajika**

- Michoro ya mabadiliko ya tabianchi
- Picha ya athari ya blanketi kwenye ubao wa karatasi au karatasi kubwa
- Ubao wa karatasi au ubao wa kawaida

**Eyewuni Inareta Naaiteng'enishoreki**

- Impichai oo nkibelekenyat orreje le enkop
- empicha entorroni irgesii torrok/orbiranketi torkibao le nkardasi arashu enkardasi sapuk.
- Orkibao lenkardasi sapuk arashu orkibao orok

**Vifaa vya Wanafunzi / Vipeperushi vya Karatasi**

- Ubao wa karatasi au karatasi kubwa na kalamu za alama

**Inareta oo Looiteng'eni/Ingardasini Kunyinyi**

- Orkibao le enkardasi arashu empalai sapuk oo arkalamu osirishoreki

Dakika

**Maudhui**



**1) NDOANO**

kupata usikivu

8 *Wanafunzi wanapaswa kuunda vikundi vidogo na kujadili kwa dakika 2.*

- Bainisha athari za mabadiliko ya tabianchi zilizotokea katika mazingira yao ya Asili.
- Linganisha mazingira wakati wa utoto wao na hali ya mazingira ya sasa.

*Mmoja kutoka kila kundi anapaswa kuwasilisha uchunguzi mmoja mbele ya darasa. Kila mtoa mada anapewa dakika 1.*

*Jaribu kupitia hili haraka sana, kwani hili linajadili kile tunachokijua tayari, ili kutoa muda zaidi wa kukuza maarifa mapya.*

**Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)**

- 1
- Kutokana na maoni yaliyoshirikishwa, ni wazi kwamba kuna mabadiliko makubwa katika mazingira yetu, jambo ambalo huathiri vibaya mtindo wetu wa maisha wa kitamaduni.
  - Kupitia mitazamo ya kisayansi sasa, hebu tuone kinachotokea kwa mazingira yetu. Maarifa haya yatatuwezesha kuelewa vyema kinachoendelea nje ya muktadha wetu na kuathiri hata katika ardhi yetu.

**Enaiteng'enuoi**



**1) ALTARGE**

entumoto olning'o

*Ishaakinore ilooiteng'eni piitobirr ilturrurri kutiti neimaki kuna baa tooldakikani aare.*

- Nelimu n'golikinot oo nkibelekenyat orreje le enkop naatupukutuo tiatua enkop enye e asili.
- Nitanyanyuk enkop tenkata aakutiti/tem'bulunoto enye oo tenarishata etaata.

*Kila olturrurr neyieuni peeta oltung'ani obo olikioo nena baa taldarasa pookin taldakika obo.*

*Tanywaa iimai kuna aaseki naleng' aamuu kin'dipa aing'urai kuna baa metaa kiyiolo, pee kitum enkata neking'uraa enkariyiano ng'ujuk.*

**Ilomon lenkidikidikoto (enkidikidikoto Altarge oo Em'bae Kitok)**

- Ore Enaa n'dwaat nekitoning'o, nibala aajo etii nkibelekenyat sapukin aatwa enkop ang' em'bae naakee eyau en'golikinoto torrono tenkishon easili.
- Ore enaa n'dwaat e sayansi taata, matodol siyie nena naaidim aatupuku tiatua enkop aang'. Ore ena arriyiano nidimie iyook matayielo esidai nena naatii bata orkwaak lang' naaidim aayau n'golikinot tiatua enkop ang'.

- Katika somo la kwanza, tulikumbushwa agizo la Mungu kwa wanadamu la kutunza uumbaji wa Mungu. Katika somo la pili, tulitambua jinsi maarifa ya jadi ya mazingira ya Wamaasai na ufugaji endelevu vinavyoendana na maagizo ya Mungu ya kutunza uumbaji. Katika somo hili, tutazingatia sayansi ya tabianchi kwa njia mbili.
  - Kwanza, tunaona kwamba ufugaji endelevu unaendana na uhifadhi na sayansi ya tabianchi kwa njia nyingi.
  - Pili, tutaangalia jinsi ambavyo tunaweza kupanua maarifa yetu ya kitamaduni kupiti taarifa kutoka kwa wanasayansi ili kutusaidia kukuza njia za kupunguza athari za mabadiliko ya tabianchi na jinsi ya kupunguza hatari ya athari mbaya ambazo tayari tunazipata.

- Ore tiatua enkisoma naiturukwo, nitadamwaki iyook orkilikwai le Engai toltung'anak lerripoto oo nkitobirunot Engai. Ore tenkisoma eare, nekitadua eniko enkariyiano easili enkop oo Irmaasai oo eramatare nabikoo eniko enenyanyuk oo orkilikwai le Engai lerripoto oo nkitobirunot. Ore tenakisoma, neking'uraa sayansi orreje le enkop toonkoitoi are.
  - Enaituruku, kidolita aajo ore eramatare nabikoo nepuo tenebo oo erripoto oo sayansi orreje lenkop toonkoitoi kumok.
  - Ore eniare, king'uraa enekingo pee kintalala enkariyiano aang' easili naimu ilimunot oo iltung'anak le sayansi peeretoki iyook peekishumu nkoitoi naaitong'orr n'golikinot naayau nkibeleyenat orreje lenkop oo ene kingo tenikintong'orr n'golikinoto nekin'dipa aainoto.



- 18 *Maelezo ya kufundisha: Uliza maswali 7 yafuatayo na uongoze majadiliano, ukijaza nafasi zilizowazi na maudhui yaliyo hapa chini. Katika somo la dakika 60, kila kitu hakiwezi kujumuishwa. Taarifa zaidi zimetolewa hapa ili kumjulisha mwalimu. Wastani wa dakika 3 kwa kila swali kati ya maswali 6 ya kwanza; #7 ina dakika 10.*

- Irkiliku lengiteng'ena: Nkilikwanu irmaswali naapishana ootii ene nirikoo ilo turrurr, niim'put iwuejitin nemesira toom'baa naatii aabori tene. Ore tenkisoma oo ldaikani ntomoni ile, meidimi aaimaki m'baa pookin. Itawuoki orkilikwai tiabori tene piiliki alaiteng'enani/armalimui.*

## Sayansi ya Tabianchi: Kupunguza na Kukabiliana na Mabadiliko ya Tabianchi



Tuanze na marudio ya dhana kuu ihusuyo mabadiliko ya tabianchi.

### 1. Mabadiliko ya tabianchi ni nini?

- **Marudio:** Mabadiliko ya tabianchi hurejelea mabadiliko ya muda mrefu katika hali ya joto, mvua, mifumo ya upepo, na vipengele vingine vya mfumo wa tabianchi wa Dunia. (Dhana muhimu!)

## Sayansi Orreje le Enkop: Engitong'orata oo Enkirishata oo Nkibeleyenat Orreje le Enkop

Maiteru oo ngigilat em'bae sapuk naipirita nkibeleyenat orreje le enkop.

### 1. Kanyoo nkibeleyenat orreje le enkop?

- **Iimai:** Ore nkibeleyenat orreje le enkop naa nkibeleyenat engata naado tengata enkima/enkirowuaj, enchan, nkataitin osiwuo, oonkulie baa pookin orreje le enkop tolosho. (Em'bae etipat!)
- Eeta ilang'eni le sayansi wasiwasi aamu ore orreje le enkop naakibeleyenya te enkop pookin.

- Wanasayansi wa tabianchi wana wasiwasi kwa sababu tabianchi inabadilika kote duniani
- Mchakato au tukio lolote linalozalisha tofauti katika mfumo wa tabianchi linaweza kusababisha mabadiliko ya tabianchi. Mojawapo ya matukio hayo ni kama vile milipuko ya volkeno.<sup>1</sup>
- Wakati utafiti wa kisayansi unaonyesha tabianchi imebadilika kwa maelfu ya miaka, dunia inazidi kuwa na joto na kasi zaidi kuliko wakati mwingine wowote katika historia ya Dunia.<sup>2</sup>
- Sasa, sababu kuu ya mabadiliko ya tabianchi ni matokeo ya shughuli za kibinadamu. Hii inaitwa “mabadiliko ya tabianchi yanayosababishwa na binadamu.”<sup>3</sup>

## 2. Tofauti kati ya hali ya hewa na tabianchi ni ipi?

- **Hali ya hewa** “ni ya ndani na ya muda. Hali ya hewa hutokea kwa wakati na mahali fulani...”
- **Tabianchi** “inaelezea hali kwa muda mrefu na kwa eneo zima. Tabianchi ni **kwa mtazamo mpana**. Ni mtazamo mpana wa halijoto, mvua, upepo na hali zingine katika eneo kubwa na muda mrefu zaidi kuliko hali ya hewa ya kila siku.”<sup>4</sup>
- Sasa, nitawapa hali fulani, na nyote mniambie kwa kila moja kama inahusiana na hali ya hewa au tabianchi.
  - Kulikuwa na mvua ya 13 mm jana. [Hali ya hewa]
  - Wastani wa halijoto ya juu ya Arusha katika mwezi wa Januari katika kipindi cha miaka 25 iliyopita ni nyuzi joto 28. [Tabianchi]
  - Wastani wa mvua huko Arusha kwa mwezi wa Aprili ni 360 mm. [Tabianchi, kwa sababu ni wastani wa hali ya hewa kwa miaka mingi.]
  - Wiki iliyopita, wastani wa halijoto ya juu ulikuwa nyuzi joto 28. [Hali ya hewa]
  - Wastani wa mvua ya kila mwaka ya Arusha ni 1,180 mm. [Tabianchi, kwa sababu ni wastani wa hali ya hewa kwa miaka mingi.]
  - Kasi ya wastani ya upepo jijini Arusha jana ilikuwa kilomita 5 kwa saa. [Hali ya hewa]

- Ore esiaai arashu em’bae akeyie naitu empaashata tiatua m’baa orreje le enkop neidim aayau nkibelekenyat orreje le enkop.
- Ore nabo enana baa naa engiswakunye nkuruon e folkeno.<sup>1</sup>
- Ore egira en’jurrore e sayansi aitodolu nkibelekenyat orreje le enkop toongalifuni oo larin, neeku ketum dunia enkirowuaj oleng’ aalang’ nkataitin pookin enaa enaiteru enkop.<sup>2</sup>
- Neeku, ore enkipirata sapuk oo nkibelekenyat orreje le enkop naa ngiasin oo iltung’anak naayau. Ore ena naakeji “Ingibelekenyat orreje le enkop naayau nkiasin ooltung’anak.”<sup>3</sup>

## 2. Kanyoo naitoorr orreje le enkiyape oo orreje le enkop?

- **Ore orreje le enkiyape** “naa eniatwa, tengata dorrop. Ore orreje lenkiyape naakepuku tengata oo tewueji neje...”
- **Orreje le enkop** “akelikioo em’bae tengata naado naa tewueji pookin. Ore orreje le enkop naa **ten’dapasho**. Elalai oo m’baa enkima/ engirowuaj, enchan, osiwuo, oo nkulie baa tiatua ewueji sapuk tengata naado oleng’ aalang’ orreje le enkop loongolong’i pookin.”<sup>4</sup>
- Neeku, aliki n’tai kunabaa, nekijokiki pookin aajo kaamatwa anabo ipirita, ke enkiyape enake orreje le enkop.
  - Etii ng’ole enchan enkadoro nabaya 13 te enkipimata. [Orreje lenkiyape]
  - Ore eneba enkata enkima talapa liobo toltiren loolarusa toolarin tikitam oimet oima naa erishata nabaya tikitam oisiet. [Orreje le enkop]
  - Ore eneba enchan toltirren loolarusa talapa liong’wan naa engadoro oolakin wuni oo ntomoni ile. [Orreje le enkop, amuu orreje lenkiyape toolarin kumok.]
  - Ore en’da jumaa natulusoiye, eneba enkima/engirowuaj naa tikitam ooisiet. [Orreje lenkiyape enkop]
  - Ore eneba enchan toolarin pookin toltiren loolarusa naa engalifu nabo, oo elaki oo ntomoni isiet. [Orreje le enkop, amuu ake orreje lolaing’ang’e toolarin kumok.]
  - Ore eneba osiwuo toltiren loolarusa ng’ole naa engadoro oo rarwat imiet tesaa nabo. [Orreje lenkiyape]

### 3. Chanzo kikuu cha mabadiliko ya tabianchi ni nini?

- “Njia kuu inayofahamika ambayo kwao binadamu wanaathiri hali ya hewa ni kwa kutoa gesi zinazoshikilia joto hewani.<sup>5</sup>
- Gesi hizi huitwa gesi zinazoongeza joto la dunia kwa sababu gesi hizi hukusanyika angani na kunasa joto ambalo kwa kawaida hupanda angani. Kwa hivyo, hupasha joto uso wa dunia.
- Tunaweza kufananisha gesi hii kama blanketi linalotupa joto, kwa hivyo tunaweza kufananisha kama blanketi linaloipa Dunia joto.

*Onyesha picha au chora picha rahisi ya athari ya chafuzi/blanketi kwenye ubao mweusi—kulingana na picha iliyo hapa chini.*

### Athari ya Blanketi kwa Ongezeko la Joto la Dunia

1. Mionzi mingi hufyonzwa na uso wa dunia na kuipasha joto.
2. Baadhi ya mionzi ya jua huakisiwa na dunia na angahewa.
3. Baadhi ya mionzi ya infrared hupita kwenye angahewa. Baadhi hufyonzwa na kutolewa tena pande zote na molekuli za gesi zinazoongezeka kwa joto duniani. Athari ya hii ni kupasha joto uso wa dunia na sehemu ya chini ya angahewa.
4. Mionzi ya infrared hutolewa na uso wa dunia.

*Tazama jalada la kitabu hiki upande wa nyuma.*

### 4. Vyanzo vya gesi zinazoongeza joto duniani ni vipi?<sup>6</sup>

- Gesi kuu zinazoongeza joto duniani zinazosababishwa na binadamu:
  - **kaboni dioksidi** (CO<sub>2</sub>) huzalishwa kwa kuchoma mafuta ya visukuku, kama vile makaa ya mawe na petroli katika magari.
    - Na hata kuchoma chupa za plastiki za maji!



### 3. Kanyoo sapuk naye nkibelekenyat orreje le enkop?

- Ore enkoitoi sapuk nayioloi naa ninye eyaunye iltung'anak en'golon/entorroni orreje lenkijape naa enkitaunoto em'puruo torrono naake iibung' enkima/irgesii torrok tolaing'ang'e.<sup>5</sup>
- Ore kulo gesii naakeji irgesii oopon enkima/enkirowuaj tolaing'ang'e amuu akiturrurro tolaing'ang'e newuap enkima naakiilep oshiaake shumata. Neeku, iilang'/epej engomom enkop.
- Kiin'dim aitanyanyikie kulo gesii oo orbiranketi oisho iyook enkirowuaj, metaa kiin'dim aitanyanyikie enaa orbiranketi oisho enkop enkirowuaj.

*Intodolu empicha arashu iin'gerr empicha nalelek naitodolu ina torroni torkibao enaa enetiu enapicha natii aabori.*

### Inaayau Orbirangeti te Emponata Enkirowuaj e Dunia

1. Ore ngilang'at kumok naake ibibi olchoni le enkop nirowuaje.
2. Ore matwa oo ngilang'at engolong neshuki te enkop oo alaing'ang'e.
3. Ore matwa engilang'ata nado niim aatwa enkijape olaing'ang'e. Ore matwa neibibiy neinyaakini aita too mm'bat pokira oo irgesii torrok. Ore enayau ena naake ake lang'ilang'/irowaje olchoni le enkop oo ewueji eabori olaing'ang'e.
4. Ore engilang'ata nado nitau olchoni le enkop.

*Ng'urai en'jalada te syadi ena kitabu.*

### 4. Ntokiting naayau irgesii torrok oopon enkirowuaj te enkop?<sup>6</sup>

- Irgesii oopon enkirowuaj te enkop naaltung'anak ooyeu:
  - **Kabon** (CO<sub>2</sub>) orgesi itobiruni tenkaraki empejore iila niyo nkuk-soitok, oo petroli oo motokaani/n'garrimi.
    - Tenebo oo empejore ilchupai loo ngariak!

- **Uzalishaji na uchomaji wa plastiki hutengeneza 5% ya gesi zinazoongeza joto duniani kote.**
- Nusu ya plastiki hii ni plastiki zinazotumika mara moja, ambazo zinapaswa kuepukwa.
- Kumbuka kwamba **kuchoma chupa za plastiki hutoa kemikali zenye sumu ambazo ni mbaya sana kwa wanadamu na mazingira** (tazama Nyenzo za Somo la 3).<sup>7</sup>

*Zingatia matatizo ya plastiki, hasa chupa za plastiki, kwani ni rahisi kubadilika na kuacha matumizi yake, na kwa sababu plastiki ni sumu sana kwa afya ya binadamu na mazingira. Zaidi ya hilo kuna kemikali zenye sumu ambazo hutoka kwenye chupa za plastiki pamoja na chembe ndogo na nanoplastiki ambazo matokeo yake zinapatikana katika viungo vyote vya binadamu ikiwa ni pamoja na ubongo wa mtu aliyetumia chupa za plastiki. Muhtasari: epuka plastiki kwa sababu nyingi!!!*

- **Methane** (CH<sub>4</sub>) huzalishwa na kilimo cha kisasa, kama vile gesi ya ng'ombe, na biomasi inayowaka. Ingawa si ya kawaida kama kaboni dioksidi, methane ina nguvu zaidi ya mara 30 katika kunasa joto.
- Kuna gesi na vitu vingine vya kiasili vinavyosababisha joto duniani. Hizi ni pamoja na:
  - Mvuke wa maji (H<sub>2</sub>O) husababishwa na uvukishaji wa mvua au njia za mvuke ambazo ni mawingu ya ubeti ulionyooka yanayofuata ndege yanayosababishwa na moshi wa injini au mabadiliko katika shinikizo la hewa; na
  - Majivu ya volkeno, yanayosababishwa na mlipuko wa volkeno.

### **5. Je, ni madhara gani ya msingi ya mabadiliko ya tabianchi?<sup>8</sup>**

- Joto lililokwama angani kutokana na gesi zinazozalishwa na binadamu zinazosababisha ongezeko la joto duniani husababisha dunia kupata joto. Dunia yenye joto zaidi husababisha matatizo.
- Hapa chini kuna makundi 4 ya matatizo, ingawa athari zinaweza kuingiliana katika kundi moja au zaidi.

- **Ore enkitobirunoto oo empejore oo mpirai oo nkariak neitobirr asilimia imiet oorgesii/enkijape napon enkirowuaj te enkop pookin.**
- Ore matwa enena pirai naampirai naa nabokata ake eesishoreki, naake ishaakinore pee epaashareki.
- **Tadamu aajo ore empejore oo mpirai nitau isayieti torrok oleng' too iltung'anak oo te enkop** (ng'urai enkisoma ewuni).<sup>7</sup>

*Tayelo enyamali oompirai, aaisulu ilchupai loongariak, amuu elelek piibelekenya ning'waa engiaas enye, naa tengaraki sii eesayiet naleng' tooltung'anak oote enkop. Ore sii engay naaisul ina etii kemikali naata esayet naing'waa impirai oonkariak naake ore entorroni enye netumi tiatua irubat pookin oltung'ani naa tenebo ooelukunya oltung'ani ataasishore mpirai oonkariak. Tipat: tapaashare mpirai tengaraki entorroni sapuk!!!*

- **Methane** (CH<sub>4</sub>) Itobiruni te enkata enturore ekisasa, nijo orgesi oitau ingishu, oo enake metiu enaa orgesi le kabon, ore methane neeta en'golon nalang' aigil osom (30) tenkibibiyaata enkirowuaj.
- Etii irgesii oo nkulie baa tokitin easili naayau enkirowuaj te enkop. Naa Tenebo oo kuna:
  - Engiroebuk e engare (H<sub>2</sub>O) ore orpukunei lenye naa empuruo enkare enchan arashu enkoitoi empuruo naa ngatambo orbeti oitoriori osuj enteke nayau empuruo e injin arashu nkibelekenyat tiatua erogonyata enkijape; oo
  - Nkuruone folkono nayau enkima naiswaunye tiatwa engop/oldonyo).

### **5. Kanyoo entorroni naibala oo nkibelekenyat orreje le enkop?<sup>8</sup>**

- Enkima/enkirowuaj natuune tolaing'ang'e nayau empuruo naitau iltung'anak naayau emponoto enkima te enkop ninye nayau enkirowuaj/enkima oleng' te enkop. Ore enkop nairowua naleng' neyau ntorrok kumok.

**1. Matukio ya hali mbaya ya hewa**

- Mawimbi ya joto
- Ukame katika baadhi ya maeneo na ongezeko la matuta ya mchanga
- Mafuriko na mmomonyoko wa udongo katika maeneo mengine
- Vimbunga vikali na typhoons, ambavyo hutokea mara kwa mara na kwa nguvu zaidi kutokana na maji ya bahari yenye joto zaidi

**2. Athari kwa binadamu**

- Njaa na ukosefu wa usalama wa chakula, kutokana na ukame na mafuriko yanayoharibu mazao
- Uhaba wa maji safi
- Matatizo ya kiafya, kama vile malaria na magonjwa mengine yanayotokana na mabadiliko ya tabianchi na hali mbaya ya hewa husababisha magonjwa ya kupumua
- Msongo wa joto la muda mrefu na wenye joto kali zaidi kuliko kawaida husababisha: Matatizo ya kiafya yanayohusiana na joto, hasa kwa wanawake wajawazito na wazee, na vifo kwa watu walio katika mazingira magumu, hasa wagonjwa na wazee pamoja na mifugo
- Uharibifu wa nyumba, kutokana na mafuriko na vimbunga
- Uhamiaji au “wakimbizi wa mabadiliko ya tabianchi” kutokana na uhamiaji unaosababishwa na ukosefu wa maji, kwa mazao, hali mbaya ya hewa, n.k. hivyo, mabadiliko katika upatikanaji wa riziki
- Changamoto za haki za ardhi/umiliki wa ardhi.
- Kemikali zenye sumu na uzalishaji wa CO<sub>2</sub> kutokana na plastiki zinazoungua

**3. Athari kwa mifumo ikolojia**

- Afrika inatarajiwa kuongezeka joto mara 1.5 zaidi kuliko wastani wa kimataifa unaoathiri mifumo ikolojia na maliasili.
- Uharibifu wa maeneo ya malisho ikiwa ni pamoja na spishi vamizi
- Kuongezeka kwa viwango vya bahari, kutokana na kuyeyuka kwa barafu kwenye ncha za Kaskazini na Kusini za dunia na

- Etii aabori tene ilturrurri oong'wan lentorrone, oo enake iin'dim ntorrok aataa nabo tolturrurr obo arashu olikai.

**1. M'baa orreje torrone le enkop**

- Orkutati le enkirowuaj
- Alamei too kulie wuejitin oo emponata oo wululuni osunyai.
- Enang'unoto oo nkariak oo em'bobolata oo nkulukok too kulie wuejitin
- Isiwoitin sapukin oo typhoons, naake epuku aigiligil naa tesapuko oleng' tenkaraki engare enaipasha/arbabal nairowua oleng'

**2. Entorrone too iltung'anak**

- Esumash oo elaunoto oo n'daikin, tengaraki ilameitin oo enang'unoto oo nkariak naayau enginyala toon'daikin
- Enginyishu/elaunoto engare sidai
- Imueyiaraitin, nijo engajang'ani oo nkulie naapukunore nkibelekenyat orreje lenkop oo enkijape torrone tolaing'ang'e neyau imueyiaratin oo ngiyang'at
- Enkirowuaj sapuk engata naado oleng' aalang' sii naa keyau: imuyieratin naaipirita enkirowuaj, aisulaki nkitwaak/ntwaan oorpayiani, oo engeeya toltung'anak ootii nkwapi naagol, nisulaki iltamueyia oo irrpayiani tenebo oo eramatare
- Enginyalare oo ngajjik, torbae loo ngarika sapukin naanang'ari oo osiwuo
- Enkidurrakinoto arashu “ilaisikak loo nkibelekenyat orreje lenkop” tengaraki enaidurra nayau elaunoto oo nkariak, toon'daikin, orreje torrone lenkop, n.k. neeku nkibelekenyat ten'tumoto oon'daikin
- En'goloto e haki enkop/enkibung'ata enkop
- Kemikalini naata isayieti oo enkitobirunoto orgesi le kabon (CO<sub>2</sub>) torbae loo mpirai naaikita/naatapejoki

**3. En'golon te ikolojia**

- Ore te Africa ejoitoo epona enkirowuaj aigil nabo oorpisiai (1.5) oleng' aalang' emponanta oo nkwapi pookin ,neyau en'golon too ntokiting' pookin oom'baa oo n'dupot e asili.
- Enginyalare oo n'n'daat e eramatare

milima mingine ya barafu, kunaharibu jamii za pwani na baadhi ya visiwa, kama vile Visiwa vya Marshall, Kiribati, Tuvalu, na Maldives.

**4. Athari kwa usalama wa taifa**

- Migogoro itaongezeka kutokana na rasilimali asilia chache, ndani ya maeneo ndani ya nchi na kati ya mataifa.
- Mito na maji yake ya thamani mara nyingi ni rasilimali za pamoja kati ya maeneo na mataifa. Maeneo ya mwisho ya mito yatapata maji kidogo.
- Ingawa mgogoro mwingi wa tabianchi umesababishwa na maeneo makubwa ya viwanda kama vile Ulaya, Marekani, na China, nchi maskini zaidi—kama Tanzania—zitaathiriwa zaidi!
  - Sababu moja ni kwamba Waafrika wengi wanategemea rasilimali asili kwa ajili ya riziki zao.
  - Kwa bahati mbaya, nchi maskini zaidi—ambazo zitaathiriwa zaidi—zina kiasi kidogo cha rasilimali za kudhibiti athari hizo!

**6. Tofauti kati ya kupunguza na kukabiliana na hali ni ipi?<sup>9</sup>**

- Hatua za kupunguza hali ni zile hatua zinazochukuliwa ili kupunguza uzalishaji wa gesi unaotokana na ongezeko la joto duniani.
- Mbinu za kuhimili mabadiliko ya tabianchi zinatokana na kupunguza hatari na urahisi wa kuathirika kwa binadamu na mazingira.
- Hivyo, kukabiliana na hali kunalenga kupunguza sababu za mabadiliko ya tabianchi, huku kukabiliana na hali kunalenga kuwafanya watu wawe na ustahimilivu zaidi au wasiwe na hatari kubwa kutokana na athari za mabadiliko ya tabianchi.

- Emponata enaipasha, tengaraki nehola orbarafu te kopkop oo moikuape olosho ool'donyo kulie, eyau enginyala toom'bat oo nkulie wuejitin, nijo nkisiwani e Marshall Islands, Kiribati, Tuvalu, oo Maldives.

**4. En'goloto te seriani olosho pookin**

- Epono ilarrabali torbae eeku dupoto easili kuti, tiatua iwuejitin, tiatua enkop oo tooloshon.
- Ore irkejek oo engare enye easili naa dupore enaboishu too wuejitin oo tooloshon. Ore iwuejitin naabayie too rkejek netum engare kinyi.
- Oo enakee ore empukunoto oo larrabali kumok lo orreje le enkop naa tengaraki iwuejitin sapukin oo nkiwandan nijo idialo oo looiborr, Marekani, oo China, ore olosho menat oleng'—nijo Tanzania—negoliki oleng'!
  - Ore sababu nabo naa tengaraki ore iltung'anak le Africa kumok ning'orita n'dupot easili torbae loon'daikin enye.
  - kake ore iloshon menat oleng'—naake etum n'golikinot oleng'—neeta nareta kunyi (en'golon kinyi) naaretoki mirisha nena golikinot!

**6. Kanyoo naitoorr engitong'orata oo enkirishata orreje?<sup>9</sup>**

- Ore nkoitoy naaitong'orr naa nkoitoy naasi pee itong'ori empuruo nayau emponoto enkirowuaj tolosho.
- Ore nkoitoy naairishieki nkibelekenyat orreje le enkop naakepukunore engitong'orata entorrone oo eleleki entumoto entorrone tootung'anak oo enkop.
- Neeku, ore enkirishata enye naakipirita engitong'orata oo nkibelekenyat orreje le enkop, ore enkirishata naa eretokinoto oo iltung'anak midima aating'iria arashu peemetum n'golikinot sapukin torbae loo n'golikinot orreje le enkop.



## 7. Ni njia zipi za kupunguza na kukabiliana na mabadiliko ya tabianchi ambazo:

- Zinatokana na sayansi ya tabianchi na
- Zinafaa kwa muktadha wa kitamaduni wa Wamaasai?

*Toa karatasi na chora ubeti katikati ya karatasi, upande wa kushoto andika kupunguza athari, alafu upande wa kulia andika kuhimili athari. Mwalimu anaweza kuchagua kutoka kwenye orodha zifuatazo bila mpangilio na kuongoza majadiliano. (Wanafunzi wanatakiwa kusema/kuandika kwenye karatasi aliyoigawanya kama njia iliyotajwa ni ya kupunguza au kuhimili athari.) Orodha hizi zina maelezo mengi na zimetolewa ili kusaidia uelewa wa mwalimu. Mwalimu hapaswi kujadili haya yote bali kuchagua vipengee vinavyofaa zaidi kwa kundi lake. Andika matokeo kwenye chati mgeuzo au ubao mweusi kwa majadiliano ya baadaye.*

*IKIWA KITINI KINAWEZEKANA: Njia nyingine ya kufundisha swali hili ni kutoa kitini kilicho hapa chini orodha ya kina ya mikakati ya kupunguza na kukabiliana. Kisha-wanafunzi wasome na kujadili maswali wanaposhirikisha maudhui ya kitini.*

- Nitataja vipengele tofauti. Hebu tuvijadili na tufanye kazi pamoja ili kubaini ni vitendo gani kati ya hivi vinavyohusiana na kupunguza na/au kukabiliana (kuongezeka kwa ustahimilivu kwa athari za mabadiliko ya tabianchi).

*Jadili mikakati ya kupunguza makali na kukabiliana nayo kwa dakika 10.*

## 7. Kakwa nkoitoi naaitong'orr neyau engirishata too ngibelekenyat orreje le enkop naa akee:

- Naapukunye sayansi orreje le enkop, naa
- Naaishaakinore torkwaak lemila oo Irmaasai?

*Intau engardasi niin'gerr orkereri tempolos engardasi, ore enchoto ekedianye nisirr engitong'orata oo n'golikinot, ore tenchoto etetene tisira engirishata oon'golikinot. Iidim alaiteng'enani aategelu nabo tiatua lelo turrurri nerikoo engiteng'ena. (Eyieumi ilaiteng'enak pee esirr ina palai naigero empolos aalimu aajo kamaa engoitoi natolimwoki kenake enaitong'orr enake enairish n'golikinot.) Kumok kulo kigerot kake akitawuoki peeretoki engarriyiano alaiteng'enani. Mishaakinore pee ing'uraa alaiteng'enani/armalimui kuna pookin kake peegelu nena naaishaakinore oleng' tolturrurr lenye. Tisira matokeo torkibao orok torbae leade.*

*Tenidimai empalai: Ore engay oitoi naiteng'enieki ele swali naa aintau embalaii natii aabori tene naitodolu enikoni tenitong'ori oo rng'iria. Nisoma niimaki sii iloitenteng'eni irmaswali enaa enejo ina palai.*

- Akalimu ntilat naapaasha. Maimaki siyie nekiaas esiaai tenebo peekidol aajo kakwa nena tiatua kuna naadim aitong'ora arashu kakwa naayau engirishata (emponata org'iria too ntorrok oo nkibelekenyat orreje le enkop).

*Eimaki nkoitoi naaitong'orr emion oo engirishata too ldakikani tomon.*

Kupunguza	Kukabiliana	Engitong'orata	Engirishata
<p><b>1. Panda miti ambayo inachukua kaboni dioksidi, CO<sub>2</sub></b> (hasa miti ambayo ni ya asili ya eneo la hilo).</p> <p><b>2. Ufanisi wa nishati (kupunguza kiwango cha kaboni)</b></p> <p>a) Tumia majiko ya kuni yenye ufanisi zaidi ya kuni ili kupunguza uchomaji wa kuni (ambao huweka gesi zinazongeza joto kwenye dunia kwenye mazingira).<sup>1</sup> [Tazama Nyenzo sura ya 17 kuhusu kuchoma biomasi chini na mfano wa jiko linalotumia mafuta kidogo.]</p> <p>b) Kuongeza matumizi ya nishati mbadala kama vile nishati ya jua.</p> <p>c) Tumia taa za LED zisizo na nishati au taa za fluorescent (CFL) badala ya balbu za zamani za incandescent.</p> <p>d) Zima taa za umeme wakati hautumiki.</p> <p><b>3. Punguza matumizi ya chupa za plastiki na urejeshe tena chupa zinazotumika.</b></p>	<p><b>5. Maji</b></p> <p>h) Tengeneza njia za kuvuna na kuhifadhi maji.</p> <p>i) Katika uhaba mkubwa wa maji, hamia kwa muda kwenye maeneo ambayo maji yanapatikana.</p> <p>j) Kuendeleza maeneo ya kukusanyia maji, visima, maji ya bomba, na mabwawa.<sup>4</sup> [Tazama picha hapa chini katika Nyenzo sura ya 17.]</p> <p><b>6. Usalama wa chakula</b></p> <p>k) Weka mikakati ya kuimarisha usalama wa chakula (hifadhi ya chakula).<sup>5</sup></p> <p>l) Uwezo wa kaya kununua chakula ndio mkakati muhimu zaidi wa usalama wa chakula.<sup>6</sup></p> <p>m) Chanzo cha mapato kinachotegemewa na msingi wa mali ni muhimu kwa mwikitio wa kaya dhidi ya majanga ya tabia nchi.<sup>7</sup></p> <p>n) Asilimia 58 ya kaya ziliripoti kuwa zimeamua kuuza mifugo...ili kudhibiti majanga ya tabia nchi.<sup>8</sup></p> <p><b>7. Ustahimilivu wa miundombinu</b></p> <p>o) Maeneo salama zaidi ya nyumba na kituo</p> <p>p) Hatua za kuzuia na za tahadhari (mipango ya uokoaji, masuala ya afya, n.k.)</p> <p><b>8. Mfumo wa ikolojia na mandhari</b></p> <p>q) Marejesho ya mazingira (mandhari ya asili) na upandaji miti upya</p> <p>r) Uhifadhi wa mfumo ikolojia asilia (bioanuwai na maji)</p> <p><b>9. Maarifa ya jadi ya mazingira</b></p> <p>s) Tambua na udumishe maarifa asilia/jadi ya Wamaasai na mazoea ambayo ni mazuri kwa kutunza mazingira; "...mfumo na taasisi za maarifa za wenyeji zinapaswa kuimarisha utungaji na utekelezaji wa sera ili kukuza ustahimilivu wa wenyeji."<sup>9</sup></p> <p>t) "Mpango wa mseto wa maisha wa taratibu na wa kati hadi mrefu ni mkakati wa kisera unaopendekezwa ili</p>	<p><b>1. Tuono irkeek oibibi kabon</b> isulaki irkeek le asili ine weji.</p> <p><b>2. Enkishaa e nishati (itong'orr kabon)</b></p> <p>a) Taasishore orrupie loo irkeek lemitau irgesii oirowaje enkop pee itong'orr enkinuata oo irkeek (oopen enkirowaj te enkop).<sup>1</sup> [Ng'urui enaret te ematwa e 17 nijo orrupie le enishati kinyi.]</p> <p>b) Taasishore oleng' enishati sidai anaa esola.</p> <p>c) Taasishore iltaai sidan le LED aalang iltaai musan.</p> <p>d) Taara iltaai le umeme tenemiasishore.</p> <p><b>3. Ntong'oro enkiasishore oo ilchupai loo mpirari nishukoki ng'ejukishu ilchupai oasishoreki.</b></p> <p>e) Amu ore empire naasishoreki nabo kata ning'waa e nishati musana naa ore enkitobirunoto oo kuna pirai nitau irgesii</p>	<p><b>5) Engare</b></p> <p>h) Ntobiru enkarriyano niwounye nishum engare.</p> <p>i) Ore te erishata kiti engare naleng' n'duraki wejitin naatii engare.</p> <p>j) Taramata wejitin naaibok engare (enipirunyeke, orpomba, irbwaan/irmalambo).<sup>4</sup> [Ngurai empicha te abori te naret ematwa e 17]</p> <p><b>6. Entumpoto e en'daa</b></p> <p>k) Tipika n'kidanyat e endtumoto e-en'daa (enchumata e-en'daa).<sup>5</sup></p> <p>l) Ore enkidimata engaji/armarei pee inyag'u en'daa naa enkidanyata tipat oleng' te enumoto en'daa.<sup>6</sup></p> <p>m) Ore ening'orita armarei te dupoto neeta tipat pee irishe armarei n'golikinot naayeu nkibelekenyat e enkop.<sup>7</sup></p> <p>n) Ore irmarei ono moo isiet tiatwa iip (58%) netolimutwo aajo etimira ermatate too n'golikinot oo nkibelekenyat enkop.<sup>8</sup></p> <p><b>7) En'olon wejitin naasheta.</b></p> <p>o) Wejitin sidan naatii nkajjik oo neesheta</p> <p>p) Nkoitoi naiboorieki (nkidanyat esaurnoto, m'baa em'biotishu oo seseni)</p> <p><b>8) M'baa e ikolojia oo enkop</b></p> <p>q) Enkitang'ejukoto e enkop (enkop e asili) oo eunoto oo irkeek te ng'ejukishu</p> <p>r) Erripoto e ikolojia e-asili (iseuseu oo engare)</p> <p><b>9) Enkarriyano e mila te enkop</b></p> <p>s) Tayolo niim'bung engariyano e asili/mila oo Irmaasai sidan naarrip enkop: "...ore m'baa engarriyano oo iltung'anak loo nkwapi oo Irmaasai ishaakinaore pee eretoo nitagol enkitobirunoto oo enkias e sera pee eshumu orng'iria loopeny enkop."<sup>9</sup></p> <p>t) "Ishaakinore ngidanyat e sera/ncheriani naibelekenyeke orrje le enkishui neyauni akiti aatwa ilaramatak pee eeta olosho loo laramaak orng'iria</p>

Kupunguza	Kukabiliana	Engitong'orata	Engirishata
<p>e) Kwa sababu plastiki ya matumizi moja huzalishwa kutoka kwa nishati ya mafuta (kama petroli), kupata na kuunda plastiki hizi hutoa kiasi kikubwa cha gesi za joto za dunia.</p> <p>f) Tumia ukusanyaji wa taka badala ya kuchoma takataka.<sup>2</sup></p> <p><b>4. Takataka zinazochomwa hutoa kaboni hewani.</b></p> <p>g) Kuchoma plastiki huweka kaboni dioksidi na kemikali za sumu katika hewa na ardhi ambayo ni hatari kwa afya ya binadamu na wanyama na mazingira. (Angalia maelezo “f.”)</p>	<p>kuongeza ustahimilivu miongoni mwa jamii za wafugaji kinyume na sera ya sasa inayolaani ufugaji kuwa ni shughuli ya kurudi nyuma na kuharibu mazingira.”<sup>10</sup></p> <p><b>10. Kilimo-ufugaji/kilimo kidogo</b></p> <p>u) Tumia njia rahisi na tofauti za kilimo.</p> <p>v) Kuendeleza utunzaji wa mbegu.<sup>11</sup></p> <p>w) Jumuisha mazao yanayostahimili ukame zaidi kuliko mahindi, “kama vile mtama, njegere, mtama, viazi vitamu na kunde.”<sup>12</sup></p> <p><b>11. Uongozi na utawala</b></p> <p>x) Wajumuishe wanawake katika kufanya maamuzi ambayo yanaathiri maisha yao na ya watoto wao ili kupunguza hatari ya kaya nzima.</p> <p>y) Waimarishe viongozi wa kimila kwani wazee ndio wanaosimamia uhibititi na ugawaji wa rasilimali hasa nyakati za uhaba mkubwa,<sup>13</sup> na kutoa msaada wa miundombinu, kijamii, kisheria na kifedha.</p> <p>z) Imarisha halmashauri ya kijiji jinsi ya kutafuta msaada wa serikali...kwa msaada wa miundombinu, kijamii, kisheria na kifedha.<sup>14</sup></p>	<p>tesapuko oirowaje enkop.</p> <p>f) Ore empejoto oo mpirai nepic esayeti aatwa engijape oo enkulukoni naa torrongo te em'biotishu oo seseni too ilung'anak oo kulie tokitin naishu.<sup>2</sup></p> <p><b>4. Nturrurro altaka, mipejoo.</b></p> <p>g) Ore empejoto oo mpirai nepic esayeti aatwa engijape oo enkulukoni naa torrongo te em'biotishu oo seseni too ilung'anak oo kulie tokitin naishu. (Ngurai wutarot te enkipengele “f.”)</p>	<p>elang' iserai/ncheriani/wutarot e tata naaiba eramatatare ejo eisai e siadi niinyarl enkop.”<sup>10</sup></p> <p><b>10. Enturore-oo-eramatatare (enturore kiti)</b></p> <p>u) Taasishore nkoitoi naalelek naapaasha tenturore.</p> <p>v) Enchumata embeu.<sup>11</sup></p> <p>w) Ntushulaki n'daikin naairish alamei aalang' irpaek, “anaa ormutama, njegere, irmurungu, irkisoya oo irpombo/mboosho.”<sup>12</sup></p> <p><b>11) Erikore oo enkitahekinoto</b></p> <p>x) Ntushulu ndasati tiatwa nkigwanat oo m'baa naipirita enkishui enye oo nkera enye pee itong'or enyamali armarei olulung'a</p> <p>y) Ntagolo larikok le le mila amu irpayani oitasheki enkitahekinoto oo erishare oo n'dupot naleng' enkata eng'orikinoto sapuk,<sup>13</sup> nitau erototo oo ntokitin,naaipir iltung'anak, too ncheriani oo too nkohola</p> <p>z) Ntagolo erikore enkijiji/enkanasa eniko pee ing'oru erototo te sirkale...te erototo oo neesheta,iyeunot oo iltung'anak, ncheriani oo nkohola.<sup>14</sup></p>

### Table Bibliography

<sup>1</sup> Ndesanjo, Theilade, and Nielsen. “Water scarcity is a common determinant of migration among pastoral communities.” (Berkhout 2012; Brockhaus et al. 2013). 2602, [https://doi.org/10.1007/978-3-030-45106-6\\_128](https://doi.org/10.1007/978-3-030-45106-6_128).

<sup>2</sup> Verma et al., “Toxic Pollutants from Plastic Waste-A Review,” *Procedia Environmental Sciences*, Waste Management for Resource Utilisation, 35 (January 1, 2016): 701–8, <https://doi.org/10.1016/j.proenv.2016.07.069>.

<sup>3</sup> Ndesanjo, Theilade, and Nielsen, 2603.

<sup>4</sup> Mwandosya, “National Adaptation Programme of Action (NAPA),” 2007, ix, <https://unfccc.int/resource/docs/napa/tza01.pdf>.

<sup>5</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>6</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>7</sup> Ndesanjo, Theilade, and Nielsen, 2602.

<sup>8</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>9</sup> Mwandosya, ix.

<sup>10</sup> Ndesanjo, Theilade, and Nielsen, 2607.

<sup>11</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>12</sup> J. Douwe Meindersma and Jan J. Kessler, eds., 44. Meindersma, J. Douwe, and Jan J. Kessler, eds. Planning for a Better Environment in Monduli District. Netherlands Economic Institute, 1997.

<sup>13</sup> Ndesanjo, Theilade, and Nielsen, 2604.

<sup>14</sup> Ndesanjo, Theilade, and Nielsen, 2605.

## Wamaasai: Ni desturi zipi ambazo Wamaasai tayari wanafanya?

- 5
- Angalia orodha zetu.
  - Piga ubeti chini ya mambo ambayo Wamaasai hufanya.

*Hapa chini kuna orodha iliyohaririwa ya ile iliyo hapo juu inayozingatia desturi za Wamaasai.*

## Irmaasai: Kakwa iyasat mila nena naasita Irmaasai?

- N'gurai inikitisira.
- Tipika orkereri m'baa naas Irmaasai.

*Ore tiabori tene netii m'baa enena naalimuno tengaiterr nasuj mila oo Irmaasai.*

Kupunguza	Kukabiliana	Engitong'orata	Engirishata
<p><b>1. Miti: Kijadi haikatwagi miti.</b> Baadhi: Chimba mashimo ya "tabasamu" ambayo "hurudisha kijani" eneo hilo kwa mimea inayotoa CO<sub>2</sub> kutoka hewani (na pia hupunguza mmomonyoko wa udongo). [Tazama Rasilimali Sura ya 17.]</p> <p><b>2. Ufanisi wa nishati:</b> Wengi: Tumia usafiri wa umma na kutembea.</p> <p>a) Baadhi: majiko ya kupikia ya kuni yenye ufanisi zaidi</p> <p>b) Baadhi: nishati ya jua</p> <p>c) Baadhi: taa za LED zinazotumia nishati kidogo</p> <p>d) Baadhi: Zima taa za umeme zisipotumika</p>	<p><b>5) Maji</b> h) Baadhi: Kuendeleza uvunaji na uhifadhi wa maji</p> <p>i) Wakati wa kiangazi, huhama kwa muda</p> <p>j) NDIYO! Kuendeleza maeneo ya kuinga maji</p> <p><b>7) Ustahimilivu wa miundombinu</b> o) Baadhi: Maeneo salama zaidi ya nyumba na vituo</p> <p><b>8) Mfumo ikolojia na mandhari</b> r) NDIYO! Uhifadhi wa mfumo ikolojia na viumbe hai</p> <p><b>9) Maarifa ya jadi ya mazingira</b> s) Baadhi: Kutambua na kudumisha maarifa ya jadi</p> <p>t) Baadhi: Ubadilishaji wa utaratibu wa maisha</p> <p><b>11) Uongozi na utawala</b> x) Baadhi: Kuwajumuisha wanawake katika kufanya maamuzi</p> <p>y) Baadhi: Kuimarisha viongozi wa kitamaduni wa mitaa kwa ajili ya kudhibiti na kushiriki rasilimali</p> <p>z) Baadhi: Kuimarisha baraza la kijiji kutafuta msaada wa serikali</p>	<p><b>1. Irkeek: Ore te mila medung'i.</b> Irkulie: Eturr kulie ingumot/ululuni "enchipai" nashuku en'oriji too irkeek oibibi kabon ta alaing'ang'e nitong'orr sii em'bobolata e engulukoni. [Ng'urai nareta natii emwate e 17.]</p> <p><b>2. Enkishaa e nishati:</b> Ore irkumok: epweiye motokaani e pooki nepwo sii too ngejek.</p> <p>a) Irkulie: eeta irrupieta loo irkeek sidan/ikishaan.</p> <p>b) Irkulie: eeta isolai.</p> <p>c) Irkulie: eeta itlaai le LED ooya enishati kinyi.</p> <p>d) Irkulie: eer itlaai le umeme tenemeesishoreki.</p>	<p><b>5) Engare</b> h) Irkulie: Itobiru enkiwounoto e en'chumata e engare.</p> <p>i) Ore te enkata elamae, niidurr.</p> <p>j) EE! Eshetu wejitin naabokie engare</p> <p><b>7) Oringiria oo wejitin neesheta</b> o) Irkulie: Wejitin sidan too nkajijik oo neesheta.</p> <p><b>8) M'baa e ikolojia oo enkop</b> r) EE! Erripoto e ikolojia oo nkitobirunot naishu</p> <p><b>9) Engarriyano e mila te enkop</b> s) Irkulie: Eyolo negolie engarriyano e mila.</p> <p>t) Irkulie: Engibeleyenata akiti orkwak le enkishui</p> <p><b>11) Erikore oo enkitahekinoto</b> x) Irkulie: Itushulu ndasati tiatwa ngigwanat</p> <p>y) Irkulie: Itagol ilarikok le mila te enkitashekinoto oo eng'arata oo n'dupot.</p> <p>z) Irkulie: Eer itlaai le umeme tenemeesishore.</p>

**Kuunganisha Sayansi ya Tabianchi kwa Mukadha wa Wamaasai**

- 4 • Ni mazoea gani ambayo Wamaasai hawayafanyi kijadi, lakini ni mambo ambayo WEWE unaweza kuyafanya kwa urahisi—baadhi yake bila rasilimali nyingi?  
 • Tukiangalia tena orodha yetu, pigia mistari miwili chini ya mambo tunayoweza kufanya!

**Engidikoto e Sayansi Orreje le Enkop Torkwaak le Irmaasai**

- Kakwa moot mees irmaas temila, kake m'baa naake iin'dim iyie aataasa teleleki—ore nkulie nias miaata eretoto sapuk?
- Tenikiin'gil aing'uraa ntokitini nikitisira, in'georki irkererini aare aabori oom'baa nekiin'dim aataas!

Kupunguza	Kukabiliana	Engitong'orata	Engirishata
<p><b>1. Panda miti:</b>                      Panda miti ambayo ni ya asili katika eneo hilo; Chimba mashimo ya "tabasamu" ambayo "yanarudisha kijani" katika eneo hilo kwa mimea inayotoa CO<sub>2</sub> kutoka hewani (na pia hupunguza mmomonyoko wa udongo).</p> <p><b>2. Ufanisi wa nishati</b> (kupunguza kaboni)                      a) Zaidi: Tumia majiko ya kupikia ya kuni yenye ufanisi zaidi ili kupunguza uchomaji wa kuni.                      b) Zaidi: Ongeza matumizi ya nishati mbadala kama vile nishati ya jua.                      c) Zaidi: Tumia taa za LED zenye ufanisi wa nishati.                      d) Zaidi: Zima taa za umeme wakati hazitumiki. Pia, usiendeshe injini ya gari huku ukisubiri na huingii ndani ya gari.</p> <p><b>3. Punguza chupa za plastiki</b></p> <p><b>4. Ukusanyaji wa taka badala ya kuchoma</b></p>	<p><b>5. Maji</b>                      h) Uvunaji na uhifadhi zaidi wa maji                      j) Maeneo mengi ya vyanzo vya maji (mabwawa)</p> <p><b>6. Usalama wa chakula</b>                      k) Mikakati zaidi ya usalama wa chakula (hifadhi ya chakula)</p> <p><b>7. Ustahimilivu wa miundombinu</b>                      o) Nyumba salama zaidi                      p) Weka hatua za tahadhari (yaani, mipango ya uokoaji).</p> <p><b>8. Maarifa ya jadi ya mazingira</b>                      q) Utambuzi zaidi wa maarifa ya jadi kwa kutumia mbinu ambazo ni nzuri kwa utunzaji wa uumbaji</p> <p><b>10. Kilimo-ufugaji/kilimo kidogo</b>                      u) Tumia kilimo kinachonyumbulika na cha aina mbalimbali.                      w) Ongeza mazao yanayostahimili ukame, kama vile mtama, njegere, mtama, viazi vitamu na kunde.</p> <p><b>11. Uongozi na utawala</b>                      x) Jumuishwa wanawake wengi zaidi katika kufanya maamuz.                      y) Waimarisha viongozi wa kimila kwani wazee ndio wanaosimamia udhibiti na ugawaji wa rasilimali hasa nyakati za uhaba mkubwa.                      z) Iimarisha halmashauri ya kijiji jinsi ya kutafuta msaada wa serikali.</p>	<p><b>1. Eun irkeek:</b>                      Eun irkeek lina kop; neturr ingumoto/iululuni 'e "enchipai" nashuku en'oriji too irkeek oibibi kabon ta alaing'ang'e nitong'orr sii em'bobolata e engulukoni.</p> <p><b>2. Enkishaa e nishati</b> (enkitong'oroto e kabon)                      a) Aisul: Taasishore irupieta loo irkeek sidan aisul pee itong'or empejoto oo irkeek.                      b) Aisul: Taasishore naleng' nishati sidai anaa solai.                      c) Aisul: Taasishore iltaai sidan le LED.                      d) Aisul: Taara iltaai le umeme tenemiasishore. Ore sii, miinok emotokaa ianyisho nemijin'gita aatwa e motokaa.</p> <p><b>3. Ntong'oro ilchupai loo mpirai</b></p> <p><b>4. Enkiturrurroto altaka me empojoto</b></p>	<p><b>5. Engare</b>                      h) Enkiwounoto oo enchumata sapuk e-engare                      j) Wejitini kumok oo ngariak (ilturot)</p> <p><b>6. Endumoto sidai e en'daa</b>                      k) Nkidanyat kumok e endumoto e en'daa (enchumata e en'daa)</p> <p><b>7. Orng'iria oo wejitin naasheta</b>                      o) Engaji nara sidai oleng'                      p) Tipika nkoitoi engarriyano (aa, nkidanyat esarunoto).</p> <p><b>8. Engarriyano e mila te enkop</b>                      q) Eyolounoto sapuk e engarriyano e mila iasishore losekin sidan te erripoto oo nkitobirunot.</p> <p><b>10. Enturore-oo-eramatare/enturore kiti</b>                      u) Taasa entorore naibeleyenai nashulushula n'daikin.                      w) Topona n'daikin naairish alamei nijo ormutama, njegere/mboosho, irmurungu, irkishoya oo irpombo.</p> <p><b>11. Erikore oo engitashekinoto</b>                      x) Ntushulaki ndasati kumok oleng' aatwa ngigwanat.                      y) Ntagolo larikok le le mila amu irpayani oitasheki enkitahekinoto oo erishare oo n'dupot naleng' enkata eng'orikinoto sapuk.                      z) Ntagolo erikore enkijiji/enkanasa eniko pee ing'oru eretoto te sirkale.</p>

**3) UCHUNGUZI** ufafanuzi au tafakari ya maudhui ya msingi

**Kwa hivyo, ni jambo gani MOJA WEWE unaweza kufanya katika kila kipengele/kundi?**

- 5
- Kwenye karatasi yako, zungushia kitu kimoja katika kila kipengele ambacho WEWE unaweza kufanya na familia yako na marafiki ili kuleta mabadiliko katika kutunza uumbaji wa Mungu?
  - Kumbuka kwamba utunzaji wetu wa uumbaji unahamasishwa na wito wa Mungu kwetu wa kutunza uumbaji (**Mwanzo 2:15**). Tunapopatanishwa (katika uhusiano sahihi) na Mungu, asili ya imani yetu inadhihirika 1) kwa amani na wengine (haki ya kijamii) na 2) amani na uumbaji (utunzaji wa uumbaji/maadili ya mazingira).
  - wanafunzi wawili au watatu washirikishe darasa jambo moja wanalotaka kufanya ili kuleta mabadiliko.

**Tumaini**

- 3
- Tukijua kwamba tuna Mungu anayeaminika na mwenye upendo, tunaweza kukabiliana na changamoto za mabadiliko ya tabianchi kwa matumaini.
  - Kwanza, tunajua kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu, na Mungu hatauacha kamwe.
  - Pili, kama wafuasi wa Yesu Kristo, tunawezeshwa na Roho Mtakatifu kuwa baraka kwa wengine (haki ya kijamii) na uumbaji (mazingira).
  - Hatimaye, hata baadhi ya wanasayansi na wanamazingira wana matumaini kwamba sote tunaweza kufanya kitu kidogo na kwa pamoja kuleta mabadiliko makubwa.

*Huenda kusiwe na muda wa kutosha kuangazia mifano ifuatayo.*

**3) ENGING'URAROTO** enkitalalaunoto arashu engibirribirr e engiteng'ena e tipat

**Neeku, kaa siaai nabo ina niin'dim iyie aataasa tekuna tiatwa engkipengele?**



- Ore tinaardasi ino, n'tamaniki ina nabo niin'dim iyie oo rmarei lino aataasa oo lcherueti pee eyau nkibelekenyat tiatua erripoto oo nkitobirunot Engai?
- Tadamu aajo ore erripore aang' oonkitobirunot naa engitanapata Engai teyiook peekirrip nkitobirunot (**Enkiterunoto 2:15**). Ore tenitakini iyiik osotwa (tiatua em'baikinoto nasipa) oo Engai, nibalai engirukoto oo Itauja lang' 1) tooltauja oorkulie (haki olosho) oo 2) amani oo nkitobirunot (erripoto oo nkitobirunot/orkwaak le enkop).
- N'choo elimu ilooiteng'eni aare arashu wuni tele darasa aajo kaaba nabo iidim aataas pee eyau ngibelekenyat.

**Osiligi**

- Tenekiyolou aajo kiata Engai nemekiurishore naata enyorrota, nekiin'dim aataapare n'golikinot oo nkibelekenyat orreje le enkop tosiligi.
- Ore Enaituruku, Kiyolo aajo ore alaitobirunoni lang', Engai osiligi, enyorr olosho, nemeing'waa aikata Engai.
- Eniare, ore enaa ilairukok le Yesu Kristo, idimie iyook engiyang'et sinyati peekiaku emayiani toorkulikai (haki olosho) oo nkitobirunot (enkop).
- Neeku, ore matwa oo lang'eni le sayansi oo le enkop neeta osiligi aajo kiin'dim pookin aataas engiti bae tenaboishu peekiyau enkibelekenyata sapuk.

*Ebaiki nemetii engata naidip pee king'uraa kuna baa.*

- **Wangari Maathai**—mshindi wa Tuzo ya Nobel ya Kenya tuliyemzungumzia mwanzoni mwa somo.
  - “Miti milioni 30 iliyopandwa na waliojitolea wa Green Belt Movement—hasa wanawake wa vijijini—kote nchini Kenya katika kipindi cha miaka 30 iliyopita ni ushahidi wa uwezo wa watu binafsi kubadilisha historia ya mazingira.
  - “Kwa kufanya kazi pamoja, tumethibitisha kwamba maendeleo endelevu yanawezekana; upandaji miti upya katika ardhi iliyoharibiwa unawezekana; na utawala bora unawezekana wakati raia wa kawaida wanapoarifiwa, kuhamasishwa, na kushiriki katika hatua za moja kwa moja kwa mazingira yao.”
- **Jane Goodall** alifanya utafiti na sokwe katika Hifadhi ya Taifa ya Gombe nchini Tanzania kwa miaka 30 (1960–1990). [Tazama Rasilimali za Somo la 3.]
  - “Matumaini ndiyo yanayotuwezesha kuendelea mbele katika hali ngumu.”<sup>11</sup>
  - “Ninaamini kweli, na siko peke yangu kama mwanasayansi, kwamba tuna wakati ambapo tukikusanyika pamoja na kuchukua hatua, tunaweza kupunguza kasi ya mabadiliko ya tabianchi na upotevu wa bayoanuwai...**Siwezi kuokoa ulimwengu, lakini naweza kufanya nini hapa?...Chochote unachojali, ungana na marafiki na uchukue hatua. Fanya unachoweza kufanya ili kutatua kile unachopenda na utaona unaleta mabadiliko.**”<sup>12</sup>



## Kwa hivyo, nini sasa?

- 5
- Katika somo la kwanza, tuliona kwamba uelewa wa jadi wa Wamaasai ni kwamba *Engai* hudhibiti hali ya hewa.
  - Hata hivyo, katika masomo haya, pia tulijifunza kwamba kuna tofauti kati ya hali ya hewa na tabianchi, na tunaona kwamba athari kubwa zaidi kwa mabadiliko ya tabianchi ni kwa sababu ya shughuli za

- **Wangari Maathai**—enkaisulani e Tuzo e Nobel tolosho le Kenya lekiimakitia duoo tengaiterr enkisoma.
  - “Irkeek oobaya imilionini osom ootuuno nkitwaak e Green Belt Movement—aisulaki nkitwaak oo rkijijini—tolosho pookin le Kenya tengata oo larin osom ooima, ore ina nitodolu njere aajo idimakinoi iltung’anak maote peeyau nkibelekenyat te enkop.
  - “Tenekiaas esiaai tenaboishu, kitaduaa aajo ore maendeleo aadoru neidimakinoi; eunoto oorkeek teng’ejuko too wuejitin nainyalaki nidimakinoi; idimakinoi erikore sidai tenelikini iltung’anak, nitanapi, neesisho tiatua m’baa pookin naaipirita enkop enye.”
- Etaasa **Jane Goodall** en’jurre ore oo ltulal tiatua oserok le enkop oji Gombe otii Tanzania toolarin osom (aiteru 1960–1990). [N’gurai tenkisoma ewuni.]
  - “Osiligi oretoki iyook maape dukuya toongataitin naagol.”<sup>11</sup>
  - “Aiiruk esipa, nematii openy enaa ilang’eni le sayansi, aajo etii nkataitin naa tenekindurrro tenebo tengirukoto, nekiin’dim aitong’oro m’baa oo nkibelekenyat orreje le enkop oenkiminata e bayoanuwai...**Maidim aatomitu olosho, kake kanyoo aidim aataasa tene?...ore nena nishilaa, inotore ilcherueti niesiese. Taasa ina niin’dim aataasa piirrip nena ninyorr nekin’todol aajo iyauta nkibelekenyat.**”<sup>12</sup>



## Neeku, oo taata?

- Ore tengisoma engaiterr, nekitaduaa aajo ore engarriyiano e mila oo Irmaasai naa Engai naitaheki orreje lenkijape/enkop.
- Ore ake sii, tekulo somoi kulie, nekitaduaa aajo epaaha orreje lenkijape enkop oo orreje le enkop, nekidolita aajo ore n’golikinot kumok too ngibelekenyat orreje lenkop naa tengaraki nkiasin oo

binadamu—hasa kuzalisha gesi zinazoozongeza joto la dunia hewani, kama vile kaboni dioksidi hwanjia ya kuchoma petroli.

- Kwa hivyo, tunaona kwamba wanadamu wanaweza kuwa na jukumu muhimu katika kupunguza athari mbaya za mabadiliko ya tabianchi. Jukumu letu muhimu kimsingi ni lile agizo la Mungu kwetu kutunza uumbaji wake mzuri. Kwa hivyo, ni dhahiri kwamba shughuli za binadamu ndizo sababu kuu za mabadiliko ya tabianchi na kwamba wanadamu wana kitu cha kuchangia katika kubadilisha tabianchi kijadi na kisayansi. Mitazamo ya kisayansi na ya Kikristo inasisitiza kwamba wanadamu wana jukumu la kuwa wasimamizi wa dunia na kuilinda kwa ajili ya vizazi vijavyo.
- Tunaweza kuleta mabadiliko! Hebu tujadili hili katika vikundi vidogo.

### Shughuli za Kuleta Mabadiliko katika Mgogoro wa Tabianchi

- 8
- Bainisha njia 3 zinazofaa ambazo WEWE unataka kuleta mabadiliko katika kupunguza mabadiliko ya tabianchi katika muktadha wa jadi ya Wamaasai.
  - Bainisha njia 3 zinazofaa ambazo UNATAKA kuleta mabadiliko katika kukabiliana na mabadiliko ya tabianchi (ustahimilivu) katika muktadha wa kitamaduni wa Wamaasai.

*Ikiwa kuna muda, mwandishi kutoka kila kikundi ashirikishe jambo moja ambalo wanakikundi watalifanya ambalo lilikuwa muhimu katika mazungumzo ya kikundi chao.*

### Uandishi wa Nyimbo

- Au  
8
- Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni programu nzuri sana, inahitaji muda wa kutosha kuikamilisha vizuri.*

Kila kikundi kiandike ubeti mmoja wa wimbo kuhusu maarifa na desturi za kitamaduni za kimazingira za Wamaasai ambazo pia ni njia bora za kupunguza mabadiliko ya tabianchi. Tumia sauti ya kawaida

iltung'anak—aisulaki too irgesii oopon enkirowuaj tenkijape, nijo kaboni dioksidi torbae le em'pejore eilata e petroli.

- Neeku, kidolita aajo iidim iltung'anak aataas esiaai etipat tengitong'ortao oo n'golikinot torrok oo nkibeleyenat orreje le enkop. Ore esiaai sapuk teyiook naa ilo kilikwai le Engai lerripoto oo nkitobirunot enyena sidan. Neeku, ibala aajo nkiasin oo iltung'anak naayau nkibeleyenat orreje le enkop naake eeta inaas iltung'anak tiatua enkibeleyenata orreje le enkop temila oo te sayansi. Ore nging'urat e sayansi oone Kikristo nelimu aajo eeta iltung'anak engias naaku ilaitahekinok le enkop, nitaheiki tengaraki eishoi nasuju.
- Kiin'dim aayautu! Nkibeleyenat! Maing'urai siyie kuna too ilturrurri kutiti.

### M'baa Naayau Nkibeleyenat tiatua Ilarrabali lo Orreje le Enkop

- Tolimu nkoitoi wuni naanare niyeu IYIE pee iyaunye nkibeleyenat tengitong'ortao oo nkibeleyenat orreje le enkop torkwaak lemila oo Irmaasai.
- Tolimu nkoitoi wuni naanare NIYEU niyaunye nkibeleyenat tengirishata oo ngibeleyenat orreje le enkop torkwaak lemila oo Irmaasai.

*Tenetii engata, neliki iyook iltung'anak tolturrurri pookin em'bae naidim aataas nara tipat tolturrurr lenye.*

### Esirata/En'dung'unoto oo Sinkolioitin

*Ore enasiaai neidim aataasai too ldakikani tomon arashu tomon oimet. Neeku, ore enakee esiaai sidai oleng', eyieu enkata naishaakinore naidipieki esidai.*

Ore kila olturrurr kiti nchoo esirr orbeti obo lo osinkolio oipirita enkariyiano orkwaak le asili te enkop oo Irmaasai naake sii nkoitoi sidan naaitolong' nkibeleyenat orreje le enkop. Taranye oltoilo

inayojulikana na wanafunzi wengi. Wimbo wa Wamaasai wa mtindo wa kupokezana unaweza kuwa njia nzuri ya kuanzia. Kisha, waalike kila kikundi kuimba ubeti wao.

otamoo iloiteng'eni kumok. Ore osinkolio loo Irmaasai ang'amakinoi niidim aataa enkoitoi sidai naiterunyeki. Netumoki Iturrurri pookin aatarany orbeti lenye.

1

**Prayer**

**Engomono**

60

**Mwisho wa Somo**

**Enging'oto Osomo/Enkisoma**

### Bibliography

- <sup>1</sup> “Climate Change Mitigation and Adaptation: Simple Guide to Schools in Africa,” with Ann Therese Ndong-Jatta, UNESCO, United Nations Educational, Scientific and Cultural Organization, 2019, 4, <https://unesdoc.unesco.org/ark:/48223/pf0000372168>.
- <sup>2</sup> “Climate Change Mitigation and Adaptation,” 4.
- <sup>3</sup> “Climate Change Mitigation and Adaptation,” 4.
- <sup>4</sup> “Climate Change Mitigation and Adaptation,” 3.
- <sup>5</sup> “Climate Change Mitigation and Adaptation,” 4–5.
- <sup>6</sup> “Climate Change Mitigation and Adaptation,” 5–6.
- <sup>7</sup> Rinku Verma et al., “Toxic Pollutants from Plastic Waste—A Review,” *Procedia Environmental Sciences, Waste Management for Resource Utilisation*, vol. 35 (January 2016): 701–8, <https://doi.org/10.1016/j.proenv.2016.07.069>. “...plastics is burnt, releasing **toxic gases** like Dioxins, Furans, Mercury and Polychlorinated Biphenyls into the atmosphere. Further, burning of Poly Vinyl Chloride liberates *hazardous halogens and pollutes air*, the **impact of which is climate change**. The toxic substances thus released are posing a **threat to vegetation, human and animal health and environment as a whole**. Polystyrene is harmful to Central Nervous System. The hazardous brominated compounds act as **carcinogens** and **mutagens**. Dioxins settle on the crops and in our waterways where they eventually enter into our food and hence the body system. These Dioxins are the lethal persistent organic pollutants (POPs) and its worst component, 2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD), commonly known as agentorange is a **toxic compound which causes cancer and neurological damage, disrupts reproductive thyroid and respiratory systems**. Thus, **burning of plastic wastes increase the risk of heart disease, aggravates respiratory ailments such as asthma and emphysema and cause rashes, nausea or headaches, and damages the nervous system**. Hence, a sustainable step towards tomorrow’s cleaner and healthier environment needs immediate attention of the environmentalists and scientists. This review presents the hazards of incineration; open burning of plastics and effects of plastic in water and also a possibility of working out strategies to develop alternate procedures of plastic waste management.”
- <sup>8</sup> “Climate Change Mitigation and Adaptation,” 8–12.
- <sup>9</sup> “Climate Change Mitigation and Adaptation,” 13.
- <sup>10</sup> Maathai, *The Green Belt Movement*, xi. See also, Wangari Maathai. *The Green Belt Movement: Sharing the Approach and the Experience*. Revised edition. Lantern Publishing & Media, 2003; and Wangari Maathai. *Replenishing the Earth: Spiritual Values for Healing Ourselves and the World*. Random House, 2010.
- <sup>11</sup> Jane Goodall, Douglas Abrams, and Gail Hudson. *The Book of Hope: A Survival Guide for an Endangered Planet*. Viking, 2022.
- <sup>12</sup> Jane Goodall. “Reasons for Hope” About the Planet’s Future, *Greater Boston, GBH News*. 29 September 2023. <https://www.youtube.com/watch?v=LXXb5MjPbPI>.

**Part 4:**  
**Lessons for Theological Education by Extension (TEE)**  
**(English/Kiswahili)**





## 9. TEE Lesson 1: English/Kiswahili

## Biblical Creation Care

### Utunzaji wa Uumbaji wa Kibiblia

## Main Point

**God has commissioned (instructed) us to care for God’s good creation.**



**Mungu ametuamuru (ametuagiza) kutunza uumbaji mwema wa Mungu.**

## Learning Outcomes

As a result of this lesson, the learner will:

Kama matokeo ya somo hili, mwanafunzi atafanya:

## Cognitive: Know



#### Biblical Mandate

- Know that God made the world, and it was very good (**Genesis 1:31a**); and God loves it (**John 3:16**).
- Understand that we have been given a mandate (commissioned or instructed) to look after what God has made (**Genesis 2:15**).
- Understand that the world has gone wrong because of human sin (especially seen in selfishness and greed).
- Be aware that failing to love one another is sin (**Mathew 22:37–39**), thus spoiling natural resources that could be used by many is a sin.
- Realize that Jesus died for the whole world—not just humans.
- Realize that though God has control over the weather, yet God gave humanity the responsibility of caring for the environment.
- Know that God will restore creation when Jesus Christ returns.



#### Mamlaka ya Kibiblia

- Fahamu kwamba Mungu aliumba ulimwengu, na ulikuwa mzuri sana (**Mwanzo 1:31a**); na Mungu anaupenda (**Yohana 3:16**).
- Elewa kwamba tumepewa agizo (tumeagizwa au tumeagizwa) la kutunza kile ambacho Mungu ameumba (**Mwanzo 2:15**).
- Elewa kwamba ulimwengu umeharinika kwa sababu ya dhambi ya mwanadamu (hasa inavyodhihirika katika ubinafsi na uchoyo).
- Kujua kwamba kutopendana ni dhambi (**Mathayo 22:37–39**), kwa hivyo kuharibu maliasili ambazo zingeweza kutumiwa na wengi ni dhambi.
- Tambua kwamba Yesu alikufa kwa ajili ya ulimwengu wote—si wanadamu tu.
- Tambua kwamba ingawa Mungu ana udhibiti wa hali ya hewa, lakini Mungu aliwapa wanadamu jukumu la kutunza mazingira.
- Fahamu kwamba Mungu atarejesha uumbaji wakati Yesu Kristo atakaporudi.

### Climate Change Introduction

- Realize that humans have caused damage to the planet.
- Recall the various ways in which the earth has been damaged by human activities and greed (sin).
- Introduce that the Maasai traditional environmental knowledge has good ways to take care of creation (more in lesson 2).
- Introduce basic climate science knowledge, like global-warming gases (greenhouse gases) (more in Lesson 3).



### Utangulizi wa Mabadiliko ya Tabianchi

- Tambua kwamba wanadamu wamesababisha uharibifu kwenye dunia.
- Kumbuka njia mbalimbali ambazo dunia imeharibiwa na shughuli za binadamu na uchoyo (dhambi).
- Tambulisha kwamba maarifa ya kitamaduni ya mazingira ya Wamaasai ni njia nzuri za kutunza uumbaji (zaidi katika somo la 2).
- Eleza maarifa ya msingi ya sayansi ya tabia nchi, kama vile gesi za ongezeko la joto la dunia (zaidi katika Somo la 3).

### Hope

- Know that our Creator, the God of Hope, loves the world and will never abandon it.
- With the knowledge God has given to humanity, the environment can be cared for in ways that nurture renewal of the creation.



### Tumaini

- Fahamu kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu na hatauacha kamwe.
- Kwa maarifa ambayo Mungu amewapa wanadamu, mazingira yanaweza kutunzwa kwa njia zinazochochea uhuishaji wa uumbaji.

#### Affective: Feel



- Students will reflect on their role in God’s creation.
- **Blessed** by God’s good creation.
  - **Honored** to be commissioned by God to care for creation.
  - **Committed** to care for God’s creation.

- Wanafunzi watatafakari kuhusu jukumu lao katika uumbaji wa Mungu.
- Wamebarikiwa na uumbaji mzuri wa Mungu.
  - Wameheshimiwa kutumwa na Mungu kutunza uumbaji.
  - Wamejitolea kutunza uumbaji wa Mungu.

#### Behavioral: Do



- Students in small groups will:
- Identify traditional songs and practices that reveal that the Maasai people acknowledge God as a creator;
  - Write a new verse from this lesson’s content;
  - Then sing the song.



- Wanafunzi katika vikundi vidogo watafanya hivi:
- Kubainisha nyimbo na desturi za kitamaduni zinazoonyesha kwamba Wamaasai wanamtambua Mungu kama muumbaji;
  - Kutunga wimbo mpya ubeti mmoja kutoka kwa maudhui ya somo hili;
  - Kisha kuimba wimbo huo.

**Notes for Teachers**

- *Words in italics* are guiding information for the teachers.
- Teachers are encouraged to use active learning methods rather than lecturing. This includes small group discussion and exercises.
- Minutes for each activity are suggested in the far-left column to fit into a 60-minute lesson.
- See other good resources in Chapter 22 to equip the teacher prior to teaching the lesson.
- English Bible text from the ESV, [Gen 1 ESV - The Creation of the World - In the - Bible Gateway](#)

**Teaching Equipment Needed**

- Anthropogenic (human caused) climate change chart (on blackboard or large paper)

**Student Supplies / Handouts**

- Bibles
- Soft/bulletin board on the wall and clips or pins or tape to post large paper on the walls
- BOOK: A chart of Bible verses or slips of paper with Bible verses: Genesis 1:31; Genesis 2:15; Psalm 24:1–2; John 3:16
- HOPE: Slips of paper with Bible verses: Romans 8:19–21; Colossians 1:15–17; Revelation 21:1–5

**Vidokezo kwa Walimu**



- Maneno yaliyoandikwa kwa herufi za italiki ni mwongozo kwa walimu.
- Walimu wanahimizwa kutumia mbinu za kujifunza kwa vitendo badala ya kutoa mihadhara. Hii inajumuisha majadiliano na mazoezi ya vikundi vidogo.
- Dakika za kila shughuli zinapendekezwa katika safu wima ya kushoto ili kuendana na somo la dakika 60.
- Tazama nyenzo zingine nzuri katika Sura ya 22 ili kumpa mwalimu ujuzi kabla ya kufundisha somo.
- Kiswahili Biblia kutoka SRUV, [Mwanzo 1 | SRUV Bible | YouVersion](#);

**Vifaa vya Kufundishia Vinahitajika**

- Chati ya mabadiliko ya tabianchi yanayosababishwa na binadamu (kwenye ubao mweusi au karatasi kubwa)


**Vifaa vya Wanafunzi / Vipeperushi vya Karatasi**

- Biblia
- Ubao laini/wa matangazo ukutani na kifaa cha kubania karatasi au pini au utepe wa kubandika karatasi kubwa ukutani
- KITABU: Chati ya mistari ya Biblia au vipande vya karatasi vyenye mistari ya Biblia: Mwanzo 1:31; Mwanzo 2:15; Zaburi 24:1–2; Yohana 3:16
- TUMAINI: Vipande vya karatasi vyenye mistari ya Biblia: Warumi 8:19–21; Wakolosai 1:15–17; Ufunuo 21:1–5

Time	Content	Maudhui
	 <b>1) HOOK</b> attention getter	 <b>1) NDOANO</b> kupata usikivu
	<p><b>Maa Stories, Cultural Instructions, and Practices on Creation Care</b></p>	<p><b>Hadithi za Maa, Maelekezo ya Kitamaduni, na Namna za Utunzaji wa Uumbaji</b></p>
5	<ul style="list-style-type: none"> <li>How do Maasai stories show that God is the creator and the owner of creation?</li> </ul> <p><i>The students are encouraged to take notes for future reference.</i></p> <p><i>Students may identify and share the traditional knowledge and practices that promote creation care, such as:</i></p> <ul style="list-style-type: none"> <li>Cultural norms and taboos that advocate for creation care,</li> <li>Cultural teaching at various age groups that insist on creation care, or</li> <li>Daily practices in life that recognize the importance of creation care.</li> </ul> <p><b>Transition statement (connecting Hook to Main Point)</b></p>	<ul style="list-style-type: none"> <li>Hadithi za Wamaasai zinaonyeshaje kwamba Mungu ndiye muumbaji na mmiliki wa uumbaji?</li> <li>Wanafunzi wanahimizwa kuandika maelezo kwa ajili ya marejeleo ya baadaye.</li> </ul> <p><i>Wanafunzi wabainishe na kushirikisha maarifa na desturi za kitamaduni zinazochoea utunzaji wa uumbaji, kama vile:</i></p> <ul style="list-style-type: none"> <li>Kanuni na miiko ya kitamaduni inayotetea utunzaji wa uumbaji,</li> <li>Mafundisho ya kitamaduni katika makundi rika mbalimbali yanayosisitiza utunzaji wa uumbaji, au</li> <li>Vitendo vya kila siku maishani vinavyotambua umuhimu wa utunzaji wa uumbaji.</li> </ul> <p><b>Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)</b></p>
1	<ul style="list-style-type: none"> <li>The rich Maasai traditional knowledge as we heard—on the goodness of God’s creation and human responsibility in the proper use and caring of creation—align very well with the Bible teachings.</li> <li>Let’s look together at some important texts in the Bible.</li> </ul>	<ul style="list-style-type: none"> <li>Utajiri wa Maarifa ya kitamaduni ya Wamaasai kama tulivyosikia—juu ya wema wa uumbaji wa Mungu na wajibu wa mwanadamu katika matumizi na utunzaji sahihi wa uumbaji—yanaendana vyema na mafundisho ya Biblia.</li> <li>Hebu tuangalie pamoja baadhi ya maandiko muhimu katika Biblia.</li> </ul>




**2) BOOK** Bible observation and/or core content


**2) KITABU** uchunguzi wa Biblia na/ au maudhui ya msingi

## Bible Discussions

15 *Form small groups consisting of three to four students each. The groups are assigned to read and discuss one of the following verses. The questions are available on the same sheet of paper that have Bible verses.*

- What does this Bible verse say about God?
- What does this Bible verse say about God's creation?
- What does this Bible verse say about the relationship between humans and God's creation?
- Choose a reporter for your group to write down key points and be prepared to share your insights with the rest of the class.

*Bible text from the ESV unless otherwise noted.*

- **Genesis 1:31a** And God saw everything that he had made, and behold, it was very good.
- **Genesis 2:15** The LORD God took the man and put him in the garden of Eden to work it and keep it.  
(עָבַד is the Hebrew word that means both work and serve).
- **Psalms 24:1** The earth is the LORD's and the fullness thereof, / the world and those who dwell therein,
- **John 3:16** "For God so loved the world, that he gave his only Son, that whoever believes in him should not perish but have eternal life." (The "world" in New Testament Greek is *cosmos*, all the created world, including non-human creation.)

*Each group reporter gives a 1 to 2-minute summary presentation of key points.*

*Collect the key points to be attached to the wallboard.*



## Majadiliano ya Biblia

*Unda vikundi vidogo vyenye wanafunzi watatu hadi wanne kila kimoja. Vikundi vimepewa jukumu la kusoma na kujadili mojawapo ya mistari ifuatayo. Maswali yanapatikana kwenye ile karatasi yenye mistari ya Biblia.*

- Ubeti huu wa Biblia unasema nini kuhusu Mungu?
- Ubeti huu wa Biblia unasema nini kuhusu uumbaji wa Mungu?
- Ubeti huu wa Biblia unasema nini kuhusu uhusiano kati ya wanadamu na uumbaji wa Mungu?
- Chagua mwandishi kwa ajili ya kikundi chako ili aandike mambo muhimu na awe tayari kushiriki maarifa yako kwa darasa lote.

*Maandishi ya Biblia kutoka SRUV isipokuwa kama yametajwa vinginevyo.*

- **Mwanzo 1:31a** Mungu akaona kila kitu alichokifanya, na tazama, ni chema sana.
- **Mwanzo 2:15** BWANA Mungu akamtwa huyo mtu, akamweka katika bustani ya Edeni, ailime na kuitunza.  
(עָבַד ni neno la Kiebrania linalomaanisha kazi na kuitumikia.)
- **Zaburi 24:1** Nchi na vyote vilivyomo ni mali ya BWANA, / Dunia na wote wakaao ndani yake.
- **Yohana 3:16** Kwa maana jinsi hii Mungu aliupenda ulimwengu, hata akamtoa Mwanawe pekee, ili kila mtu amwaminiye asipotee, bali awe na uzima wa milele. ("Ulimwengu" katika Kigiriki cha Agano Jipya ni κοσμος, ulimwengu wote uliombwa, ikiwa ni pamoja na uumbaji usio wa kibinadamu.)

*Kila mwandishi wa habari wa kikundi hutoa muhtasari wa dakika 1 hadi 2 wa mambo muhimu.*

*Kusanya mambo muhimu yatakayoambatanishwa kwenye ubao wa ukutani.*

## God's Charge to Care for Creation (Main point)

*Note to the teacher: The Maasai traditionally understand that God controls the weather. There is also biblical teaching of God's sovereignty over the weather. However, if this idea was applied to climate change, then some students may think incorrectly that we can do nothing to reduce the negative effects of climate change (which is different than weather, as identified below). So, these lessons seek to both affirm God's sovereignty while also recognizing that God has commissioned us to care for the creation, which also can reduce the negative effects of climate change. Please uphold this tension and nuanced thinking in your teaching.*

The Bible emphasizes that humans are entrusted with the care of the earth. **Genesis 2:15:** "The LORD God took the man and put him in the garden of Eden to work it and keep it." The Hebrew word from the Bible that is translated as "work" can also mean "serve," which indicates the responsibility to minister to the creation in a way that is different from having mastery over or dominating over it.

## Image of God

- 5 *The facilitator should guide the students to discover a beginning understanding of **Genesis 1:27**, that humankind is created "in the image of God."*
- Turn in your Bibles to **Genesis 1:27**. Who will read it for the class?
    - So, God created man in his own image, / in the image of God he created him; / male and female he created them.
  - What does it mean that humankind is created "in the image of God" in relation to caring for creation?
    - God revealed Godself through nature/creation.

## Jukumu la Mungu la Kutunza Uumbaji (Hoja Kuu)

*Dokezo kwa mwalimu: Wamaasai wanaelewa kijadi kwamba Mungu anadhibiti hali ya hewa. Pia kuna mafundisho ya kibiblia kuhusu uhuru wa Mungu juu ya hali ya hewa. Hata hivyo, ikiwa wazo hili lilitumika kwa mabadiliko ya tabianchi, basi baadhi ya wanafunzi wanaweza kufikiri kimakosa kwamba hatuwezi kufanya chochote kupunguza athari mbaya za mabadiliko ya tabianchi (ambayo ni tofauti na hali ya hewa, kama ilivyoainishwa hapa chini). Kwa hivyo, masomo haya yanalenga kuthibitisha uhuru wa Mungu huku pia yakitambua kwamba Mungu ametuagiza kutunza uumbaji, ambao pia unaweza kupunguza athari mbaya za mabadiliko ya tabianchi. Tafadhali shikilia mvutano huu na mawazo yenye mantiki katika ufundishaji wako.*

Biblia inasisitiza kwamba wanadamu wamepewa jukumu la kutunza dunia. **Mwanzo 2:15:** "BWANA Mungu akamtwa huyo mtu, akamweka katika bustani ya Edeni, ailime na kuitunza." Neno la Kiebrania kutoka Biblia linalotafsiriwa kama "kazi" linaweza pia kumaanisha "kutumikia," ambalo linaonyesha jukumu la kuhudumia uumbaji kwa njia tofauti na kuwa na mamlaka juu yake au kutawala juu yake.

## Mfano wa Mungu

- Mwezeshaji anapaswa kuwaongoza wanafunzi kugundua uelewa wa mwanzo wa **Mwanzo 1:27**, kwamba wanadamu wameumbwa "kwa mfano wa Mungu."*
- Fungua Biblia zako kwenye **Mwanzo 1:27**. Nani atasoma kwa ajili ya darasa?
    - Mungu akaumba mtu kwa mfano wake, / kwa mfano wa Mungu alimwumba, / mwanamume na mwanamke aliwaumba.
  - Inamaanisha nini kwamba wanadamu wameumbwa "kwa mfano wa Mungu" kuhusiana na kutunza uumbaji?
    - Mungu alijifunua kupitia asili/uumbaji.

- Humas are representatives to look after and take care of the world that God loves.
- Jesus became part of creation.

*The discussion can also reflect on how both men and women in various social positions in the Maasai society have played a role reflecting “the image of God.”*

- However, the world has been spoiled because of human sin—especially seen in selfishness and greed.
- This is opposite of Jesus’s teaching in **Mathew 22:37–39**, which commands love of God and love of others. And [Jesus] said to him, “You shall love the Lord your God with all your heart and with all your soul and with all your mind. This is the great and first commandment. And the second is like it: You shall love your neighbor as yourself.”

## Climate Change Introduction

3 *Knowledge generation through quick questions and short answers.*

- How do the Maasai understand the concept of climate change?
- What are some effects of climatic change that we see now that are drastically different from what we have in our traditional stories?

Here’s some beginning information about how science can inform us about caring for God’s creation. We will review and add more information in lesson 3.

## Climate Change Definition (Key point)

- 7
- Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other aspects of the Earth’s climate system.



- Binadamu ni wawakilishi wa kutunza na kutunza ulimwengu ambao Mungu anaupenda.
- Yesu alifanyika/ alijifanya sehemu ya uumbaji.

*Majadiliano yanaweza pia kutafakari jinsi wanaume na wanawake katika nafasi mbalimbali za kijamii katika jamii ya Wamaasai wamechukua jukumu la kuonyesha “mfano wa Mungu.”*

- Hata hivyo, ulimwengu umeharibiwa kwa sababu ya dhambi ya mwanadamu—hasa inavyodhihirishwa katika ubinafsi na uchoyo.
- Ambapo ni kinyume na mafundisho ya Yesu katika **Mathayo 22:37–39**, ambayo inaamuru upendo kwa Mungu na upendo kwa wengine. [Yesu] Akamwambia, “Mpende Bwana Mungu wako kwa moyo wako wote, na kwa roho yako yote, na kwa akili zako zote. Hii ndiyo amri iliyo kuu, tena ni ya kwanza. Na ya pili yafanana nayo, nayo ni hii, Mpende jirani yako kama nafsi yako.”

## Utangulizi wa Mabadiliko ya Tabianchi

*Uzalishaji wa maarifa kupitia maswali ya haraka na majibu mafupi.*

- Wamaasai wanaelewaje dhana ya mabadiliko ya tabianchi?
- Ni athari gani za mabadiliko ya tabianchi tunazoziona sasa ambazo ni tofauti sana na zile tulizonazo katika hadithi zetu za kitamaduni?

Hapa kuna taarifa za mwanzo kuhusu jinsi sayansi inavyoweza kutufahamisha kuhusu kutunza uumbaji wa Mungu. Tutapitia na kuongeza taarifa zaidi katika somo la tatu.

## Ufafanuzi wa Mabadiliko ya Tabianchi (Hoja muhimu)

- Mabadiliko ya tabianchi yanarejelea mabadiliko ya muda mrefu katika halijoto, mvua, mifumo ya upepo, na vipengele vingine vya mfumo wa tabia nchi wa Dunia.

### ***Climate Change is:***

- Any process that causes adjustments to a climate system could be described as creating “climate change.” These processes include volcanic eruptions and cyclical changes in solar activity. The planet’s climate has constantly been changing over geological time.
- However, the current period of warming is occurring more rapidly than many past events. Scientists are concerned by the rapid human-induced warming because of the serious implications for the stability of the planet’s climate.
- Today, however, the phrase is most often used as shorthand for anthropogenic climate change—in other words, climate change caused by humans. The principal way in which humans are understood to be affecting the climate is through the release of heat-trapping gases into the air, such as burning fossil fuels (oil, coal, gas, plastics).<sup>1</sup>

### ***Global-warming gases (“Greenhouse Gases”)***

- Have you heard about global-warming or “greenhouse gases” before?
- These are the heat-trapping gases that absorb and trap the sun’s radiation in earth’s atmosphere—like a blanket—so the heat cannot escape.<sup>2</sup>
- So, the earth warms up—like a person in a blanket.
- But the earth is getting too hot and causing problems that are seen in effects like:<sup>3</sup>
  - The rise of sea level;
  - Extreme weather like flooding in some areas and droughts in other areas; and
  - These droughts can cause crops to fail.
  - There are more effects that will be discussed further in lesson 3.

### ***Mabadiliko ya Tabianchi ni:***

- Mchakato wowote unaosababisha marekebisha kwenye mfumo wa tabianchi unaweza kuelezewa kama unaosababisha “mabadiliko ya tabianchi.” Mchakato hii inajumuisha mlipuko wa volkeno hadi mabadiliko ya mzunguko katika shughuli za jua. Tabia nchi ya dunia imekuwa ikibadilika kila mara kwa wakati wa kijiolojia.
- Hata hivyo, kipindi cha sasa cha ongezeko la joto kinatokea kwa kasi zaidi kuliko matukio mengi ya zamani. Wanasayansi wana wasiwasi na ongezeko la joto la haraka linalosababishwa na binadamu kwa sababu ya athari kubwa kwa uthabiti wa tabia nchi ya dunia.
- Hata hivyo, leo, msemu huo mara nyingi hutumika kama kifupi cha mabadiliko ya tabianchi yanayosababishwa na binadamu—kwa maneno mengine, mabadiliko ya tabianchi yanayosababishwa na binadamu. Njia kuu ambayo wanadamu wanayoathiri tabia nchi ni kupitia kutolewa kwa gesi zinazozuia joto angani, kama vile kuchoma mafuta ya visukuku (mafuta, makaa ya mawe, gesi, plastiki).<sup>1</sup>

### ***Gesi zinazoongeza joto dunia***

- Je, umesikia kuhusu ongezeko la joto dunia au “gesi mbaya zinazoongeza joto” hapo awali?
- Hizi ni gesi zinazozuia joto; zinazonyonya na kunasa mionzi ya jua katika angahewa ya dunia—kama blanketi—hivyo joto haliwezi kutoroka.
- Kwa hivyo, dunia inapata joto—kama mtu aliyevaa blanketi.
- Lakini dunia inapata joto sana na kusababisha athari kama:
  - Kupanda kwa usawa wa bahari;
  - Hali mbaya ya hewa kama mafuriko katika baadhi ya maeneo na ukame katika maeneo mengine; na
  - Na ukame huu unaweza kuharibu uoto wa asili na mazao.
  - Kuna athari zaidi ambazo zitajadiliwa zaidi katika somo la 3.

### Human Caused (Anthropogenic) Climate Change

- Greed and selfishness keep industries burning fossil fuels in order to make money instead of caring for the environment.
- While we know what to do to reduce the negative effects of climate change, knowledge does not empower us to do it. The sins of selfishness, greed, and apathy are too strong. This lack of love is going against the great commandment to love one another.  
**John 13:34–35:** [Jesus said,] “A new commandment I give to you, that you love one another: just as I have loved you, you also are to love one another. By this all people will know that you are my disciples, if you have love for one another.”



## The Maasai Context

- 4 The Maasai have the saying “*melaikinoi ororei te enkigwena*,” which means, “Through meeting discussions every problem finds its solution.”



### Impact of Climate Change on the Maasai

- For the Maasai, climate change is experienced as significant shifts in weather systems that impact their traditional way of life.
  - In Maasailand, climate change means changes in weather patterns, like less rain, more droughts, and unpredictable seasons.
  - These changes make it harder to find water and grass for their animals.
  - The Maasai see this as both a spiritual issue linked to *Engai* and a result of human actions.
- The impacts upon the Maasai will be discussed further in the next lesson.

### Mabadiliko ya Tabianchi Yanayosababishwa na Binadamu

- Uchoyo na ubinafsi huwafanya viwanda viendeleo kuchoma mafuta ya visukuku ili kupata pesa badala ya kutunza mazingira.
- Ingawa tunajua la kufanya ili kupunguza athari mbaya za mabadiliko ya tabianchi, maarifa hayatuwezeshi kuyafanya. Dhambi za ubinafsi, uchoyo, na kutojali ni kubwa sana. Ukosefu huu wa upendo ni kwenda kinyume na amri kuu ya kupendana.  
**Yohana 13:34–35:** [Yesu alisema,] “Amri mpya nawapa, Mpendane. Kama vile nilivyowapenda ninyi, nanyi mpendane vivyo hivyo. Hivyo watu wote watatambua ya kuwa ninyi mmekuwa wanafunzi wangu, mkiwa na upendo ninyi kwa ninyi.”



## Muktadha wa Wamaasai

Wamaasai wana msemo “*melaikinoi ororei te enkigwena*,” unaomaanisha, “Kupitia mijadala ya mikutano kila tatizo hupata suluhisho lake.”

### Athari za Mabadiliko ya Tabianchi kwa Wamaasai

- Kwa Wamaasai, mabadiliko ya tabianchi hutokea kama mabadiliko makubwa katika mifumo ya hali ya hewa yanayoathiri mtindo wao wa maisha wa kitamaduni.
  - Kwa Wamaasai, mabadiliko ya tabianchi yanamaanisha mabadiliko katika mifumo ya hali ya hewa, kama vile mvua kidogo, ukame zaidi, na misimu isiyotabirika.
  - Mabadiliko haya hufanya iwe vigumu kupata maji na nyasi kwa ajili ya wanyama wao.
  - Wamaasai wanaona hili kama suala la kiroho linalohusiana na *Engai* na matokeo ya matendo ya binadamu.
- Athari kwa Wamaasai zitajadiliwa zaidi katika somo lijalo.

4

## Biblical Creation Care Continued



- God has given us the Bible to guide us in all our ways. Therefore, when the Maasai have Bible meetings aiming at seeking solutions and guidance, the Holy Spirit will empower us and lead us. The word of God has transforming power that can encourage us!
- Think back to that most beautiful place in your area that you want to preserve.
  - Think of the wild animals in the bush and their environment that need protection.
  - Do not forget the soil that you always preserve to avoid soil erosion.
  - The truth is, we are not doing this only for the sake of humankind but also for God's sake who so loved the world and died to reconcile the world to Godself.

### Reflection

*Students will reflect on their position in God's creation.*

- Think of how you feel when the creation provides all you need.
  - **Blessed** by God's good creation.
- Think of the position each human holds as entrusted by God.
  - Mention the tasks of Maa elders, leaders, warriors, men, women and parents and children concerning creation care.
- Think of God's purpose in placing you in that position in God's creation.
  - **Honored** to be commissioned by God to care for creation.
- Think of your sincere response to God for such a blessing.
  - **Committed** to care for God's creation.

### This is the first step.

- In our second of 3 lessons, we will look at WHICH Maasai traditions are good for caring for God's creation.

## Utunzaji wa Uumbaji wa Kibiblia Unaendelea

- Mungu ametupa Biblia ili ituongoze katika njia zetu zote. Kwa hivyo, wakati Maa wanapokuwa na mikutano ya Biblia inayolenga kutafuta suluhisho na mwongozo, Roho Mtakatifu atatutia nguvu na kutuongoza. Neno la Mungu lina nguvu ya kubadilisha ambayo inaweza kututia moyo!
- Fikiria tena mahali pazuri zaidi katika eneo lako ambapo unataka kuhifadhi.
  - Fikiria wanyama wa porini kwenye vichaka na mazingira yao wanaohitaji ulinzi.
  - Usisahau udongo ambao unahifadhi kila wakati ili kuepuka mmomonyoko wa udongo.
  - Ukweli ni kwamba, hatufanyi hivi kwa ajili ya wanadamu tu bali pia kwa ajili ya Mungu ambaye aliupenda ulimwengu sana na akafa ili kupatanisha ulimwengu na Mungu Mwenyewe.

### Tafakari

*Wanafunzi watatafakari nafasi yao katika uumbaji wa Mungu.*

- Fikiria jinsi unavyohisi wakati uumbaji unakupa kila kitu unachohitaji.
  - **Umeharikiwa** na uumbaji mzuri wa Mungu.
- Fikiria nafasi ambayo mwanadamu anayo kama alivyokabidhiwa na Mungu.
  - Taja kazi za wazee wa Maa, viongozi, mashujaa, wanaume, wanawake na wazazi na watoto zinazohusu utunzaji wa uumbaji.
- Fikiria kusudi la Mungu katika kukuweka katika nafasi hiyo katika uumbaji wa Mungu.
  - **Umeheshimiwa** kuagizwa na Mungu kutunza uumbaji.
- Fikiria mwitikio wako wa dhati kwa Mungu kwa baraka kama hiyo.
  - **Umehitolea** kutunza uumbaji wa Mungu.

### Hii ni hatua ya kwanza.

- Katika somo letu la pili kati ya masomo 3, tutaangalia NJIA nzuri za asili za Wamasai za kutunza uumbaji wa Mungu.

- In our third and last lesson, we will look more at WHAT we can practically do to care for God’s creation.
- For now, let’s reflect more on WHY this matters and HOW we, the people of God, can make a difference.

## Hope

6 *Outcome: Know that our Creator, the God of Hope, loves the world and will never abandon it.*

- Give a slip of paper with each of the 3 Bible verses to 3 students and ask them to look up the Bible text and be ready to read it to the whole class.
  - **Romans 8:19–21**
  - **Colossians 1:15–17**
  - **Revelation 21:1–5**
- When the Maasai or other people hear about the climate change crisis, they may get depressed or anxious. This is called **climate anxiety**.

*Remind the students of the merciful ways Engai dealt with the creation through myths and Maa stories.*

*For example, there have been periods of traumatic war among the Maa groups, diseases in history that killed almost all Maa livestock, severe drought that deprived the Maasai of wealth and that caused suffering; but God is the God of hope, and God will never abandon God’s creation.*

- However, it is important to have hope!
- First, God is the God of hope who loves and sustains the world! And God has promised not to abandon it but rather restore it! Let’s look at 3 example Bible verses.

*Have the designated student read the Bible verse to the whole class. Below is the text to guide the discussion.*



- Katika somo letu la tatu na la mwisho, tutaangalia zaidi NJIA ambazo tunaweza kwa vitendo ili kutunza uumbaji wa Mungu.
- Kwa sasa, hebu tutafakari zaidi kuhusu KWA NINI hili ni muhimu na JINSI sisi, watu wa Mungu, tunavyoweza kuleta mabadiliko.

## Tumaini

*Matokeo: Jua kwamba Muumba wetu, Mungu wa Tumaini, anaupenda ulimwengu na hatauacha kamwe.*

- Wape wanafunzi 3 karatasi yenye mistari yote mitatu 3 ya Biblia na uwaombe wawe tayari kuisoma kwa darasa zima.
  - **Warumi 8:19–21**
  - **Wakolosai 1:15–17**
  - **Ufunuo 21:1–5**
- Wamaasai au watu wengine wanaposikia kuhusu mgogoro wa mabadiliko ya tabianchi, wanaweza kufadhaika au kuwa na wasiwasi. Hii inaitwa **wasiwasi wa tabianchi**.

*Wakumbushe wanafunzi jinsi Engai anavyoshughulikia uumbaji kwa huruma kupitia hadithi za Wamaa.*

*Kwa mfano, kumekuwa na vipindi vya vita vya kutisha miongoni mwa makundi ya Wamaa, magonjwa katika historia yaliyoua karibu mifugo yote ya Wamaa, ukame mkali uliowanyima utajiri wa Wamaa na kusababisha mateso; lakini Mungu ni Mungu wa matumaini, na Mungu hatawahi kuacha uumbaji wa Mungu.*

- Hata hivyo, ni muhimu kuwa na matumaini!
- Kwanza, Mungu ni Mungu wa matumaini anayependa na kutegemeza ulimwengu! Na Mungu ameahidi kutouacha bali kuurejesha! Hebu tuangalie mifano 3 ya mistari ya Biblia.

*Mwanafunzi aliyeteuliwa asome ubeti wa Biblia kwa darasa zima. Hapa chini kuna maandishi ya kuongoza majadiliano.*

- **Romans 8:19–21** The creation waits in eager expectation for the children of God to be revealed. For the creation was subjected to frustration, not by its own choice, but by the will of the one who subjected it, in hope that the creation itself will be liberated from its bondage to decay and brought into the freedom and glory of the children of God.
  - Did you hear? The creation will be freed from its bondage to decay.
- **Colossians 1:15–17** The Son is the image of the invisible God, the firstborn over all creation. For in him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities; all things have been created through him and for him. He is before all things, and in him all things hold together. For by him all things were created, in heaven and on earth, visible and invisible, whether thrones or dominions or rulers or authorities—all things were created through him and for him. And he is before all things, and in him all things hold together.
  - Here we read that God is the Creator and Sustainer of the world and will never abandon the creation but will reconcile ALL things to Jesus Christ. We do not understand how this is going to happen, but we trust God’s promises.
  - So, we know that Jesus is holding all things together—including the earth.
- **Revelation 21:1–5** Then I saw a new heaven and a new earth, for the first heaven and the first earth had passed away, and the sea was no more. And I saw the holy city, new Jerusalem, coming down out of heaven from God, prepared as a bride adorned for her husband. And I heard a loud voice from the throne saying, “Behold, the dwelling place of God is with man. He will dwell with them, and they will be his people, and God himself will be with them as their God. He will wipe away every tear from their eyes, and death shall be no more, neither shall there be mourning, nor crying, nor pain anymore, for the former things have passed away.” And he who was seated on the throne said, “Behold, I am making all things new.” Also he said, “Write this down, for these words are trustworthy and true.”
- **Warumi 8:19–2** Kwa maana viumbe vyote pia vinatazamia kwa shauku nyingi kufunuliwa kwa wana wa Mungu. Kwa maana viumbe vyote pia vilitiishwa chini ya ubatili; si kwa hiari yake, ila kwa sababu yake yeye atiyevitiisha katika tumaini; kwa kuwa viumbe vyenyewe navyo vitawekwa huru na kutolewa katika utumwa wa uharibifu, hata viingie katika uhuru wa utukufu wa watoto wa Mungu.
  - Umesikia? Uumbaji utawekwa huru kutoka katika utumwa wake wa kuoza.
- **Wakolosai 1:15–17** Naye ni mfano wa Mungu asiyeonekana, mzaliwa wa kwanza wa viumbe vyote. Kwa kuwa katika yeye vitu vyote viliumbwa, vilivyo mbinguni na vilivyo juu ya nchi, vinavyoonekana na visivyoonekana; ikiwa ni vitu vya enzi, au milki, au enzi, au mamlaka; vitu vyote viliumbwa kwa njia yake, na kwa ajili yake. Naye amekuwako kabla ya vitu vyote, na vitu vyote hushikana katika yeye.
  - Hapa tunasoma kwamba Mungu ndiye Muumba na Mlinzi wa ulimwengu hataacha kamwe uumbaji wa Mungu bali ataunganisha vitu VYOTE na Yesu Kristo. Hatuelewi jinsi hili litakavyotokea, lakini tunaziamini ahadi za Mungu.
  - Kwa hivyo, tunajua kwamba Yesu anaratibisha vitu vyote—ikiwa ni pamoja na dunia pamoja.
- **Ufunuo 21:1–5** Kisha nikaona mbingu mpya na nchi mpya; kwa maana mbingu za kwanza na nchi ya kwanza zimekwisha kupita, wala hakuna bahari tena. Nami nikauona mji ule mtakatifu, Yerusalemu mpya, ukishuka kutoka mbinguni kwa Mungu, umewekwa tayari, kama bibi arusi aliyekwisha kupambwa kwa mumewe. Nikasikia sauti kubwa kutoka katika kile kiti cha enzi ikisema, Tazama, maskani ya Mungu ni pamoja na wanadamu, naye atafanya maskani yake pamoja nao, nao watakuwa watu wake. Naye Mungu mwenyewe atakuwa pamoja nao. Naye atafuta kila chozi katika macho yao, wala mauti haitakuwapo tena; wala maombolezo, wala kilio, wala maumivu hayatakuwapo tena; kwa kuwa mambo ya kwanza yamekwisha kupita. Na yeye aketiye juu ya kile kiti cha enzi akasema, Tazama, nayafanya yote kuwa mapya. Akaniambia, Andika ya kwamba maneno hayo ni amini na kweli.

- Here, the original Greek language has a meaning of *renewed* earth and not a new one. Yes, God has promised not to abandon God’s creation but to renew it!
- **This is good news!** This is news we can trust, because it is from our trustworthy God. The foundation of our hope is not wishful thinking, but a trustworthy and loving God.
  - In our third lesson, we also learn about hope from the scientists.

- Hapa, lugha ya asili ya Kigiriki ina maana ya dunia iliyofanywa upya na si mpya. Ndiyo, Mungu ameahidi kutoacha uumbaji wa Mungu bali kuufanya upya!
- **Hii ni habari njema!** Hii ni habari tunayoweza kuiamini, kwa sababu inatoka kwa Mungu wetu anayeaminika. Msingi wa tumaini letu si mawazo ya kutamani, bali ni Mungu anayeaminika na mwenye upendo.
  - Katika somo letu la tatu, pia tunajifunza kuhusu tumaini kutoka kwa wanasayansi.



## Creation Care in Song



10 *This activity may take 10–15 minutes. So, while it is a very good application, it needs enough time to be done well.*

- With a partner or small group, remind yourselves of the traditional songs and practices that reveal that the Maasai people acknowledge God as a creator and those that praise God for God’s creation and ask for God’s intervention at the time of severe drought.
- To one of the traditional songs, write a new verse from this lesson’s content.
- Sing the song and new verse.

### Other Activity Options

- Or
- Write down several important points that you are eager to teach in Sunday school classes on creation care. Share it with your partner and clip the papers on the board for others to see.
  - Discuss with your partner the beautiful environment in your village, its features, and the benefit it offers to the people and animals. Identify how society took measures to conserve it.
  - Write down two points on how God involves humankind in caring for creation.

## Uanagalizi wa Uumbaji katika Wimbo

*Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni programu nzuri sana, inahitaji muda wa kutosha kuikamilisha vizuri.*

- Pamoja na mwenzako au kikundi kidogo, jikumbusheni zile nyimbo na desturi za kitamaduni zinazoonyesha kwamba Wamaasai wanamtambua Mungu kama muumbaji na zile zinazomsifu Mungu kwa uumbaji wa Mungu na kwamba wanaomba Mungu aingilie kati wakati wa ukame mkali.
- Katika mojawapo ya nyimbo hizo za kitamaduni, andika ubeti mpya kutoka kwa maudhui ya somo hili.
- Imba wimbo na ubeti mpya.

### Shughuli Nyingine Zinazoweza Kufanyika

1. Zungumzia jambo moja au mawili muhimu ambayo una hamu ya kuwafundisha watoto wako au wajukuu zako kuhusu utunzaji wa uumbaji.
2. Jadili na mwenzi wako/kikundi kidogo kuhusu mazingira mazuri katika kijiji chako, sifa zake, na faida ambayo yanatoa kwa watu na wanyama. Tambua jinsi jamii ilivyochukua hatua za kuyahifadhi.
3. Zungumzia njia moja au mbili ambazo Mungu anawahusisha wanadamu katika kutunza uumbaji. Swali la 3 litaulizwa tena katika

*Question 3 will be asked again in Lesson 3 where we see specific ways creation care can reduce the negative effects of climate change.*

*The whole group will sing one traditional song to thank God for rain and grass.*

**Prayer**

.5 God, the creator of heaven and earth, we thank you for the blessing of creation and honor of being created in your image.

Thank you for rain and grass, milk, and children.

We are asking—through your grace and kindness that lasts forever—to enable us to accomplish our task of caring for your creation. Give us unshaken hope at the midst of dramatic climate change. For you are our refuge now and forever. Amen.

*Somo la 3 ambapo tunaona njia mahususi za utunzaji wa uumbaji ambazo zinaweza kupunguza athari mbaya za mabadiliko ya tabianchi.*

*Kundi zima litaimba wimbo mmoja wa kitamaduni wa kumshukuru Mungu kwa mvua na nyasi.*

**Maombi**

God, muumba wa mbingu na dunia, tunakushukuru kwa baraka ya uumbaji na heshima ya kuumbwa kwa mfano wako.

Asante kwa mvua na nyasi, maziwa, na watoto.

Tunaomba—kupitia neema na wema wako unaodumu milele—utuwezeshe kutimiza kazi yetu ya kutunza uumbaji wako. Tupe tumaini lisilotikisika katikati ya mabadiliko makubwa ya tabianchi. Kwa maana wewe ndiye kimbilio letu sasa na milele. Amina.

**Bibliography**

<sup>1</sup> “Climate Change Mitigation and Adaptation: Simple Guide to Schools in Africa” (UNESCO, United Nations Educational, Scientific and Cultural Organization, 2019), 4, <https://unesdoc.unesco.org/ark:/48223/pf0000372168>.

<sup>2</sup> “Climate Change Mitigation and Adaptation:,” 4.

<sup>3</sup> “Climate Change Mitigation and Adaptation:,” 8–12.

10. TEE Lesson 2: English/Kiswahili

**Pastoralist Maasai Traditional Environmental Knowledge for Creation Care  
Ujuzi wa Asili wa Wamaasai kwa Ajili ya Utunzaji wa Uumbaji**

Main Point

The Maasai world view—of the interdependence between humans, the environment, and *Engai*—is similar to Bible’s “creation triangle.”



Mtazamo wa ulimwengu wa Wamaasai—wa utegemezi kati ya wanadamu, mazingira, na *Engai*—unafanana na “pembetatu ya uumbaji” ya Biblia.

Learning Outcomes

As a result of this lesson, the learner will:

Kama matokeo ya somo hili, mwanafunzi atafanya:

Cognitive: Know



**Bible**

- Know that the biblical “creation triangle” refers to the relationship between God, humanity, and non-human creation.



**Biblia**

- Fahamu kwamba “pembetatu ya uumbaji” ya kibiblia inarejelea uhusiano kati ya Mungu, ubinadamu, na uumbaji usio wa kibinadamu.

**Maasai**

- Understand that the Maasai triangulated worldview on the importance of harmony with *Engai*, humans, and non-human creation for humanity’s wellbeing is similar to the “creation triangle” in the Bible.
- The concept of blessing (*empuris e Engai*) or curse (*eng’oki*) as a result of hostile relationship between humankind and God but also between humankind and non-human creation.
- Understand the Maasai worldview of ecosystem.
- Know that the Maasai traditional environmental knowledge (TEK) are good ways to take care of creation.



**Wamaasai**

- Elewa kwamba mtazamo wa ulimwengu wa Wamaasai kuhusu umuhimu wa maelewano na *Engai*, wanadamu, na viumbe visivyo vya binadamu kwa ustawi wa binadamu ni sawa na “pembetatu ya uumbaji” katika Biblia.
- Dhana ya baraka (*empuris e Engai*) au laana (*eng’oki*) kama matokeo ya uhusiano wa uadui kati ya wanadamu na Mungu lakini pia kati ya wanadamu na viumbe visivyo wanadamu.
- Elewa mtazamo wa ulimwengu wa Wamaasai wa mfumo ikolojia.
- Fahamu kwamba maarifa ya kitamaduni ya mazingira ya Wamaasai ni njia nzuri za kutunza uumbaji.

## Hope



## Tumaini

- 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).

- Hivyo basi, tunaweza kukabiliana na changamoto za mabadiliko ya tabianchi kwa **matumaini**.
- Kwanza, tunajua kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu, **na Mungu hatauacha kamwe**.
- Pili, kama wafuasi wa Yesu Kristo, **tumewezeshwa na Roho Mtakatifu** kuwa baraka kwa wengine (haki ya kijamii) na uumbaji (mazingira).

### Affective: Feel



- Proud to be Maasai, who sustain biodiversity, protect ecosystems, and keep environmentally sustainable livelihoods

- Tuna sababu ya kujivunia kuwa Wamaasai, wanaodumisha bioanuwai, kulinda mifumo ikolojia, na kudumisha maisha endelevu ya kimazingira.

### Behavioural: Do



- Identify several challenges that prevent the applicability of Maasai traditional environmental knowledge.
- 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.
- 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.

- Bainisha changamoto kadhaa zinazozuia utekelezaji wa maarifa ya jadi ya Wamaasai.
- Bainisha njia tatu za maarifa ya jadi ya Wamaasai na mbinu za utunzaji wa uumbaji ambazo pia ni mbinu bora za kupunguza na/au kukabiliana na athari za mabadiliko ya tabianchi.
- Bainisha njia moja au mbili mpya ambazo zinaweza kupanua utunzaji wa uumbaji wa jadi ya Wamaasai kwa madhumuni ya kupunguza na/au kuhimili athari za mabadiliko ya tabianchi
- Andika ubeti mmoja wa wimbo kuhusu maarifa na mbinu za kitamaduni za mazingira za Wamaasai ambazo pia ni mbinu bora za kupunguza mabadiliko ya tabianchi. Tumia sauti ya kawaida inaojulikana na wanafunzi wengi.

### Teaching Equipment Needed

- Pictures of the effects of climate change
- Optional: bring a 3-legged stool, *olorika*
- Flipchart, marker pen, clips or tape

### Vifaa vya Kufundishia Vinahitajika



- Picha za athari za mabadiliko ya tabianchi
- Hiari: kigoda chenye miguu 3, *olorika*
- Chati mgeuzo, kalamu ya alama, klipu au tepu

### Student Supplies / Handouts

- Flip chart or large paper and marker pens

### Vifaa vya Wanafunzi / Vipeperushi vya Karatasi

- Ubao wa karatasi au karatasi kubwa na kalamu za alama

Time	Content	Maudhui
	 <p><b>1) HOOK</b> attention getter</p>	 <p><b>1) NDOANO</b> kupata usikivu</p>
4	<p>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.</p> <ol style="list-style-type: none"> <li>How much of Tanzania’s national income (gross domestic product, GDP) comes from tourism? A) over 10% B) over 15% C) over 20% <ul style="list-style-type: none"> <li><b>Answer: C) over 20%</b>, which is about 8.25 trillion shillings generated by 1,790,301 tourists who visited Tanzania in 2023 alone.<sup>1</sup></li> </ul> </li> <li>What percent of Tanzania’s tourists come to Maasai areas? A) 19% B) 29% C) 39% <ul style="list-style-type: none"> <li><b>Answer: C) 39%</b> Over 13.3% of the tourists visited the Ngorongoro Conservation Area alone (during 2023, <i>excluding</i> Arusha National Park and Mt. Kilimanjaro).<sup>2</sup> Adding visits to Serengeti (12.0%) and Tarangire (9.0%), we see that 3 of the top 5 tourist attractions are places in Maasailand!</li> </ul> </li> </ol> <ul style="list-style-type: none"> <li>Raise your hand if you got both questions correct! Hongera sana!</li> <li>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.</li> <li>Let’s get 3 volunteer groups to share their hypothesis with the entire class.</li> </ul> <p><i>Discuss briefly.</i></p>	<p>Tutacheza mchezo wa jaribio la kuchagua jibu sahihi katika maswali mawili. Wanafunzi waunde vikundi vya watu wawili wawili ili kusaidiana kujibu maswali. Chukua kipande cha karatasi tupu ili kuandika majibu yako.</p> <ol style="list-style-type: none"> <li>Kiasi gani cha mapato ya taifa la Tanzania (pato la taifa) kinatokana na utalii? A) zaidi ya 10% B) zaidi ya 15% C) zaidi ya 20% <ul style="list-style-type: none"> <li><b>Jibu: C) zaidi ya 20%</b>, ambayo ni takriban shilingi trilioni 8.25 zilizozalishwa na watalii 1,790,301 waliotembelea Tanzania mwaka wa 2023 pekee.</li> </ul> </li> <li>Ni asilimia ngapi ya watalii wa Tanzania huja katika maeneo ya Wamaasai? A) 19% B) 29% C) 39% <ul style="list-style-type: none"> <li><b>Jibu: C) 39%</b> Zaidi ya 13.3% ya watalii walitembelea Eneo la Hifadhi la Ngorongoro pekee (mwaka 2023, ukiondoa Hifadhi ya Taifa ya Arusha na Mlima Kilimanjaro). Bila kusahau ziara za Serengeti (12.0%) na Tarangire (9.0%), tunaona kwamba vivutio vitatu kati ya vitano bora vya utalii ni maeneo ya Wamaasai!</li> </ul> </li> </ol> <ul style="list-style-type: none"> <li>Inua mkono wako ikiwa umejibu maswali yote mawili kwa usahihi! Hongera sana!</li> <li>Tengeneza msingi wa nadharia kuhusu uchunguzi wa data hii kwa nini unafikiri kwamba mapato mengi ya utalii yanatokana na eneo hili la kaskazini mwa Tanzania? Una dakika 2 za kutoa dhana fupi.</li> <li>Tuache vikundi 3 vya kujitolea vishiriki dhana yao na darasa zima.</li> </ul> <p><i>Jadili kwa ufupi.</i></p>

**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.

**Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)**

- Sababu kuu kwa nini maeneo ya Wamaasai hutembelewa na watalii wengi ni uwepo wa mazingira ya asili porini.
- Hii inaonyesha ustadi wa Wamaasai katika kulinda mazingira na bioanuwai.
- Sasa hebu tuangalie jinsi Wamaasai wamekuwa wakishughulikia utunzaji wa uumbaji.



**Maasai Traditional Environmental Knowledge**



**Maarifa ya Jadi ya Mazingira ya Jamii ya Wamaasai**

10 *Have the students form small groups. There are 12 topics for discussion, which could be divided into one topic for 12 groups or two topics for 6 groups, or whatever fits well. Adapt the groups or delimit questions as needed.*

- Discuss the Maasai traditional knowledge (TEK) and creation care practices of your topic.
- Then, write three points for each topic you have discussed in point form on a large sheet of paper. Later, we will post these on the wall.

Traditional Maasai methods of environmental care that reflect a deep respect for nature and sustainable living. Here are some traditional Maasai ways of environmental care:

**1. Use of Indigenous Knowledge**

The Maasai pass down knowledge from generation to generation of local plants and wildlife, natural herbs for medicine, and avoiding harmful harvesting practices to ensure their well-being. This supports biodiversity and sustainable use of resources.

*Waambie wanafunzi waunde vikundi vidogo. Kuna mada 12 za majadiliano, ambazo zinaweza kugawanywa katika mada moja kwa vikundi 12 au mada mbili kwa vikundi 6, au chochote kinachofaa vizuri. Badilisha vikundi au tenga maswali inavyohitajika.*

- Jadili maarifa ya jadi ya Wamaasai na mbinu za utunzaji wa uumbaji wa mada yako.
- Kisha, andika hoja tatu kwa kila mada uliyojadili kwa umbo la hoja kwenye karatasi kubwa. Baadaye, tutazibandika ukutani.

Mbinu za kitamaduni za Wamaasai za utunzaji wa mazingira zinazoonyesha heshima kubwa kwa asili na maisha endelevu. Hapa kuna baadhi ya njia za kitamaduni za Wamaasai za utunzaji wa mazingira:

**1. Matumizi ya Maarifa Asilia**

Wamaasai hurithisha maarifa kutoka kizazi hadi kizazi kuhusu mimea ya eneo lao na wanyamapori, mimea asilia kwa ajili ya tiba, na kuepuka mbinu hatarishi za kuvuna ili kuhakikisha ustawi wao. Hii inasaidia bioanuwai na matumizi endelevu ya rasilimali.

## 2. Rotational Grazing

The Maasai divide the land into portions for specific reasons: *olopololi/osupuko* for dry-season grazing, *oloisukut* wet-season grazing area, *orpurkel* for communal grazing lands. This gives the land time to recover and prevents overgrazing, which protects grasslands and prevents soil erosion.

## 3. Care for Ritual Sites and Sacred Natural Sites

The Maasai consider certain natural sites as sacred and protected from exploitation, including trees (like *oreteti*), hills (for example, Oldonyolengai, Oldonyomoruak, and Elerai areas), and water sources. There are also traditional laws to protect these areas. These areas serve as biodiversity hotspots and contribute to conservation.

## 4. Water Conservation

The Maasai avoid pollution of natural water sources like rivers and seasonal streams, because they rely on them for human and livestock survival. Instead, they often dig shallow wells near dry riverbeds to access clean water without harming the ecosystem.

## 5. Controlled Burning

The Maasai use controlled or prearranged location burning to manage grasslands. This clears old, dry grass and encourages new growth, helping maintain the ecosystem. (The roots of grasses are good “carbon sinks,” storing carbon in the soil, see lesson 3.)

## 6. Respect for the Natural Laws/Customary laws, Myths and Taboos

The Maasai respect the natural/customary laws that require 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 to stray from what is good. Violence towards biodiversity is normally done by children; the uncircumcised (*ilayok*) have to be cleansed through rituals before and after

## 2. Malisho ya Mzunguko

Wamaasai hugawanya ardhi katika sehemu kwa sababu maalum: *olopololi/osupuko* kwa ajili ya malisho ya msimu wa kiangazi, eneo la malisho ya msimu wa mvua la *oloisukut*, *orpurkel* kwa ajili ya malisho ya jamii. Hii huipa ardhi muda wa kuona na kuzuia malisho kupita kiasi, ambayo hulinda nyasi na kuzuia mmomonyoko wa udongo.

## 3. Utunzaji wa Maeneo ya Tambiko na Maeneo Matakatiifu ya Asili

Wamaasai wanachukulia baadhi ya maeneo asilia kuwa matakatiifu na kulindwa dhidi ya matumizi mabaya, ikiwa ni pamoja na miti (kama vile *oreteti*), vilima (kwa mfano, maeneo ya Oldonyolengai, Oldonyomoruak, na Elerai), na vyanzo vya maji. Pia kuna sheria za kitamaduni za kulinda maeneo haya. Maeneo haya hutumika kama maeneo yenye bayoanuwai na huchangia katika uhifadhi.

## 4. Uhifadhi wa Maji

Wamaasai huepuka uchafuzi wa vyanzo vya maji asilia kama vile mito na vijito vya msimu, kwa sababu wanategemea hivyo kwa ajili ya kuishi kwa binadamu na mifugo. Badala yake, mara nyingi huchimba visima vidogo karibu na mito iliokauka ili kupata maji safi bila kudhuru mfumo ikolojia.

## 5. Uchomaji Uliodhibitiwa

Wamaasai hutumia uchomaji wa eneo uliodhibitiwa au uliopangwa mapema ili kudhibiti nyasi. Hii husafisha nyasi za zamani, kavu na kuhimiza ukuaji mpya, na kusaidia kudumisha mfumo ikolojia. (Mizizi ya nyasi husaidia kuhifadhi kaboni kwenye udongo kama ilivyojadiliwa katika somo la 3.)

## 6. Kuheshimu Sheria za Asili/Sheria za Kitamaduni, Hadithi na Miiko

Wamaasai huheshimu sheria za asili/mila zinazolenga utunzaji wa uumbaji ili kupata baraka na kuepuka laana. Wamaasai wana mfumo wa kiumri wenye seti ya sheria za kitamaduni zinazokataza jaribio lolote lisilo la lazima. Vurugu dhidi ya bioanuwai kwa kawaida hufanywa na watoto hivyo wasiotahiriwa (*ilayok*) wanapaswa kutakaswa kupitia mila kabla na baada

circumcision rites. Therefore, it is forbidden and it is shameful for warriors (*ilmuran*) to destroy biodiversity unnecessarily.

## 7. Minimalist Lifestyle

The Maasai live a semi-nomadic lifestyle with a minimal environmental footprint. Their homes (*manyatta*) are made from natural, biodegradable materials like mud, sticks, and cow dung.

## 8. Anti-pollution Lifestyle

Traditional Maasai lifestyle does not produce solid wastes and harmful gases that harms the environment.

## 9. Common Use of Nature and Resources Managing Scarce Resources

Fertile areas with good weather, vegetation, and water sources are very scarce in Maasailand, and thus, they are owned communally. There is not over possession by a few people.

## 10. Keeping Domestic Animals

The Maasai do not kill or feed on wild animals. Therefore, they are not poachers.

## 11. Preserve Trees and Shrubs

Traditionally, the Maasai do not cut living tress. They collect deadwood for cooking (and now there is a movement toward fuel efficient stoves). Maasai use herbs for medicine, trees for domestic purposes, and grass for their livestock, so they have rules for preserving plants.

## 12. Elders and Leaders Responsibilities

The prime duty of the Maasai leaders is to ensure their customs and rules are observed for the wellbeing of the society. This includes environmental rules, as they believe that in order to live well, there must be harmony between people and environment.

ya mila za tohara. Kwa hivyo, ni marufuku na ni aibu kwa wapiganaji (*ilmuran*) kuharibu bioanuwai bila sababu.

## 7. Mtindo wa Maisha wa Kiwango cha Chini

Wamaasai wanaishi maisha ya kuhamahama kidogo yenye athari ndogo ya kimazingira. Nyumba na boma zao (*emanyatta*) zimetengenezwa kwa nyenzo asilia, zinazoweza kuoza kama vile matope, vijiti, na kinyesi cha ng'ombe.

## 8. Mtindo wa Maisha wa Kupambana na Uchafuzi

Mtindo wa maisha wa kitamaduni wa Wamaasai hauzalishi taka ngumu na gesi hatari zinazodhuru mazingira.

## 9. Matumizi ya Rasilimali kwa Ushirika na Usimamizi wa Rasilimali Adimu

Maeneo yenye rutuba au yenye hali nzuri ya hewa lakini pia vyanzo vya maji na mimea ni adimu sana katika Wamaasai, na hivyo, yanamilikiwa kwa pamoja. Hakuna umiliki kupita kiasi wa watu wachache.

## 10. Kufuga Wanyama wa Nyumbani

Wamaasai hawauki au kula wanyama wa porini. Kwa hivyo, wao si wawindaji haramu.

## 11. Hifadhi Miti na Vichaka

Kijadi, Wamaasai hawakati miti hai. Wanakusanya kuni zilizokufa kwa ajili ya kupikia (na sasa kuna harakati za kuelekea matumizi ya majiko yanayotumia nishati kidogo). Wamaasai hutumia mimea kwa ajili ya dawa, miti kwa madhumuni ya nyumbani, na nyasi kwa mifugo yao, kwa hivyo wana sheria za kuhifadhi mimea.

## 12. Majukumu ya Wazee na Viongozi

Jukumu kuu la viongozi wa Wamaasai ni kuhakikisha mila na sheria zao zinazingatiwa kwa ustawi wa jamii. Hii inajumuisha sheria za mazingira, kwani wanaamini kwamba ili kuishi vizuri, lazima kuwe na mahusiano mazuri kati ya watu na mazingira.

## Science

20 Consider the following techniques where environmental and climate science affirm traditional Maasai environmental knowledge.



*Read the following five scientific means of caring for the environment.*

*After each one, identify one or two ways that can confirm and strengthen (what was identified above) or expand traditional Maasai creation care for climate change mitigation and/or adaptation. Write them on the flipchart.*

*If there is an opportunity to print out the text for each of the following 5 scientific means, then divide students into five groups to read their group's information. Each group will discuss and present to the entire class the ways that can confirm and strengthen (what was identified above) or expand traditional Maasai creation care for climate change mitigation and/or adaptation. Write them on the flipchart.*

*The information has been formatted for printing out for five groups. The challenge will be that each group will want to share for more than a one-minute summary. If there is a longer lesson time than 60-minutes, this is where to expand the lesson.*

Sustainable pastoralism <b>Ufugaji endelevu</b>	Protecting biodiversity <b>Kulinda bioanuwai</b>	Protecting ecosystems including grasslands <b>Kulinda mifumo ikolojia ikiwemo nyasi</b>	Preserving grasslands <b>Kuhifadhi nyasi</b>	Environmentally sustainable livelihoods <b>Maisha endelevu ya mazingira</b>
<i>Write responses on the flipchart. Andika majibu kwenye chati mgeuzo.</i>				

## Sayansi

Fikiria mbinu zifuatazo ambapo sayansi ya mazingira na tabianchi huthibitisha maarifa ya kitamaduni ya mazingira ya Wamaasai.

*Soma njia tano zifuatazo za kisayansi za kutunza mazingira. Baada ya kila moja, bainisha njia moja au mbili zinazoweza kuthibitisha na kuimarisha (kilichotambuliwa hapo juu) au pambanua utunzaji wa kitamaduni wa uumbaji wa Wamaasai kwa ajili ya kupunguza na/au kukabiliana na mabadiliko ya tabianchi. Ziandike kwenye chati mgeuzo/ubao wa karatasi.*

*Ikiwa kuna fursa ya kuchapisha maandishi kwa kila moja ya njia 5 zifuatazo za kisayansi, kisha wagawe wanafunzi katika vikundi vitano ili kusoma taarifa za kikundi chao. Kila kikundi kitajadili na kuwasilisha kwa darasa zima njia ambazo zinaweza kuthibitisha na kuimarisha (kile kilichoainishwa hapo juu) au kupanua utunzaji wa kitamaduni wa uumbaji wa Wamaasai kwa ajili ya kupunguza na/au kukabiliana na mabadiliko ya tabianchi. Waandike kwenye chati mgeuzo/ubao wa karatasi.*

*Taarifa zimepangwa kwa ajili ya kuchapishwa kwa vikundi vitano.*

*Changamoto itakuwa kwamba kila kikundi kitataka kushiriki kwa zaidi ya muhtasari wa dakika moja. Ikiwa kuna muda mrefu zaidi wa somo kuliko dakika 60, hapa ndipo pa kupanua somo.*

## 1. Sustainable pastoralism

- Sustainable pastoralism is a livestock production system that manages land and herds in an organized way to provide economic, social, and environmental benefit.
- Sustainable pastoralism contributes to environmental services: preserving land and ecosystem, biodiversity conservation, food and water security, and supporting resilient livelihoods.
- There is a widespread myth, “Pastoralist degrade the environment because they hoard animals.” The scientific evidence shows that degradation occurs when common property systems are eroded and in locations where herds are prevented from moving, which does not allow the pastures to renew.<sup>3</sup>
- However, according to Article 3 of the United Nations Declaration on the Rights of Indigenous Peoples, Indigenous Maasai have the right to self-determination.<sup>4</sup> Thus, pastoralist Maasai have the right to continue in a way to effectively manage their livestock and carefully manage their grazing land.
- Another widespread myth: “Pastoralists create conflict.” In contrast, “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.”<sup>5</sup>
- **Four enemies of pastoralism:** Land grabbing for so-called conservation, climate change, non-pastoralist-friendly policies, and demographic challenges.

## 1. Ufugaji endelevu

- Ufugaji endelevu ni mfumo wa uzalishaji wa mifugo unaosimamia ardhi na mifugo kwa njia iliyopangwa ili kutoa faida ya kiuchumi, kijamii, na kimazingira.
- Ufugaji endelevu huchangia huduma za mazingira: kuhifadhi ardhi na mfumo ikolojia, uhifadhi wa bayoanuwai, usalama wa chakula na maji, na kusaidia riziki thabiti.
- Kuna dhana iliyoenea, “Wafugaji huharibu mazingira kwa sababu wanafuga wanyama wengi.” Ushahidi wa kisayansi unaonyesha kwamba uharibifu hutokea wakati mifumo ya mali ya pamoja inapoanguka na katika maeneo ambapo mifugo huzuiwa kuhamia, jambo ambalo haliruhusu malisho kujihisha upya.<sup>3</sup>
- Hata hivyo, kulingana na Kifungu cha 3 cha Azimio la Umoja wa Mataifa kuhusu Haki za Watu wa Asili, Wamaasai wa Asili wana haki ya kujitawala.<sup>4</sup> Hivyo, Wamaasai wafugaji wana haki ya kuendelea kusimamia mifugo yao kwa ufanisi na kusimamia ardhi yao ya malisho kwa uangalifu.
- Dhana nyingine iliyoenea: “Wafugaji huunda migogoro.” “Ufugaji duniani kote una sifa ya amani, kutokana na mila imara ya ushirikiano na ugawanaji wa rasilimali miongoni mwa jamii za wafugaji. Pale ambapo migogoro inatawala, kwa kawaida kuna sababu za msingi kama vile mmomonyoko wa mipango ya utawala wa ndani, unyang'anyi wa maliasili au kutengwa na huduma na kutoshirikishwa kufanya maamuzi. Migogoro kwa kawaida ni dhihirisho la kushindwa kutoa usalama na huduma za msingi, na kutetea haki za msingi, ikiwa ni pamoja na Haki ya Ardhi ya Pamoja.”<sup>5</sup>
- **Maadui wanne wa ufugaji:** Unyang'anyaji wa ardhi kwa ajili ya kile kinachoitwa uhifadhi, mabadiliko ya tabianchi, sera zisizo rafiki kwa wafugaji, na changamoto za idadi ya watu.

## 2. Protecting Biodiversity

- In simple terms, biodiversity refers to all types of life on Earth. Protecting biodiversity is protection for the more than 100 million living species in the world.
- The diversity of species (including plants, animals, bacteria, and fungi) and ecosystems keep the global ecosystem in balance, providing everything in nature that we, as humans, need to survive, including food, clean water, medicine, and shelter.<sup>6</sup>
- Here are five ways to protect biodiversity:
  - Prevent the cutting of trees.
  - Put a ban on hunting of most animals.
  - More efficiently utilize natural resources.
  - Maintain the protected areas for animals where no human activities are allowed.
  - Poaching and hunting wild animals should be prevented.

## 2. Kulinda Bioanuwai

- Kwa maneno rahisi, bioanuwai inamaanisha aina zote za maisha Duniani. Kulinda bioanuwai ni ulinzi kwa zaidi ya spishi milioni 100 zinazoishi duniani.
- Utofauti wa spishi (ikiwa ni pamoja na mimea, wanyama, bakteria, na kuvu) na mifumo ikolojia huweka mfumo ikolojia wa kimataifa katika usawa, na kutoa kila kitu katika asili ambacho sisi, kama wanadamu, tunahitaji ili kuishi, ikijumuisha chakula, maji safi, dawa, na makazi.<sup>6</sup>
- Hapa kuna njia tano za kulinda bioanuwai:
  - Zuia ukataji miti.
  - Weka marufuku ya uwindaji wa wanyama wengi.
  - Tumia maliasili kwa ufanisi zaidi.
  - Dumisha maeneo yaliyolindwa kwa wanyama ambapo hakuna shughuli za kibinadamu zinazoruhusiwa.
  - Uwindaji haramu na uwindaji wa wanyama wa porini unapaswa kuzuiwa.

### 3. Protecting Ecosystems

- Let's start this subtopic by reviewing 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:** The importance of harmonious relationships with fellow humans, God, and non-human creation for God's blessing and sustenance for 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."<sup>7</sup>
  - Ecosystems consist of living organisms and non-living things like temperature, humidity, and land.
- The 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."<sup>8</sup> For example, the wildebeest living on the savannah ecosystem of the Serengeti need water sources and grass to eat. If the wildebeest herd eats all the grass, it will have to search for grass elsewhere until the rains return and renews the grass.
- **Protecting the Earth's Ecosystems:** The ecosystems of the Earth can be protected through responsible use of natural resources.
  - Conserve water resources and be responsible about water usage.
  - Develop and use proper waste management.
  - Avoid the use of chemical pesticides and develop the use of natural pesticides.

### 3. Kulinda Mifumo Ikolojia

- Tuanze mada hii ndogo kwa kupitia mtazamo wa ulimwengu wa Wamaasai wa mfumo ikolojia, **pembetatu ya utegemeano wa pande zote**.
  - **Upande wa kwanza:** Umuhimu wa ardhi (*Oldonyo le Engai* kwa ajili ya ibada), vyanzo vya maji, na hali nzuri ya hewa (*osupuko* na *orpurkel* kwa ajili ya malisho) kwa ajili ya kuishi kwa binadamu na mifugo.
  - **Upande wa pili:** Umuhimu wa mifugo na mimea (dawa) kwa ajili ya kuishi kwa binadamu na kwa ajili ya ibada (mnyama kwa ajili ya kafara na mila, miti kwa ajili ya madhabahu, n.k.).
  - **Upande wa tatu:** Umuhimu wa mahusiano mazuri na wanadamu wenzake, Mungu, na uumbaji usio wa binadamu kwa ajili ya baraka na riziki ya Mungu kwa ya uumbaji wa binadamu na usio wa binadamu.
- Sasa, hebu tuone jinsi dhana hii inavyofanana na dhana ya kisayansi ya mfumo ikolojia.
  - "Mfumo ikolojia ni eneo la kijiografia ambapo mimea, wanyama, na viumbe vingine, pamoja na hali ya hewa na mandhari, hufanya kazi pamoja ili kuunda kiputo cha uhai."<sup>7</sup>
  - Mifumo ikolojia ina viumbe hai na vitu visivyo hai kama vile halijoto, unyevunyevu, na ardhi.
- Umuhimu wa mifumo ikolojia
  - "Mimea na wanyama wote wa Dunia hutegemea mifumo ikolojia kutoa chakula na makazi. Mifumo ikolojia lazima idumishe usawa mzuri ili kubaki hai."<sup>8</sup> Kwa mfano, nyumbu wanaoishi katika mfumo ikolojia wa savannah wa Serengeti wanahitaji vyanzo vya maji na nyasi za kula. Ikiwa kundi la nyumbu litakula nyasi zote, litalazimika kutafuta nyasi kwingine hadi mvua itakaporudi na kuiboresha nyasi.
- **Kulinda Mifumo Ikolojia ya Dunia:** Mifumo ikolojia ya Dunia inaweza kulindwa kupitia matumizi yanayofaa.
  - Hifadhi rasilimali za maji na uwajibikaji kuhusu matumizi ya maji.
  - Kuendeleza na kutumia usimamizi sahihi wa taka.
  - Epuka matumizi ya dawa za kuua wadudu za kemikali na kuendeleza matumizi ya dawa za kuua wadudu za asili.
  - Panda spishi za asili.

- Plant native species.
- Engage in reforestation where trees have been cut.
- Develop diverse cropping systems to help maintain soil productivity and prevent erosion instead of using single crop systems.
- Use natural fertilizers and reduce the use of chemical fertilizer.
- Protect wildlife in your area by respecting wildlife habitats, by reporting instances of illegal wildlife trade or poaching, and by not supporting wildlife-exploitation activities.

- Shiriki katika upandaji miti tena ambapo miti imekatwa.
- Kuendeleza mifumo mbalimbali ya upandaji miti ili kusaidia kudumisha uzalishaji wa udongo na kuzuia mmomonyoko badala ya mfumo wa upandaji wa mazao ya aina moja.
- Tumia mbolea asilia na kupunguza matumizi ya mbolea ya kemikali.
- Kulinda wanyamapori katika eneo lako kwa kuheshimu makazi ya wanyamapori, kuripoti matukio ya biashara haramu ya wanyamapori au ujangili, na usiunge mkono shughuli za unyonyaji wa wanyamapori.

## 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.”<sup>9</sup>
- Grasslands are very good *carbon sinks* (meaning they have the ability to store large amounts of carbon).
- Allowing grasslands to rest during the dry season by moving to high grounds (*osupuko*) and returning from these high grounds (*osupuko*) to go to low grounds (*olpurkel*) when the rains return is a good way of managing grass, trees, and flowers (flora).
- “Grasslands store approximately 34% of the global terrestrial stock of carbon... Unlike forests where vegetation is the primary source of carbon storage, most of the grassland carbon is stored in the soil.”<sup>10</sup>
- “Increased drought and wildfire risk make grasslands more reliable carbon sinks than trees... Trees are still critical. [Research] does not suggest that grasslands should replace forests on the landscape or diminish the many other benefits of trees.”<sup>11</sup>
- “Threats to natural grasslands, as well as the wildlife that live on them, include farming, overgrazing, invasive species, illegal hunting, and climate change.”<sup>12</sup>

## 4. Kuhifadhi nyasi

*Nyasi pia ni aina ya mfumo ikolojia, lakini itakuwa na mwelekeo maalum hapa katika muktadha wa Wamaasai.*

- “Nyasi za malisho hupatikana pale ambapo mvua ya kawaida haitoshi kuhimili ukuaji wa msitu, lakini si kidogo sana kiasi cha kuunda jangwa. Kwa kweli, nyasi za malisho mara nyingi ziko kati ya misitu na majangwa.”<sup>9</sup>
- Nyasi za malisho ni vyanzo vyema vya kuhifadhi kaboni (ikimaanisha zina uwezo wa kuhifadhi kiasi kikubwa cha kaboni).
- Kuruhusu nyasi za malisho kupumzika wakati wa kiangazi (kwa kuhamia *osupuko*) na kurudi kutoka maeneo ya juu (*osupuko*) kwenda maeneo ya chini (*olpurkel*) mvua zinaporudi ni njia nzuri ya kudhibiti nyasi, miti, maua (mimea).
- “Nyasi za malisho huhifadhi takriban 34% ya akiba ya kaboni duniani kote... Tofauti na misitu ambapo mimea ndiyo chanzo kikuu cha uhifadhi wa kaboni, kaboni nyingi ya nyasi huhifadhiwa kwenye udongo.”<sup>10</sup>
- “Kuongezeka kwa hatari ya ukame na moto kunafanya nyasi za malisho kuwa vyanzo vya kaboni vinavyotegemewa zaidi kuliko miti... Hata hivyo, Miti bado ni muhimu sana. [Utafiti] haupendekezi kwamba nyasi za malisho yanapaswa kuchukua nafasi ya misitu kwenye mandhari au kupunguza faida nyingine nyingi za miti.”<sup>11</sup>
- “Vitisho kwa nyasi asilia, pamoja na wanyamapori wanaoishi juu yake, ni pamoja na kilimo, ufugaji kupita kiasi, spishi vamizi, uwindaji haramu, na mabadiliko ya tabianchi.”<sup>12</sup>

## 5. Environmentally sustainable livelihoods

- Living sustainably “...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.”<sup>13</sup>
- Threats for environmental livelihood security (ELS) include external factors, such as climate change, population growth, and government policies.
- There are core resources (“capital”) for sustainable livelihoods: natural, human, social, physical, and economic resources.<sup>14</sup>

## 5. Maisha endelevu kiikolojia yanayolingana na mazingira

- Kuishi kwa uendeleu “...kunajumuisha ujuzi, mali (nyenzo na kijamii) na mbinu zitakazotumiwa na watu binafsi na jamii ili kuishi. Kipengele cha maisha uendeleu kinamaanisha kwamba watu hawa au jamii wanaweza kukabiliana na kushinda nyakati za msongo wa mawazo na/au mgogoro, na kwamba wanaweza kudumisha au hata kuboresha ujuzi na mali za sasa na za baadaye bila kutumia rasilimali zao za asili.”<sup>13</sup>
- Vitisho kwa usalama wa maisha endelevu ya mazingira vinajumuisha mambo ya nje, kama vile mabadiliko ya tabianchi, ukuaji wa idadi ya watu, na sera za serikali.
- Kuna rasilimali za msingi (“mtaji”) kwa maisha endelevu: rasilimali za asili, binadamu, kijamii, kimwili, na kiuchumi.<sup>14</sup>

### 3) LOOK interpretation/reflection on core content

## Maasai

- 4
- So, let us now connect these climate change 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 (*empuris e Engai*) or curse (*eng'oki*) as a result of hostile relation between humankind and God but also between humankind 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 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 shameful for *ilmuran* to destroy biodiversity unnecessarily.



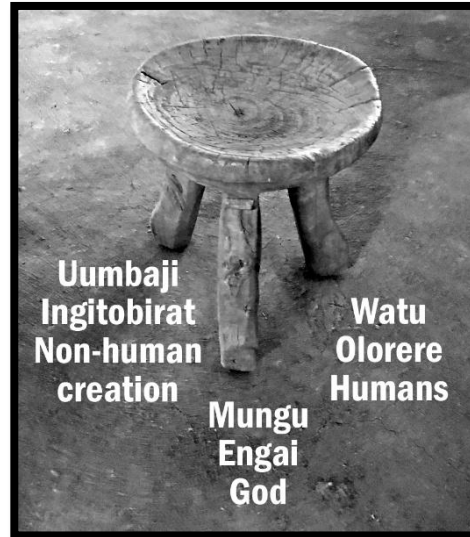
### 3) UCHUNGUZI ufafanuzi au tafakari ya maudhui ya msingi

## Wamaasai

- Kwa hivyo, hebu sasa tuunganishe mbinu hizi za kupunguza na kuhimili mabadiliko ya tabianchi na mtazamo mkubwa wa Wamaasai kuhusu ulimwengu (mtazamo wa ulimwengu).
- Mbinu hizi za kitamaduni za maarifa ya mazingira za Wamaasai ni nzuri kwa utunzaji wa uumbaji.
- Mbinu hizi za utunzaji wa uumbaji zinawakilisha uelewa wa Wamaasai unaozingatia utegemezi wa pande zote mbili na mazingira ambayo yameundwa na *Engai*—yanayoonekana katika kuwatunza watu, mifugo, viumbe vyote vilivyo hai, na ardhi (wanadamu na viumbe visivyo binadamu)—ambayo hudumisha maisha na riziki ya Wamaasai.
  - Kwa hivyo, Wamaasai wanaelewa kwamba ustawi wa binadamu maishani unatokana na uhusiano mzuri na 1) *Engai*, 2) watu wengine, na 2) viumbe visivyo binadamu.
  - Vipengele hivi vitatu vinaonekana kama kigoda chenye miguu mitatu, *olorika*.
  - Kwa kuwa ina miguu mitatu inakuwa na nguvu na imara—hata kwenye ardhi isiyo na usawa—na kufanya kazi vizuri zaidi.
  - Mtizamo wa Wamaasai wa baraka (*empuris e Engai*) au laana (*eng'oki*) kama matokeo ya uhusiano wa uadui kati ya wanadamu na Mungu lakini pia kati ya wanadamu na viumbe visivyo wanadamu.
  - Uliwafanya Wamaasai kuheshimu sheria za asili/sheria za kitamaduni zinazowataka kutunza uumbaji ili kupata baraka na kuepuka laana.
  - Wamaasai wana mfumo wa rika pamoja na sheria za kitamaduni zinazokataza jaribio lolote lisilo la lazima la kuvuruga bioanuwai na wapiganaji (*ilmuran*). Vurugu dhidi ya bioanuwai kwa kawaida hufanywa na watoto; wasiotahiriwa (*ilayok*) hata hivyo wanapaswa kutakaswa kupitia mila kabla na baada ya ibada za tohara. Kwa hivyo, ni marufuku na ni aibu kwa *ilmuran* kuharibu bioanuwai bila pasipo na ulazima.

## Bible: Biblical Creation Triangle

- 4
- The Maasai understanding of the world—represented by a three-legged stool (*olarika*)—is similar to the biblical understanding of the world seen in the “creation triangle.”<sup>15</sup>
  - Biblical scholars call this the “creation triangle,” where peace (*shalom* in biblical Hebrew) 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).



## Biblia: Pembetatu ya Uumbaji wa Kibiblia

- Uelewa wa Wamaasai kuhusu ulimwengu—unaowakilishwa na kiti chenye miguu mitatu (*olarika*)—unafanana na uelewa wa kibiblia kuhusu ulimwengu unaonekana katika “pembetatu ya uumbaji.”<sup>15</sup>
- Wasomi wa Biblia wanaita hii “pembetatu ya uumbaji,” ambapo amani (*shalom* katika Kiebrania cha Biblia) hutokana na upatanisho na Mungu, wanadamu, na uumbaji usio wa kibinadamu.
- Amani (*shalom*) hutokana na kupatanishwa (katika uhusiano sahihi) na Mungu ambao huishi kwa amani na wengine (haki ya kijamii) na amani na uumbaji (utunzaji wa uumbaji/mazingira).

- 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 does not 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 and are contributing to global-warming gases and, thus, climate change.
  - Living as gospel-centered people gives us a purpose in life to make a difference.
- Kwa hivyo, mtazamo wa Kikristo wa ulimwengu unazingatia injili—habari njema inayowapatanisha watu wenye dhambi na wenye ubinafsi na Mungu Muumba.
- Nguvu ya injili huwezesha mabadiliko tuliyojadili katika somo la kwanza.
  - Ubinafsi, kutojali na uchoyo vinasababisha mgogoro wa mabadiliko ya tabianchi.
  - Sayansi nzuri haitoshi. Maarifa hayatuwezeshi kushinda ubinafsi na uchoyo wa kibinadamu.
  - Tunahitaji kubadilishwa! Tunahitaji kuwa na maana na kusudi maishani ambalo si tu uchoyo wa kibinadamu, ulaji, na kufanya mambo yanayopata pesa nyingi lakini pia yanachangia gesi zinazoongeza joto duniani na, hivyo, mabadiliko ya tabianchi.
  - Kuishi kama watu wanaozingatia injili kunatupa kusudi maishani la kuleta mabadiliko.

- 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 creation (environment justice).
- Amazingly, that the power that raised Christ from the dead is available to us who believe!

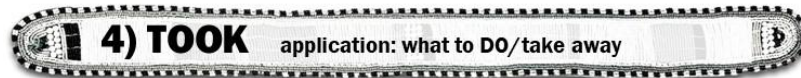
**Ephesians 1:18–21** [I pray that] “having the eyes of your hearts enlightened, that you may know what is the hope to which he has called you, what are the riches of his glorious inheritance in the saints, and what is the immeasurable greatness of his power toward us who believe, according to the working of his great might that he worked in Christ when he raised him from the dead and seated him at his right hand in the heavenly places.”

- Roho Mtakatifu hutuwezesha sisi na jamii zetu za Kikristo kuishi kulingana na imani zetu za kibiblia kwa njia ya kuwa baraka kwa ulimwengu.
- Kama wafuasi wa Yesu, tunaishi kulingana na imani yetu—tukiwezesha na Roho Mtakatifu—katika kuwahudumia wengine (haki ya kijamii) na kuwahudumia viumbe (mazingira).  
**Waefeso 1:18–21** [Naomba hivyo] “macho ya mioyo yenu yatiwe nuru, mjue tumaini la mwito wake jinsi lilivyo; na utajiri wa utukufu wa urithi wake katika watakatifu jinsi ulivyo; na ubora wa ukuu wa uweza wake ndani yetu tuaminio jinsi ulivyo; kwa kadiri ya utendaji wa nguvu za uweza wake; aliotenda katika Kristo alipomfufua katika wafu, akamweka mkono wake wa kuume katika ulimwengu wa roho; juu sana kuliko ufalme wote, na mamlaka, na nguvu, na usultani, na kila jina litajwalo, wala si ulimwenguni humu tu, bali katika ule ujao pia...”

## Look Continued: Hope



- 2
- 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).



## Tazama Inaendelea: Tumaini

- Hivyo, tunaweza kukabiliana na changamoto za mabadiliko ya tabianchi kwa matumaini.
- Kwanza, tunajua kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu, na Mungu hatauacha kamwe.
- Pili, kama wafuasi wa Yesu Kristo, tumewezeshwa na Roho Mtakatifu kuwa baraka kwa wengine (haki ya kijamii) na uumbaji (mazingira).



14 *Questions for 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?

*Maswali ya majibu mafupi.*

- Kwa nini ni muhimu kudumisha mifumo ikolojia?
- Ninawezaje kuhifadhi maji katika mazingira yangu?
- Ni miradi gani ya urejesho ambayo naweza kujiunga nayo?
- Ninaweza kufanya nini ili kulinda wanyamapori katika eneo langu?

Support conversations such as:

- **Engaging in restoration projects:**
  - **Ecosystem restoration** projects aim to enhance ecological integrity and improve the wellbeing of both ecosystems and local communities.
  - Grasslands and trees play crucial roles in carbon sequestration and provide habitat for animals.
- **Educating and raising awareness:**
  - **Stay informed:** Keep yourself updated on environmental issues, conservation practices, and scientific advancements related to ecosystems.
  - **Share knowledge:** Raise awareness among your co-workers, family, friends, and community about the importance of maintaining ecosystems and the actions they can take.
  - **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.<sup>16</sup>

## Song writing

Or

*This activity may take 10–15 minutes. So, while it is a very good application, it needs enough time to be done well.*

- Each small group writes 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. A call and response Maasai tune may be a good way to start. Then, have each group sing their verse.

1  
60

**Prayer**  
**End of lesson**

Saidia mazungumzo kama vile:

- **Kushiriki katika miradi ya urejesho:**
  - **Miradi ya urejesho wa mifumo ikolojia** inalenga kuimarisha uadilifu wa ikolojia na kuboresha ustawi wa mifumo ikolojia na jamii za wenyeji.
  - Mashamba na miti huchukua jukumu muhimu katika ufyonzaji wa kaboni na kutoa makazi kwa wanyama.
- **Kuelimisha na kuongeza uelewa:**
  - **Endelea kupata taarifa:** Jijulishe kuhusu masuala ya mazingira, desturi za uhifadhi, na maendeleo ya kisayansi yanayohusiana na mifumo ikolojia.
  - **Shirikisha maarifa:** Ongeza uelewa miongoni mwa wafanyakazi wenzako, familia, marafiki, na jamii kuhusu umuhimu wa kudumisha mifumo ikolojia na hatua wanazoweza kuchukua.
  - **Shiriki katika programu za elimu ya mazingira:** Saidia au shiriki katika mipango ya elimu ya mazingira katika eneo lako: mipango inayokuza uelewa wa ikolojia na kutoa mafunzo kwa jamii za wenyeji kuhusu masuala kama vile kilimo endelevu.<sup>16</sup>

## Uandishi wa nyimbo

*Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni programu nzuri sana, inahitaji muda wa kutosha kuikamilisha vizuri.*

- Kila kikundi kidogo waandike ubeti mmoja wa wimbo kuhusu maarifa na desturi za kitamaduni za kimazingira za Wamaasai ambazo pia ni njia bora za kupunguza mabadiliko ya tabianchi. Tumia sauti ya kawaida unaojulikana na wanafunzi wengi. Wimbo wa Wamaasai wa kupokezan unaweza kuwa njia nzuri ya kuanzia. Kisha, kila kikundi kiimbe ubeti wao.





**Maombi**  
**Mwisho wa somo**

## Bibliography

- <sup>1</sup> Lydia Shekighenda and Nelly Mtema, “Tourism Earnings Jump to 8.25tri/-, Bunge Told - Daily News,” *Daily News* (Dodoma, Tanzania), February 9, 2024, <https://dailynews.co.tz/tourism-earnings-jump-to-8-25tri-bunge-told/>.
- <sup>2</sup> Tanzania National Bureau of Statistics, “The 2023 International Visitors’ Exit Survey Report,” 2023, 51, [https://maliasili.go.tz/assets/pdfs/TTSS2023InternationalVisitorsExitSurveyDraftReport\\_13042024\\_final.pdf](https://maliasili.go.tz/assets/pdfs/TTSS2023InternationalVisitorsExitSurveyDraftReport_13042024_final.pdf).
- <sup>3</sup> UN Environment Program, “Pastoralism and the Post 2015 Agenda,” May 21, 2014, <https://www.unep.org/resources/report/pastoralism-and-post-2015-agenda>.
- <sup>4</sup> “United Nations Declaration on the Rights of Indigenous Peoples | Division for Inclusive Social Development (DISD),” accessed April 17, 2025, <https://social.desa.un.org/issues/indigenous-peoples/united-nations-declaration-on-the-rights-of-indigenous-peoples>.
- <sup>5</sup> UN Environment Program, “Pastoralism and the Post 2015 Agenda.”
- <sup>6</sup> “Biodiversity: What Is It and How Can We Protect It?,” UN News, United Nations, January 22, 2024, <https://news.un.org/en/story/2024/01/1145772>.
- <sup>7</sup> “Ecosystem,” accessed February 3, 2026, <https://education.nationalgeographic.org/resource/ecosystem>.
- <sup>8</sup> Sam Adams, “The Importance of Our Ecosystem & Ways to Protect It,” *Sciencing*, July 21, 2017, <https://www.sciencing.com/the-importance-of-our-ecosystem-ways-to-protect-it-13404825/>.
- <sup>9</sup> Christina Nunez, “Grasslands Information and Facts,” *Environment*, March 15, 2019, <https://www.nationalgeographic.com/environment/article/grasslands>.
- <sup>10</sup> 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/>.
- <sup>11</sup> 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>.
- <sup>12</sup> Nunez, “Grasslands Information and Facts.”
- <sup>13</sup> Desirée Elizondo, “Application of the Sustainable Livelihoods Framework in Development Projects,” United Nations Development Programme, 2017, [https://www.undp.org/sites/g/files/zskgke326/files/migration/latinamerica/UNDP\\_RBLAC\\_Livelihoods-Guidance-Note\\_EN-210July2017.pdf](https://www.undp.org/sites/g/files/zskgke326/files/migration/latinamerica/UNDP_RBLAC_Livelihoods-Guidance-Note_EN-210July2017.pdf).
- <sup>14</sup> Jaqueline Garcia-Yi, “Market Participation and Agro-Biodiversity Loss: The Case of Native Chili Varieties in the Amazon Rainforest of Peru,” *Sustainability* 6 (February 2014): 617, <https://doi.org/10.3390/su6020615>.
- <sup>15</sup> Hilary Marlow, *Biblical Prophets and Contemporary Environmental Ethics*, Reprint, with John Barton (Oxford University Press, 2015), 110–11, 275–78.
- <sup>16</sup> “How Can You Maintain the Ecosystems in Your Surrounding Area?,” Green.Earth, accessed February 3, 2026, <https://www.green.earth/blog/how-can-you-maintain-the-ecosystems-in-your-surrounding-area>.

11. TEE Lesson 3: English/Kiswahili

## Integrating Climate Science for a Maasai Context Kuunganisha Sayansi ya Hali ya Hewa kwa Mukadha wa Wamaasai

<b>Main Point</b>	<p><b>Integrating climate science—that is appropriate for a Maasai context—can help prevent and prepare for the challenges of climate change.</b></p>		<p><b>Kuunganisha sayansi ya tabianchi—ambayo inafaa kwa mukadha wa Wamaasai—kunaweza kusaidia kuzuia na kukabiliana na changamoto zinazotokana na mabadiliko ya tabianchi.</b></p>
<b>Learning outcomes</b>	As a result of this lesson, the learner will:		Kama matokeo ya somo hili, mwanafunzi atafanya yafuatayo:
<b>Cognitive: Know</b>  	<p><b>Climate science</b></p> <ul style="list-style-type: none"> <li>• <b>Review:</b> Understand the core concepts of climate science, i.e., climate change, glanket effect (greenhouse effect), human caused global-warming gases (elsewhere called greenhouse gases, GHGs) and their effects on ecosystems and humans.</li> <li>• <b>Review:</b> Understand the main impacts of climate change upon ecosystems and humankind</li> <li>• Know the difference between climate change mitigation (prevention) and adaptation (reducing risk of bad effects)</li> <li>• Understand core principles of sustainable pastoralism</li> </ul> <p><b>Maasai</b></p> <ul style="list-style-type: none"> <li>• Know best practices of mitigation appropriate for a traditional Maasai context.</li> <li>• Know best practices of adaptation for resilience appropriate for a traditional Maasai context.</li> <li>• Know the ongoing challenges in Maasai context:                     <ul style="list-style-type: none"> <li>○ Land rights</li> <li>○ Population growth</li> <li>○ Food and water insecurity</li> </ul> </li> </ul>	  	<p><b>Sayansi ya Tabianchi</b></p> <ul style="list-style-type: none"> <li>• <b>Mapitio:</b> Kuelewa dhana kuu za sayansi ya tabianchi, yaani, mabadiliko ya tabianchi, athari ya gesi zinazoongeza joto la dunia (athari ya blanketi), gesi zinazosababisha ongezeko la joto duniani zinazosababishwa na binadamu na athari zake kwa mifumo ikolojia na wanadamu.</li> <li>• <b>Mapitio:</b> Elewa athari kuu za mabadiliko ya tabianchi kwa mifumo ya ikolojia na binadamu</li> <li>• Fahamu tofauti kati ya kupunguza mabadiliko ya tabianchi (kinga) na kukabiliana nayo (kupunguza hatari ya athari mbaya)</li> <li>• Elewa kanuni kuu za ufugaji endelevu</li> </ul> <p><b>Wamaasai</b></p> <ul style="list-style-type: none"> <li>• Fahamu mbinu bora za kukabiliana nayo zinazofaa kwa mukadha wa jadi ya Wamaasai.</li> <li>• Fahamu mbinu bora za kukabiliana nayo kwa ajili ya ustahimilivu unaofaa kwa mukadha wa jadi ya Wamaasai.</li> <li>• Fahamu changamoto zinazoendelea katika mukadha wa Wamaasai:                     <ul style="list-style-type: none"> <li>○ Haki za ardhi</li> <li>○ Ongezeko la idadi ya watu</li> <li>○ Ukosefu wa chakula na maji</li> </ul> </li> </ul>

### Biblical Creation Triangle

- Understand how climate science can support creation care with its spiritual and ethical dimensions of environmental stewardship described in biblical teachings.



### Hope

- Understand that climate scientists and environmentalists have hope that human efforts can mitigate climate change, which encourages hope.
- Know key Bible texts that teach that God has promised to never abandon creation and will result in its ultimate reconciliation and restoration.
- Realize that our efforts to address climate change are part of working towards God's hopeful future while being faithful to God's commission to care for creation.



### Pembetatu ya Uumbaji wa Biblia

- Elewa jinsi sayansi ya tabianchi inavyoweza kusaidia utunzaji wa uumbaji katika mapana yake ya kiroho na kimaadili ya uwakili wa mazingira yalivyoelezwa katika mafundisho ya Biblia.

### Tumaini

- Elewa kwamba wanasayansi wa tabianchi na wanamazingira wana matumaini kwamba juhudi za binadamu zinaweza kupunguza mabadiliko ya tabianchi, ambayo huhimiza matumaini.
- Fhamu maandiko muhimu ya Biblia yanayofundisha kwamba Mungu ameahidi kutowahi kuuacha uumbaji na kwamba hatimae uumbaji utapatanishwa na kurejeshwa kikamilifu.
- Tambua kwamba juhudi zetu za kushughulikia mabadiliko ya tabianchi ni sehemu ya shughuli inayopelekea hatima yenye tumaini kutoka kwa Mungu huku tukiwa waaminifu kwa agizo la Mungu la kutunza uumbaji.

#### Affective: Feel



- **Equipped** with appropriate knowledge
- **Empowered** with knowledge for climate change mitigation and adaptation in Maasailand
- **Eager** to make a difference
- **Responsible** for making a difference
- **Hopeful** for their future, because God loves the world and will never abandon it.

- **Wamepewa** maarifa yanayofaa
- **Wamewezeshwa** kupitia maarifa ya kupunguza na kuhimili mabadiliko ya tabianchi katika ardhi ya Wamaasai
- **Wana hamu** ya kuleta mabadiliko
- **Wana wajibu** wa kusababisha mabadiliko mazuri
- **Wana matumaini** kwa mustakabali wao, kwa sababu Mungu anaupenda ulimwengu na hatauacha kamwe.

#### Applicative: Do



- Draw a table with two columns and identify some best practices of climate change mitigation on one column and of adaptation on the second column (practices that fit in a Maasai context).
- Identify 3 appropriate ways that one can make a difference in climate change mitigation (reduction) in a traditional Maasai context.

- Chora jedwali lenye safu mbili na ibainishe baadhi ya mbinu bora za kupunguza mabadiliko ya tabianchi kwenye safu moja na za kukabiliana na hali kwenye safu ya pili (njia zinazofaa katika muktadha wa Wamaasai).
- Bainisha njia 3 zinazofaa ambazo mtu anaweza kuleta mabadiliko katika kupunguza mabadiliko ya tabianchi (kupunguza) katika muktadha wa kitamaduni wa Wamaasai.

- Identify 3 appropriate ways that one can make a difference in climate change adaptation (resilience) in a traditional Maasai context.
- Bainisha njia 3 zinazofaa ambazo mtu anaweza kuleta mabadiliko katika kukabiliana na mabadiliko ya tabianchi (ustahimilivu) katika muktadha wa kitamaduni wa Wamaasai.

**Teaching Equipment Needed**

- Climate change illustrations
- Picture of the blanket effect on flip chart or large paper
- Flip chart or blackboard

**Vifaa vya Kufundishia Vinahitajika**

- Michoro ya mabadiliko ya tabianchi
- Picha ya athari ya gesi zinazoooneza joto la dunia/blanketi kwenye ubao wa karatasi au karatasi kubwa
- Ubao wa karatasi au ubao wa kawaida

**Student Supplies / Handouts**

- Blank paper and pen/pencil
- Handout: Climate Change Mitigation and Adaptation (pages 169–170)

**Vifaa vya Wanafunzi / Vipeperushi vya Karatasi**

- Karatasi tupu na kalamu/penseli
- Kitini: Kupunguza na Kuzuia athari za Mabadiliko ya Tabianchi na uhimilivu wake (kurasa 169–170)

Time

Content

Maudhui



- 8 *The students should form small groups and discuss for 2 minutes.*
- Identify the climate changes effects that have occurred in their Indigenous environment.
  - Compare the environment during their childhood with the current environmental status.
- One from each group should present one observation in front of the class. Each presenter is given 1 minute.*
- Try to move through this fairly quickly, as this is discussing what we already know, in order to provide more time for developing new understandings.*

**Transition Statement (connecting Hook to Main Point)**

- 1 • From the views shared, it is clear that there are significant changes to our environment, something that negatively affects our traditional way of living.

- Wanafunzi wanapaswa kuunda vikundi vidogo na kujadili kwa dakika 2.*
- Bainisha athari za mabadiliko ya tabianchi zilizotokea katika mazingira yao ya asili.
  - Linganisha mazingira wakati wa utoto wao na hali ya mazingira ya sasa.
- Mmoja kutoka kila kundi anapaswa kuwasilisha uchunguzi mmoja mbele ya darasa. Kila mtoa mada anapewa dakika 1.*
- Jaribu kupitia hili haraka sana, kwani hili linajadili kile tunachokijua tayari, ili kutoa muda zaidi wa kukuza maarifa mapya.*

**Kauli kiunganishi (kuunganisha Ndoano na Hoja Kuu)**

- Kutokana na maoni yaliyoshirikishwa, ni wazi kwamba kuna mabadiliko makubwa katika mazingira yetu, jambo ambayo huathiri vibaya mtindo wetu wa maisha wa kitamaduni.

- Now, let us see what is happening to our environment from a scientific point of view. This knowledge will enable us to better understand what is going on outside of our context that affects us even on our land.
- In the first lesson, we were reminded of God’s commission to humankind to care for God’s creation. In the second lesson, we identified how Maasai traditional environmental knowledge and sustainable pastoralism align with God’s instruction to care for the creation. In this lesson, we will focus on climate science in two ways.
  - First, we see that sustainable pastoralism aligns with conservation and climate science in many ways.
  - Second, we will look at ways that we can expand our traditional knowledge with information from the scientists to help us develop ways to decrease the effects of climate change and how to also reduce the risk of the bad effects we are already experiencing.



*Teaching notes: Ask the following 7 questions and guide the discussion— 3 minutes average for each of first 6 questions; #7 has 10 minutes. Fill in discussion with the content below.*

*In a 60-minute lesson, everything cannot be included. More information is provided here to inform the teacher.*

## Climate Science: Climate Change Mitigation and Adaptation

- 18 Let us start with a review of core concepts about climate change.



- Kupitia mitazamo ya kisayansi sasa, hebu tuone kinachotokea kwa mazingira yetu. Maarifa haya yatakuwezesha kuelewa vyema kinachoendelea nje ya muktadha wetu na kuathiri hata katika ardhi yetu.
- Katika somo la kwanza, tulikumbushwa agizo la Mungu kwa wanadamu la kutunza uumbaji wa Mungu. Katika somo la pili, tulitambua jinsi maarifa ya jadi ya mazingira ya Wamaasai na ufugaji endelevu vinavyoendana na maagizo ya Mungu ya kutunza uumbaji. Katika somo hili, tutazingatia sayansi ya tabianchi kwa njia mbili.
  - Kwanza, tunaona kwamba ufugaji endelevu unaendana na uhifadhi na sayansi ya tabianchi kwa njia nyingi.
  - Pili, tutaangalia jinsi ambavyo tunaweza kupanua maarifa yetu ya kitamaduni kupiti taarifa kutoka kwa wanasayansi ili kutusaidia kukuza njia za kupunguza athari za mabadiliko ya tabianchi na jinsi ya kupunguza hatari ya athari mbaya ambazo tayari tunazipata.



*Maelezo ya kufundisha: Uliza maswali 7 yafuatayo na uongoze majadiliano—wastani wa dakika 3 kwa kila swali kati ya maswali 6 ya kwanza; #7 ina dakika 10. Jaza majadiliano na maudhui yaliyo hapa chini.*

*Katika somo la dakika 60, kila kitu hakiwezi kujumuishwa. Taarifa zaidi zimetolewa hapa ili kumjulisha mwalimu.*

## Sayansi ya Tabianchi: Kupunguza na Kukabiliana na Mabadiliko ya Tabianchi

Tuanze na marudio ya dhana kuu ihusuyo mabadiliko ya tabianchi.

## 1. What is climate change?

- **Review:** Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other aspects of the Earth's climate system. (Key concept!)
- Climate scientists are concerned because all over the Earth the climate is changing.
- Any process or event that produces differences to a climate system can create climate change. This can include events such as volcanic eruptions.<sup>1</sup>
- While the climate has changed over the many thousands of years that science has studied, the planet is getting hotter and faster than at any other time in the history of the Earth.<sup>2</sup>
- Now, the main cause of climate change is a result of human activity. This is called "anthropogenic climate change," which means human-caused climate change.<sup>3</sup>

## 2. What is the difference between weather and climate?

- **Weather** "is local and temporary. Weather happens at a particular time and place..."
- **Climate** "describes conditions over the long term and over an entire region. Climate is the big picture. It is the big picture of temperatures, rainfall, wind and other conditions over a larger region and a longer time than weather."<sup>4</sup>
- Now, I will give you some circumstances, and you all tell me if each one is related to **weather or climate**.
  - There was 13 mm of rain yesterday. [Weather]
  - The average high temperature of Arusha in the month of January over the past 25 years is 28 degrees. [Climate]
  - The average rainfall in Arusha for the month of April is 360 mm. [Climate, because the average over many years.]
  - Last week, the average high temperature was 28 degrees. [Weather]
  - Arusha's average annual rainfall is 1,180 mm. [Climate, because the average over many years.]

## 1. Mabadiliko ya tabianchi ni nini?

- **Marudio:** Mabadiliko ya tabianchi hurejelea mabadiliko ya muda mrefu katika hali ya joto, mvua, mifumo ya upepo, na vipengele vingine vya mfumo wa tabianchi wa Dunia. (Dhana muhimu!)
- Wanasayansi wa tabianchi wana wasiwasi kwa sababu tabianchi inabadilika kote duniani.
- Mchakato au tukio lolote linalozalisha tofauti katika mfumo wa tabianchi linaweza kusababisha mabadiliko ya tabianchi. Mojawapo ya matukio hayo ni kama vile milipuko ya volkeno.<sup>1</sup>
- Wakati utafiti wa kisayansi unaonyesha tabianchi imebadilika kwa maelfu ya miaka, dunia inazidi kuwa na joto na kasi zaidi kuliko wakati mwingine wowote katika historia ya Dunia.<sup>2</sup>
- Sasa, sababu kuu ya mabadiliko ya tabianchi ni matokeo ya shughuli za kibinadamu. Hii inaitwa "mabadiliko ya tabianchi yanayosababishwa na binadamu."<sup>3</sup>

## 2. Tofauti kati ya hali ya hewa na tabianchi ni ipi?

- **Hali ya hewa** "ni ya ndani na ya muda. Hali ya hewa hutokea kwa wakati na mahali fulani..."
- **Tabianchi** "inaelezea hali kwa muda mrefu na kwa eneo zima. Tabianchi ni kwa mtazamo mpana. Ni mtazamo mpana wa halijoto, mvua, upepo na hali zingine katika eneo kubwa na muda mrefu zaidi kuliko hali ya hewa ya kila siku."<sup>4</sup>
- Sasa, nitawapa hali fulani, na nyote mniambie kwa kila moja kama inahusiana na **hali ya hewa au tabianchi**.
  - Kulikuwa na mvua ya 13 mm jana. [Hali ya hewa]
  - Wastani wa halijoto ya juu ya Arusha katika mwezi wa Januari katika kipindi cha miaka 25 iliyopita ni nyuzi joto 28. [Tabianchi]
  - Wastani wa mvua huko Arusha kwa mwezi wa Aprili ni 360 mm. [Tabianchi, kwa sababu ni wastani wa hali ya hewa kwa miaka mingi.]
  - Wiki iliyopita, wastani wa halijoto ya juu ulikuwa nyuzi joto 28. [Hali ya hewa]

- The average windspeed in Arusha yesterday was 5 km per hour. [Weather]

### 3. What is the primary cause of climate change?

- “The principal way in which humans are understood to be affecting the climate is through the release of heat-trapping [greenhouse] gases into the air.”<sup>5</sup>
- These gases are called global-warming gases because these gases collect in the atmosphere and trap the heat that would normally rise into space. Thus, they warm up the surface of the earth like a greenhouse keeps warm air in the building.
- We can think of this like a blanket that keeps us warm, so we can think of it as the blanket that keeps the Earth warm.

Show a picture or draw a simple image of the **greenhouse effect** or **blanket effect** on the blackboard. See the picture on the back cover of this book.

#### “The Greenhouse Effect” or “The Blanket Effect”?

The Greenhouse effect a standard metaphor that works in many Western contexts. However, it does not work well in a Maasai context, where most of the people have not seen a greenhouse. Thus, this concept has been adapted to “The Blanket Effect” which is more understandable in a Maasai contexts. Blankets helps to keep a person warm, and the Maasai are renown for their red plaid blankets (shuka). Since adapting this metaphor, other climate scientists have also used the blanket metaphor.

### 4. What are the sources of global-warming gases?<sup>6</sup>

Main human-caused global-warming (greenhouse) gases:

- **Carbon dioxide** (CO<sub>2</sub>) is produced by burning fossil fuels, like coal and petrol in cars...
  - and even burning plastic drinking bottles!
  - Plastic production and burning make up 5% of global-warming gases globally.

- Wastani wa mvua ya kila mwaka ya Arusha ni 1,180 mm. [Tabianchi, kwa sababu ni wastani wa hali ya hewa kwa miaka mingi.]
- Kasi ya wastani ya upepo jijini Arusha jana ilikuwa kilomita 5 kwa saa. [Hali ya hewa]

### 3. Chanzo kikuu cha mabadiliko ya tabianchi ni nini?

- “Njia kuu inayofahamika ambayo kwayo binadamu wanaathiri hali ya hewa ni kwa kutoa gesi zinazoshikilia joto hewani.”<sup>5</sup>
- Gesi hizi huitwa gesi zinazoozongeza joto la dunia kwa sababu gesi hizi hukusanyika angani na kunasa joto ambalo kwa kawaida hupanda angani. Kwa hivyo, hupasha joto uso wa dunia.
- Tunaweza kufananisha gesi hii kama blanketi linalotupa joto, kwa hivyo tunaweza kufananisha kama blanketi linaloipa Dunia joto.

Onyesha picha au chora picha rahisi ya **athari ya blanketi** kwenye ubao mweusi. Tazama jalada la kitabu hiki upande wa nyuma.

#### Athari ya blanketi kwa ongezeko la joto la dunia

1. Mionzi mingi hufyonzwa na uso wa Dunia na kuipasha joto.
2. Baadhi ya mionzi ya jua huakisiwa na Dunia na angahewa.
3. Baadhi ya mionzi ya infrared hupita kwenye angahewa. Baadhi hufyonzwa na kutolewa tena pande zote na molekuli za gesi zinazoozongeza joto la dunia. Athari ya hii ni kupasha joto uso wa Dunia na sehemu ya chini ya angahewa.
4. Mionzi ya infrared hutolewa na uso wa Dunia.

### 4. Vyanzo vya gesi zinazoozongeza joto duniani ni vipi?<sup>6</sup>

Gesi kuu zinazoozongeza joto duniani zinazosababishwa na binadamu:

- **Kaboni dioksidi** (CO<sub>2</sub>) hazalishwa kwa kuchoma mafuta ya visukuku, kama vile makaa ya mawe na petroli katika magari...
  - na hata kuchoma chupa za plastiki za maji!
  - Uzalishaji na uchomaji wa plastiki hutengeneza 5% ya gesi zinazoozongeza joto duniani kote.

- Half of this plastic is single-use plastics, which should be avoided.
- Note that burning plastic bottles releases toxic chemicals that are very bad for humans and the environment (see Resources for Lesson 3, Chapter 17).<sup>7</sup>

*Focus on the problems of plastic, especially plastic bottles, as this is easier to change, and because plastic is very toxic to both human health and the environment. In addition to the above information, there are toxic chemicals that leach (come out of) plastic bottles and micro and nanoplastics that are found in all human organs including the brain. **Summary: avoid plastics for many reasons!!!***

- **Methane** (CH<sub>4</sub>) is produced by modern agriculture, such as cow's gas, and burning biomass. While not as common as carbon dioxide, methane is at least 30 times more powerful at trapping heat.
- There are other global-warming gases and substances that occur naturally. These include:
  - **Water vapor** (H<sub>2</sub>O) is caused by evaporation of rain and "contrails" or vapor trails that are straight line clouds following airplanes caused by engine exhaust or changes in air pressure; and
  - **Volcanic ash**, caused by eruption of volcanos.

*Put little or no time into the details below, but this following paragraph is provided for the teacher in case it comes up in student questions.*

- Other common human-produced global-warming gases:
  - **Nitrous oxide** (N<sub>2</sub>O) is used in medical procedures, rocket propellants, and motorcar racing; and
  - **Ozone** (O<sub>3</sub>) is formed by the reaction of sunlight with air containing hydrocarbons and nitrogen oxides.

- Nusu ya plastiki hii ni plastiki zinazotumika mara moja, ambazo zinapaswa kuepukwa.
- Kumbuka kwamba kuchoma chupa za plastiki hutoa kemikali zenye sumu ambazo ni mbaya sana kwa wanadamu na mazingira (tazama Nyenzo za Somo la 3, Sura ya 17).<sup>7</sup>

*Zingatia matatizo ya plastiki, hasa chupa za plastiki, kwani ni rahisi kubadilika na kuacha matumizi yake, na kwa sababu plastiki ni sumu sana kwa afya ya binadamu na mazingira. Zaidi ya hilo kuna kemikali zenye sumu ambazo hutoka kwenye chupa za plastiki pamoja na chembe ndogo na nanoplastiki ambazo matokeo yake zinapatikana katika viungo vyote vya binadamu ikiwa ni pamoja na ubongo wa mtu aliyetumia chupa za plastiki. **Muhtasari: epuka plastiki kwa sababu nyingi!!!***

- **Methane** (CH<sub>4</sub>) huzalishwa na kilimo cha kisasa, kama vile gesi ya ng'ombe, na biomasi inayowaka. Ingawa si ya kawaida kama kaboni dioksidi, methane ina nguvu zaidi ya mara 30 katika kunasa joto.
- Kuna gesi na vitu vingine vya kiasili vinavyosababisha joto duniani. Hizi ni pamoja na:
  - **Mvuke wa maji** (H<sub>2</sub>O) husababishwa na uvukishaji wa mvua au njia za mvuke ambazo ni mawingu ya ubeti ulionyooka yanayofuata ndege yanayosababishwa na moshi wa injini au mabadiliko katika shinikizo la hewa; na
  - **Majivu ya volkeno**, yanayosababishwa na mlipuko wa volkeno.

*Weka muda mfupi au usitumie muda mwingi katika maelezo yaliyo hapa chini, lakini aya hii ifuatayo imetolewa kwa mwalimu iwapo itajitokeza katika maswali ya wanafunzi.*

- Gesi zingine za kawaida zinazozalishwa na binadamu zinazoongeza joto duniani:
  - **Oksidi ya nitrous** (N<sub>2</sub>O) hutumika katika matumizi ya kimatibabu, vichocheo vya roketi, na mbio za magari; na
  - **Ozoni** (O<sub>3</sub>) Inauundwa kutokana na mmenyuko wa mwanga wa jua na hewa yenye hidrokaboni na oksidi za nitrojeni.

- **Chlorofluorocarbons** (CFCs and HCFCs) are manufactured chemicals found in refrigerants, chemical agents used to make foams for mattresses, aerosol propellants in medicinal applications, degreasing solvents, and such.

## 5. What are the primary effects of climate change?<sup>8</sup>

- Trapped heat in the atmosphere as a result of human-produced **global-warming gases** is causing **the Earth to heat up**. A hotter Earth causes problems.
- Below are 4 categories of problems, though the impacts may overlap in one or more categories.

### 1. Extreme weather events

- Heat waves
- Drought in some areas and increase of sand dunes.
- Floods and soil erosion in other areas
- Hurricanes and typhoons, which are more frequent and stronger due to warmer ocean waters.

### 2. Effects upon humans

- Famine and food insecurity, due to droughts and flooding that ruins crops
- Freshwater shortages
- Health problems, such as more malaria and other climate-sensitive diseases and poor air quality causes respiratory diseases
- Heat stress that is longer and hotter than normal which causes, including: Heat related health problems, especially for pregnant and older women, and death for vulnerable people, especially the sick and elderly as well as livestock
- Destruction of homes, due to flooding and hurricanes
- Migration or “climate change refugees” due to migration caused by lack of water, crop failure, extreme weather, etc., thus, livelihood shift
- Land rights/tenure challenged
- Toxic chemicals and CO<sub>2</sub> emissions from burning plastics

- **Klorofluorokaboni** (CFC na HCFC) ni kemikali zinazotengenezwa zinazopatikana katika viyoyozi, mawakala wa kemikali wanaotumika kutengeneza povu kwa magodoro, vichocheo vya erosoli katika matumizi ya kimatibabu, miyeyusho ya kuondoa mafuta, na kadhalika.

## 5. Je, ni madhara gani ya msingi ya mabadiliko ya tabianchi?<sup>8</sup>

- Joto lililokwama angani kutokana na **gesi zinazozalishwa** na binadamu zinazosababisha ongezeko la joto duniani husababisha **Dunia kupata joto**. Dunia yenye joto zaidi husababisha matatizo.
- Hapa chini kuna makundi 4 ya matatizo, ingawa athari zinaweza kuingiliana katika kundi moja au zaidi.

### 1. Matukio ya hali mbaya ya hewa

- Mawimbi ya joto
- Ukame katika baadhi ya maeneo na ongezeko la matuta ya mchanga.
- Mafuriko na mmomonyoko wa udongo katika maeneo mengine
- Vimbunga vikali na typhoons, ambavyo hutokea mara kwa mara na kwa nguvu zaidi kutokana na maji ya bahari yenye joto zaidi.

### 2. Athari kwa binadamu

- Njaa na ukosefu wa usalama wa chakula, kutokana na ukame na mafuriko yanayoharibu mazao
- Uhaba wa maji safi
- Matatizo ya kiafya, kama vile malaria na magonjwa mengine yanayotokana na mabadiliko ya tabianchi na hali mbaya ya hewa husababisha magonjwa ya kupumua
- Msongo wa joto la muda mrefu na wenye joto kali zaidi kuliko kawaida husababisha: Matatizo ya kiafya yanayohusiana na joto, hasa kwa wanawake wajawazito na wazee, na vifo kwa watu walio katika mazingira magumu, hasa wagonjwa na wazee pamoja na mifugo
- Uharibifu wa nyumba, kutokana na mafuriko na vimbunga
- Uhamiaji au “wakimbizi wa mabadiliko ya tabianchi” kutokana na uhamiaji unaosababishwa na ukosefu wa maji, kwa mazao, hali mbaya ya hewa, n.k., hivyo, mabadiliko katika upatikanaji wa riziki
- Changamoto za haki za ardhi/umiliki wa ardhi

**3. Impacts on ecosystems**

- Africa is expected to warm up 1.5 times faster than the global average affecting ecosystems and natural resources.
- Rangeland destruction including invasive species.
- The rise of sea levels, due to melting ice caps at the North and South Poles and other icebergs, is destroying coastal communities and some island nations, such as the Marshall Islands, Kiribati, Tuvalu, and the Maldives.

**4. Impacts on national security**

- Conflicts will increase over limited natural resources, both within regions within a country and between nations.
- Rivers and their precious waters are often shared resources between regions and nations. Downstream areas have less water.

- While most of the climate crisis has been caused by large industrial areas like Europe, USA, and China, the poorer countries—like Tanzania—will be more effected!
  - One reason is that many Africans are dependent upon natural resources for their livelihoods.
  - Unfortunately, poorer countries—which will be impacted the most—have the least amount of resources to manage the effects!

**6. What is the difference between mitigation and adaptation?<sup>9</sup>**

- Mitigation measures are those actions that are taken to *reduce* global-warming gas emissions.
- Adaptation measures are based on decreasing vulnerability and risk to the effects of climate change.
- Thus, mitigation seeks to *reduce* the causes of climate change, while adaptation seeks to make people more *resilient* or less vulnerable to the impacts of climate change.

- Kemikali zenye sumu na uzalishaji wa CO<sub>2</sub> kutokana na plastiki zinazoungua.

**3. Athari kwa mifumo ikolojia**

- Afrika inatarajiwa kuongezeka joto mara 1.5 zaidi kuliko wastani wa kimataifa unaoathiri mifumo ikolojia na maliasili.
- Uharibifu wa maeneo ya malisho ikiwa ni pamoja na spishi vamizi.
- Kuongezeka kwa viwango vya bahari, kutokana na kuyeyuka kwa barafu kwenye ncha za Kaskazini na Kusini za dunia na milima mingine ya barafu, kunaharibu jamii za pwani na baadhi ya visiwa, kama vile Visiwa vya Marshall, Kiribati, Tuvalu, na Maldives.

**4. Athari kwa usalama wa taifa**

- Migogoro itaongezeka kutokana na rasilimali asilia chache, ndani ya maeneo ndani ya nchi na kati ya mataifa.
- Mito na maji yake ya thamani mara nyingi ni rasilimali za pamoja kati ya maeneo na mataifa. Maeneo ya mwisho ya mito yatapata maji kidogo.

- Ingawa mgogoro mwingi wa tabianchi umesababishwa na maeneo makubwa ya viwanda kama vile Ulaya, Marekani, na China, nchi maskini zaidi—kama Tanzania—zitaathiriwa zaidi!
  - Sababu moja ni kwamba Waafrika wengi wanategemea rasilimali asili kwa ajili ya riziki zao.
  - Kwa bahati mbaya, nchi maskini zaidi—ambazo zitaathiriwa zaidi—zina kiasi kidogo cha rasilimali za kudhibiti athari hizo!

**6. Tofauti kati ya kupunguza na kukabiliana na hali ni ipi?<sup>9</sup>**

- Hatua za kupunguza hali ni zile hatua zinazochukuliwa ili kupunguza uzalishaji wa gesi unaotokana na ongezeko la joto duniani.
- Mbinu za kuhimili mabadiliko ya tabianchi zinatokana na kupunguza hatari na urahisi wa kuathirika kwa binadamu na mazingira.
- Hivyo, kukabiliana na hali kunalenga *kupunguza* sababu za mabadiliko ya tabianchi, huku *kukabiliana* na hali kunalenga kuwafanya watu wawe na ustahimilivu zaidi au wasiwe na hatari kubwa kutokana na athari za mabadiliko ya tabianchi.

## 7. What are ways of mitigation of and adaptation to climate change that are:

- Informed by climate science and
- Appropriate for a traditional Maasai context?

*Take out a piece of paper and draw a line down the middle of the paper with the left heading of Mitigation and the right heading of Adaptation.*

*The teacher can choose from the following lists randomly and guide a discussion. (Students have to say/write on the respective columns, whether it is a mitigation or adaptation method).*

*These lists are too detailed and are provided to support the teacher's understanding. The teacher should not discuss all of these but rather choose the most appropriate items for their group. Write the findings on the flipchart or blackboard for later discussion.*

*IF A HANDOUT IS POSSIBLE: Another teaching method for this question is to provide the handout below with a detailed list of mitigation and adaptation strategies. Then have the students read and discuss the questions as they engage the content of the handout.*

- I will name different items. Let us discuss them and work together to identify which of these practices are related to climate change **mitigation** (reduction) and/or **adaptation** (increased resilience for climate change impacts).

*Discuss the mitigation and adaptation strategies for 10 minutes.*



## 7. Ni njia zipi za kupunguza na kukabiliana na mabadiliko ya tabianchi ambazo:

- Zinatokana na sayansi ya tabianchi na
- Zinafaa kwa muktadha wa kitamaduni wa Wamaasai?

*Toa karatasi na chora ubeti katikati ya karatasi, upande wa kushoto andika kupunguza athari, alafu upande wa kulia andika kuhimili athari. Mwalimu anaweza kuchagua kutoka kwenye orodha zifuatazo bila mpangilio na kuongoza majadiliano. (Wanafunzi wanatakiwa kusema/kuandika kwenye karatasi aliyogawanya kama mjia iliyotajwa ni ya kupunguza au kuhimili athari).*

*Orodha hizi zina maelezo mengi na zimetolewa ili kusaidia uelewa wa mwalimu. Mwalimu hapaswi kujadili haya yote bali kuchagua vipengee vinavyofaa zaidi kwa kundi lake. Andika matokeo kwenye chati mgeuzo au ubao mweusi kwa majadiliano ya baadaye.*

*IKIWA KITINI KINAWEZEKANA: Njia nyingine ya kufundisha swali hili ni kutoa kitini kilicho hapa chini orodha ya kina ya mikakati ya kupunguza na kukabiliana. Kisha-wanafunzi wasome na kujadili maswali wanaposhirikisha maudhui ya kitini.*

- Nitataja vipengee tofauti. Hebu tuvijadili na tufanye kazi pamoja ili kubaini ni vitendo gani kati ya hivi vinavyohusiana na **kupunguza** na/au **kukabiliana** (kuongezeka kwa ustahimilivu kwa athari za mabadiliko ya tabianchi).

*Jadili mikakati ya kupunguza makali na kukabiliana nayo kwa dakika 10*

Mitigation	Adaptation	Kupunguza	Kukabiliana
<p><b>1. Plant trees which absorb CO<sub>2</sub></b> (especially trees that are native to the area).</p> <p><b>2. Energy efficiency (reducing carbon)</b></p> <p>a) Use more efficient wood burning cooking stoves to reduce burning of wood (which puts global-warming gases into the environment).<sup>1</sup> [See Resources Chap. 17 for an example stove.]</p> <p>b) Increase the use of renewable energy such as solar power.</p> <p>c) Use energy efficient LED lights or compact fluorescent lights (CFLs) instead of old incandescent light bulbs.</p> <p>d) Turn off electrical lights when not being used.</p> <p><b>3. Reduce the use of plastic bottles and recycle the bottles that are used.</b></p> <p>e) Because single-use plastic is produced</p>	<p><b>5. Water</b></p> <p>h) Develop water harvesting and storage mechanisms.<sup>3</sup></p> <p>i) In acute water scarcity, temporarily migrate to areas where water is accessible.</p> <p>j) Develop water catchment areas (reservoirs) boreholes, piped water, and dams.<sup>4</sup> [See Resources Chap. 17.]</p> <p><b>6. Food security</b></p> <p>k) Put in place food security enhancement strategies (food reserve).<sup>5</sup></p> <p>l) The households' ability to purchase food is the most important food security strategy.<sup>6</sup></p> <p>m) A reliable income source and asset base is crucial for household response to climate shocks.<sup>7</sup></p> <p>n) 58% reported that they resort to selling livestock... in response to shocks.<sup>8</sup></p> <p><b>7. Infrastructure resilience</b></p> <p>o) More secure house and facility locations</p> <p>p) Preventive and precautionary measures (evacuation plans, health issues, etc.)</p> <p><b>8. Ecosystem and landscapes</b></p> <p>q) Landscape restoration (natural landscape) and reforestation</p> <p>r) Conservation of natural ecosystem (biodiversity and water)</p> <p><b>9. Traditional environmental knowledge</b></p> <p>s) Identify and sustain indigenous/traditional Maasai knowledge with practices that are good for caring for the environment; "...local knowledge systems and institutions should buttress policy-making and implementation to promote local resilience."<sup>9</sup></p> <p>t) "Gradual and medium to long-term livelihood diversification initiative is a highly recommended policy strategy to increase resilience among pastoral communities as opposed to the current policy which</p>	<p><b>1. Panda miti ambayo inachukua kaboni dioksidi, CO<sub>2</sub></b> (hasa miti ambayo ni ya asili ya eneo la hilo).</p> <p><b>2. Ufanisi wa nishati (kupunguza kiwango cha kaboni)</b></p> <p>a) Tumia majiko ya kuni yenye ufanisi zaidi ya kuni ili kupunguza uchomaji wa kuni (ambao huweka gesi zinazoongeza joto kwenye dunia kwenye mazingira).<sup>1</sup> [Tazama Nyenzo sura ya 17 kuhusu kuchoma biomasi chini na mfano wa jiko linalotumia mafuta kidogo.]</p> <p>b) Kuongeza matumizi ya nishati mbadala kama vile nishati ya jua.</p> <p>c) Tumia taa za LED zisizo na nishati au taa za fluorescent (CFL) badala ya balbu za zamani za incandescent.</p> <p>d) Zima taa za umeme wakati hautumiki.</p> <p><b>3. Punguza matumizi ya chupa za plastiki na urejeshe tena chupa zinazotumika.</b></p>	<p><b>5. Maji</b></p> <p>h) Tengeneza njia za kuvuna na kuhifadhi maji.</p> <p>i) Katika uhaba mkubwa wa maji, hamia kwa muda kwenye maeneo ambayo maji yanapatikana.</p> <p>j) Kuendeleza maeneo ya kukusanyia maji, visima, maji ya bomba, na mabwawa.<sup>4</sup> [Tazama picha hapa chini katika Nyenzo sura ya 17.]</p> <p><b>6. Usalama wa chakula</b></p> <p>k) Weka mikakati ya kuimarisha usalama wa chakula (hifadhi ya chakula).<sup>5</sup></p> <p>l) Uwezo wa kaya kununua chakula ndio mkakati muhimu zaidi wa usalama wa chakula.<sup>6</sup></p> <p>m) Chanzo cha mapato kinachotegemewa na msingi wa mali ni muhimu kwa mwitikio wa kaya dhidi ya majanga ya tabia nchi.<sup>7</sup></p> <p>n) Asilimia 58 ya kaya ziliripoti kuwa zimeamua kuuza mifugo...ili kudhibiti majanga ya tabia nchi.<sup>8</sup></p> <p><b>7. Ustahimilivu wa miundombinu</b></p> <p>o) Maeneo salama zaidi ya nyumba na kituo</p> <p>p) Hatua za kuzuia na za tahadhari (mipango ya uokoaji, masuala ya afya, n.k.)</p> <p><b>8. Mfumo wa ikolojia na mandhari</b></p> <p>q) Marejesho ya mazingira (mandhari ya asili) na upandaji miti upya</p> <p>r) Uhifadhi wa mfumo ikolojia asilia (bioanuwai na maji)</p> <p><b>9. Maarifa ya jadi ya mazingira</b></p> <p>s) Tambua na udumishe maarifa asilia/jadi ya Wamaasai na mazoea ambayo ni mazuri kwa kutunza mazingira; "...mifumo na taasisi za maarifa za wenyeji zinapaswa kuimarisha utungaji na utekelezaji wa sera ili kukuza ustahimilivu wa wenyeji."<sup>9</sup></p> <p>t) "Mpango wa mseto wa maisha wa taratibu na wa kati hadi mrefu ni mkakati wa kisera unaopendekezwa ili</p>

Mitigation	Adaptation	Kupunguza	Kukabiliana
<p>from fossil fuels, obtaining and creating these plastics produces large amounts of global-warming gases.</p> <p>f) Burning plastics puts toxic chemicals into the air and land that is harmful to health.<sup>2</sup></p> <p><b>4. Use garbage collection instead of burning garbage.</b></p> <p>g) Burning garbage releases carbon into the air. (See note “f” on burning plastic.)</p>	<p>condemns pastoralism as a backward and environmentally destructive activity.”<sup>10</sup></p> <p><b>10) Agro-pastoralism/small-scale agriculture</b></p> <p>u) Use flexible and diverse cultivation</p> <p>v) Develop seed banking.<sup>11</sup></p> <p>w) Incorporate crops that are more drought resistant than maize, “such as sorghum, pigeon-pea, finger millet, sweet potato and chickpea...”<sup>12</sup></p> <p><b>11) Leadership and governance</b></p> <p>x) Include women in decision making that affects their and their children’s lives to reduce the vulnerability of the entire household</p> <p>y) Strengthen local traditional leaders as the elders are in charge of resource control and allocation especially during periods of intense scarcity<sup>13</sup> and provide infrastructural, social, legal, and financial support</p> <p>z) Strengthen the village council for how to seek government support...for infrastructural, social, legal, and financial support.<sup>14</sup></p>	<p>e) Kwa sababu plastiki ya matumizi moja huzalishwa kutoka kwa nishati ya mafuta (kama petroli), kupata na kuunda plastiki hizi hutoa kiasi kikubwa cha gesi za joto za dunia.</p> <p>f) Tumia ukusanyaji wa taka badala ya kuchoma takataka.<sup>2</sup></p> <p><b>4. Takataka zinazochomwa hutoa kaboni hewani.</b></p> <p>g) Kuchoma plastiki huweka kaboni dioksidi na kemikali za sumu katika hewa na ardhi ambayo ni hatari kwa afya ya binadamu na wanyama na mazingira. (Angalia maelezo “f.”)</p>	<p>kuongeza ustahimilivu miongoni mwa jamii za wafugaji kinyume na sera ya sasa inayolaani ufugaji kuwa ni shughuli ya kurudi nyuma na kuharibu mazingira.”<sup>10</sup></p> <p><b>10. Kilimo-ufugaji/kilimo kidogo</b></p> <p>u) Tumia njia rahisi na tofauti za kilimo.</p> <p>v) Kuendeleza utunzaji wa mbegu.<sup>11</sup></p> <p>w) Jumuisha mazao yanayostahimili ukame zaidi kuliko mahindi, “kama vile mtama, njegere, mtama, viazi vitamu na kunde.”<sup>12</sup></p> <p><b>11. Uongozi na utawala</b></p> <p>x) Wajumuishe wanawake katika kufanya maamuzi ambayo yanaathiri maisha yao na ya watoto wao ili kupunguza hatari ya kaya nzima.</p> <p>y) Waimarishe viongozi wa kimila kwani wazee ndio wanaosimamia udhibiti na ugawaji wa rasilimali hasa nyakati za uhaba mkubwa,<sup>13</sup> na kutoa msaada wa miundombinu, kijamii, kisheria na kifedha.</p> <p>z) Imarisha halmashauri ya kijiji jinsi ya kutafuta msaada wa serikali...kwa msaada wa miundombinu, kijamii, kisheria na kifedha.<sup>14</sup></p>

**Table Bibliography**

<sup>1</sup> Ndesanjo, Theilade, and Nielsen. “Water scarcity is a common determinant of migration among pastoral communities.” (Berkhout 2012; Brockhaus et al. 2013). 2602, [https://doi.org/10.1007/978-3-030-45106-6\\_128](https://doi.org/10.1007/978-3-030-45106-6_128).

<sup>2</sup> Verma et al., “Toxic Pollutants from Plastic Waste-A Review,” *Procedia Environmental Sciences, Waste Management for Resource Utilisation*, 35 (January 1, 2016): 701–8, <https://doi.org/10.1016/j.proenv.2016.07.069>.

<sup>3</sup> Ndesanjo, Theilade, and Nielsen, 2603.

<sup>4</sup> Mwandosya, “National Adaptation Programme of Action (NAPA),” 2007, ix, <https://unfccc.int/resource/docs/napa/tza01.pdf>.

<sup>5</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>6</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>7</sup> Ndesanjo, Theilade, and Nielsen, 2602.

<sup>8</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>9</sup> Mwandosya, ix.

<sup>10</sup> Ndesanjo, Theilade, and Nielsen, 2607.

<sup>11</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>12</sup> J. Douwe Meindertsma and Jan J. Kessler, eds., 44. Meindertsma, J. Douwe, and Jan J. Kessler, eds. *Planning for a Better Environment in Monduli District*. Netherlands Economic Institute, 1997.

<sup>13</sup> Ndesanjo, Theilade, and Nielsen, 2604.

<sup>14</sup> Ndesanjo, Theilade, and Nielsen, 2605.

**Maasai: Which are practices that the Maasai do already?**

- 5
- Take a look at our lists.
  - Underline the things that the Maasai do.

*Below is an edited list of the one above that focuses on Maasai practices.*



**Wamaasai: Ni desturi zipi ambazo Wamaasai tayari wanafanya?**

- Angalia orodha zetu.
- Piga ubeti chini ya mambo ambayo Wamaasai hufanya.

*Hapa chini kuna orodha iliyohaririwa ya ile iliyo hapo juu inayozingatia desturi za Wamaasai.*

Mitigation	Adaptation	Kupunguza	Kukabiliana
<p><b>1. Trees: Traditionally not cutting trees;</b> Some: Dig “smile” pits that “regreen” the area with plants that take out CO<sub>2</sub> from the air (and also reduce soil erosion). [See Resources Chapter 17.]</p> <p><b>2. Energy efficiency:</b> Most use public transportation and walk. a) Some: more efficient wood burning cooking stoves b) Some: solar power c) Some: energy efficient LED lights d) Some: Turn off electrical lights when not used</p>	<p><b>5) Water</b> h) Some: Develop water harvesting and storage i) During dry seasons, temporarily migrate j) YES! Develop water catchment areas</p> <p><b>7) Infrastructure resilience</b> o) Some: More secure house and facility locations</p> <p><b>8) Ecosystem and landscapes</b> r) YES! Conservation of ecosystem and biodiversity</p> <p><b>9) Traditional environmental knowledge</b> s) Some: Identify and sustain traditional knowledge t) Some: Gradual livelihood diversification</p> <p><b>11) Leadership and governance</b> x) Some: Include women in decision making y) Some: Strengthen local traditional leaders for resource control and sharing z) Some: Strengthen the village council to seek government support</p>	<p><b>1. Miti: Kijadi haikatwagi miti.</b> Baadhi: Chimba mashimo ya "tabasamu" ambayo "hurudisha kijani" eneo hilo kwa mimea inayotoa CO<sub>2</sub> kutoka hewani (na pia hupunguza mmomonyoko wa udongo). [Tazama Rasilimali Sura ya 17.]</p> <p><b>2. Ufanisi wa nishati:</b> Wengi: Tumia usafiri wa umma na kutembea. a) Baadhi: majiko ya kupikia ya kuni yenye ufanisi zaidi b) Baadhi: nishati ya jua c) Baadhi: taa za LED zinazotumia nishati kidogo d) Baadhi: Zima taa za umeme zisipotumika</p>	<p><b>5) Maji</b> h) Baadhi: Kuendeleza uvunaji na uhifadhi wa maji i) Wakati wa kiangazi, huhama kwa muda j) NDIYO! Kuendeleza maeneo ya kuinga maji</p> <p><b>7) Ustahimilivu wa miundombinu</b> o) Baadhi: Maeneo salama zaidi ya nyumba na vituo</p> <p><b>8) Mfumo ikolojia na mandhari</b> r) NDIYO! Uhifadhi wa mfumo ikolojia na viumbe hai</p> <p><b>9) Maarifa ya jadi ya mazingira</b> s) Baadhi: Kutambua na kudumisha maarifa ya jadi t) Baadhi: Ubadilishaji wa utaratibu wa maisha</p> <p><b>11) Uongozi na utawala</b> x) Baadhi: Kuwajumuisha wanawake katika kufanya maamuzi y) Baadhi: Kuimarisha viongozi wa kitamaduni wa mitaa kwa ajili ya kudhibiti na kushiriki rasilimali z) Baadhi: Kuimarisha baraza la kijiji kutafuta msaada wa serikali</p>

### Integrating Climate Science for a Maasai Context

- 4 • Which are practices that Maasai do not traditionally do, but these are things that YOU could easily do—some of them without a lot of resources?
- Looking again at our list, put a double underline under things that we can do!

*This is an edited list of the one above that focuses on things that can be done or encouraged by the students among their families.*

### Kuunganisha Sayansi ya Tabianchi kwa Mukstadha wa Wamaasai

- Ni mazoea gani ambayo Wamaasai hawayafanyi kijadi, lakini ni mambo ambayo WEWE unaweza kuyafanya kwa urahisi—baadhi yake bila rasilimali nyingi?
- Tukiangalia tena orodha yetu, pigia mistari miwili chini ya mambo tunayoweza kufanya!

*Hii ni ile ile orodha ila imehaririwa kwa kuzingatia mambo ambayo yanaweza kufanywa au kuhimizwa na wanafunzi kufanywa miongoni mwa familia zao.*

Mitigation	Adaptation	Kupunguza	Kukabiliana
<p><b>1. Plant trees:</b> Plant trees that are native to the local area; Dig “smile” pits that “regreen” the area with plants that take out CO<sub>2</sub> from the air (and also reduces soil erosion).</p> <p><b>2. Energy efficiency</b> (reducing carbon) a) More: Use more efficient wood burning cooking stoves to reduce burning of wood. b) More: Increase the use of renewable energy such as solar power. c) More: Use energy efficient LED lights. d) More: Turn off electrical lights when not being used. Also, do not run an auto-mobile engine while waiting and not moving in a car.</p> <p><b>3. Reduce plastic bottles</b></p> <p><b>4. Garbage collection instead of burning</b></p>	<p><b>5. Water</b> h) More water harvesting and storage j) More water catchment areas (reservoirs)</p> <p><b>6. Food security</b> k) More food security strategies (food reserve)</p> <p><b>7. Infrastructure resilience</b> o) More secure houses p) Set up precautionary measures (i.e., evacuation plans)</p> <p><b>8. Traditional environmental knowledge</b> q) More Identification of traditional knowledge with practices that are good for creation care</p> <p><b>10. Agro-pastoralism/small-scale agriculture</b> u) Use flexible and diverse cultivation. w) Add drought resistant crops, such as sorghum, pigeon-pea, finger millet, sweet potato and chickpea.</p> <p><b>11. Leadership and governance</b> x) Include more women in decision making. y) Strengthen local traditional leaders as the elders are in charge of resource control. z) Strengthen the village council for how to seek government support.</p>	<p><b>1. Panda miti:</b> Panda miti ambayo ni ya asili katika eneo hilo; Chimba mashimo ya "tabasamu" ambayo "yanarudisha kijani" katika eneo hilo kwa mimea inayotoa CO<sub>2</sub> kutoka hewani (na pia hupunguza mmomonyoko wa udongo).</p> <p><b>2. Ufanisi wa nishati</b> (kupunguza kaboni) a) Zaidi: Tumia majiko ya kupikia ya kuni yenye ufanisi zaidi ili kupunguza uhomaji wa kuni. b) Zaidi: Ongeza matumizi ya nishati mbadala kama vile nishati ya jua. c) Zaidi: Tumia taa za LED zenye ufanisi wa nishati. d) Zaidi: Zima taa za umeme wakati hazitumiki. Pia, usiendeshe injini ya gari huku ukisubiri na huingii ndani ya gari.</p> <p><b>3. Punguza chupa za plastiki</b></p> <p><b>4. Ukusanyaji wa taka badala ya kuchoma</b></p>	<p><b>5. Maji</b> h) Uvunaji na uhifadhi zaidi wa maji j) Maeneo mengi ya vyanzo vya maji (mabwawa)</p> <p><b>6. Usalama wa chakula</b> k) Mikakati zaidi ya usalama wa chakula (hifadhi ya chakula)</p> <p><b>7. Ustahimilivu wa miundombinu</b> o) Nyumba salama zaidi p) Weka hatua za tahadhari (yaani, mipango ya uokoaji).</p> <p><b>8. Maarifa ya jadi ya mazingira</b> q) Utambuzi zaidi wa maarifa ya jadi kwa kutumia mbinu ambazo ni nzuri kwa utunzaji wa uumbaji</p> <p><b>10. Kilimo-ufugaji/kilimo kidogo</b> u) Tumia kilimo kinachonyumbulika na cha aina mbalimbali. w) Ongeza mazao yanayostahimili ukame, kama vile mtama, njegere, mtama, viazi vitamu na kunde.</p> <p><b>11. Uongozi na utawala</b> x) Jumuisha wanawake wengi zaidi katika kufanya maamuz. y) Waimarishe viongozi wa kimila kwani wazee ndio wanaosimamia uhibitaji na ugawaji wa rasilimali hasa nyakati za uhaba mkubwa. z) Imarisha halmashauri ya kijiji jinsi ya kutafuta msaada wa serikali.</p>

### 3) LOOK interpretation/reflection on core content

So, what is ONE thing YOU can do in each category?



- 5
- On your paper, circle one thing in each category that YOU can do with your family and friends to make a difference in caring for God's creation?
  - Remember that our creation care is motivated by being called by God to care for the creation (**Genesis 2:15**). As we are reconciled (in a right relationship) with God, the nature of our faith is lived out: 1) in peace with others (social justice) and 2) peace with creation (creation care/environmental ethics).
  - Let's have two or three students share with the class just one of the things they want to do to make a difference.

### Hope

- 3
- Knowing that we have a trustworthy and loving God, 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).
  - Finally, even some scientists and environmentalists are hopeful that we can all do something little and together it adds up to make a big difference.



*There may not be enough time to highlight the following examples.*

### 3) UCHUNGUZI ufafanuzi au tafakari ya maudhui ya msingi

Kwa hivyo, ni jambo gani MOJA WEWE unaweza kufanya katika kila kategoria/kundi?

- Kwenye karatasi yako, zungushia kitu kimoja katika kila kipengele ambacho WEWE unaweza kufanya na familia yako na marafiki ili kuleta mabadiliko katika kutunza uumbaji wa Mungu?
- Kumbuka kwamba utunzaji wetu wa uumbaji unahamasishwa na wito wa Mungu kwetu wa kutunza uumbaji (**Mwanzo 2:15**). Tunapopatanishwa (katika uhusiano sahihi) na Mungu, asili ya imani yetu inadhihirika: 1) kwa amani na wengine (haki ya kijamii) na 2) amani na uumbaji (utunzaji wa uumbaji/maadili ya mazingira).
- wanafunzi wawili au watatu washirikishe darasa jambo moja wanalotaka kufanya ili kuleta mabadiliko.

### Tumaini

- Tukijua kwamba tuna Mungu anayeaminika na mwenye upendo, tunaweza kukabiliana na changamoto za mabadiliko ya tabianchi kwa matumaini.
- Kwanza, tunajua kwamba Muumba wetu, Mungu wa Tumaini, anapenda ulimwengu, na Mungu hatauacha kamwe.
- Pili, kama wafuasi wa Yesu Kristo, tunawezeshwa na Roho Mtakatifu kuwa baraka kwa wengine (haki ya kijamii) na uumbaji (mazingira).
- Hatimaye, hata baadhi ya wanasayansi na wanamazingira wana matumaini kwamba sote tunaweza kufanya kitu kidogo na kwa pamoja kuleta mabadiliko makubwa.

*Huenda kusiwe na muda wa kutosha kuangazia mifano ifuatayo.*

- **Wangari Maathai**—the Kenyan Nobel Prize winner we talked about at the beginning of the lesson.
  - “The 30 million trees planted by Green Belt Movement volunteers—mostly rural women—throughout Kenya over the past 30 years are a testament to the individuals’ ability to change the course of environmental history.
  - “Working together, we have proven that sustainable development is possible; the reforestation of degraded land is possible; and the exemplary governance is possible when ordinary citizens are informed, sensitized, mobilized and involved in direct action for their environment.”<sup>10</sup>
- **Jane Goodall** did research with chimpanzees in Tanzania’s Gombe National Park for 30 years (1960–1990s). [See Resources for Lesson 3, Chapter 17.]
  - “Hope is what enables us to keep going in the face of adversity.”<sup>11</sup>
  - “I truly believe, and I’m not alone as a scientist, that we have a window of time when if we get together and take action, we can at least slow down climate change and loss of biodiversity... **I can’t save the world, but what can I do locally?... Whatever it is you care about, get together with some friends and take action. Do what you can do to solve what you are passionate about and you will find you make a difference.**”<sup>12</sup>
- **Wangari Maathai**—mshindi wa Tuzo ya Nobel ya Kenya tuliyezfungumzia mwanzoni mwa somo.
  - “Miti milioni 30 iliyopandwa na waliojitolea wa Green Belt Movement—hasa wanawake wa vijijini—kote nchini Kenya katika kipindi cha miaka 30 iliyopita ni ushahidi wa uwezo wa watu binafsi kubadilisha historia ya mazingira.
  - “Kwa kufanya kazi pamoja, tumethibitisha kwamba maendeleo endelevu yanawezekana; upandaji miti upya katika ardhi iliyoharibiwa unawezekana; na utawala bora unawezekana wakati raia wa kawaida wanapoarifiwa, kuhamasishwa, na kushiriki katika hatua za moja kwa moja kwa mazingira yao.”<sup>10</sup>
- **Jane Goodall** alifanya utafiti na sokwe katika Hifadhi ya Taifa ya Gombe nchini Tanzania kwa miaka 30 (1960–1990). [Tazama Rasilimali za Somo la 3, Sura ya 17.]
  - “Matumaini ndiyo yanayotuwzesha kuendelea mbele katika hali ngumu.”<sup>11</sup>
  - “Ninaamini kweli, na siko peke yangu kama mwanasayansi, kwamba tuna wakati ambapo tukikusanyika pamoja na kuchukua hatua, tunaweza kupunguza kasi ya mabadiliko ya tabianchi na upotevu wa bayoanuwai... **Siwezi kuokoa ulimwengu, lakini naweza kufanya nini hapa?... Chochote unachojali, ungana na marafiki na uchukue hatua. Fanya unachoweza kufanya ili kutatua kile unachopenda na utaona unaleta mabadiliko.**”<sup>12</sup>



### So, what now?

- 5
- In the first lesson, we saw that the traditional Maasai understanding is that *Engai* controls the weather.
  - Yet, in these lessons, we also learned that there is a difference between weather and climate, and we see that the greatest negative impact upon climate change is because of human activities—



### Kwa hivyo, nini sasa?

- Katika somo la kwanza, tuliona kwamba uelewa wa jadi wa Wamaasai ni kwamba *Engai* hudhibiti hali ya hewa.
- Hata hivyo, katika masomo haya, pia tulijifunza kwamba kuna tofauti kati ya hali ya hewa na tabianchi, na tunaona kwamba athari kubwa zaidi kwa mabadiliko ya tabianchi ni kwa sababu ya shughuli za binadamu—hasa kuzalisha gesi zinazoongeza joto la dunia hewani, kama vile kaboni dioksidi hwanjia ya kuchoma petroli.

especially putting global-warming gases into the air, such as carbon dioxide through burning petrol.

- So, we see that humans can have an important role in reducing the negative impacts of climate change. Our important role is fundamentally that of our commissioning from God to care for God’s beautiful creation. So, it is obvious that human activities are the principal causes of climate change and that humans have something to contribute in caring for the creation both traditionally and scientifically. Both scientific and Christian perspectives emphasize that human have responsibility to be stewards of the earth and protect it for future generations.
- We can make a difference! Let us discuss this in small groups.

### Activities to make a difference in the climate crisis

- 10
- Identify 3 appropriate ways that YOU want to make a difference in climate change mitigation (reduction) in a traditional Maasai context.
  - Identify 3 appropriate ways that YOU want to make a difference in climate change adaptation (resilience) in a traditional Maasai context.



*Have a reporter from each group share one thing that the group members will do that was important in their conversation.*

### Song writing

Or *This activity may take 10–15 minutes. So, while it is a very good application, it needs enough time to be done well.*

Each small group writes 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. A call and response Maasai tune may be a good way to start. Then, invite each group to sing their verse.

- Kwa hivyo, tunaona kwamba wanadamu wanaweza kuwa na jukumu muhimu katika kupunguza athari mbaya za mabadiliko ya tabianchi. Jukumu letu muhimu kimsingi ni lile agizo la Mungu kwetu kutunza uumbaji wake mzuri. Kwa hivyo, ni dhahiri kwamba shughuli za binadamu ndizo sababu kuu za mabadiliko ya hali ya hewa na kwamba wanadamu wana kitu cha kuchangia katika kutunza uumbaji kijadi na kisayansi. Mitazamo ya kisayansi na ya Kikristo inasisitiza kwamba wanadamu wana jukumu la kuwa wasimamizi wa dunia na kuulinda kwa ajili ya vizazi vijavyo.
- Tunaweza kuleta mabadiliko! Hebu tujadili hili katika vikundi vidogo.

### Shughuli za kuleta mabadiliko katika mgogoro wa tabianchi

- Bainisha njia 3 zinazofaa ambazo WEWE unataka kuleta mabadiliko katika kupunguza mabadiliko ya tabianchi katika muktadha wa jadi ya Wamaasai.
- Bainisha njia 3 zinazofaa ambazo UNATAKA kuleta mabadiliko katika kukabiliana na mabadiliko ya tabianchi (ustahimilivu) katika muktadha wa kitamaduni wa Wamaasai.

*Wwandishi kutoka kila kikundi ashirikishe jambo moja ambalo wanakikundi watalifanya ambalo lilikuwa muhimu katika mazungumzo.*

### Uandishi wa nyimbo

*Shughuli hii inaweza kuchukua dakika 10–15. Kwa hivyo, ingawa ni programu nzuri sana, inahitaji muda wa kutosha kuikamilisha vizuri.*

Kila kikundi kiandike ubeti mmoja wa wimbo kuhusu maarifa na desturi za kitamaduni za kimazingira za Wamaasai ambazo pia ni njia bora za kupunguza mabadiliko ya tabianchi. Tumia sauti ya kawaida inayojulikana na wanafunzi wengi. Wimbo wa Wamaasai wa mtindo wa kupokezana unaweza kuwa njia nzuri ya kuanzia. Kisha, waalike kila kikundi kuimba ubeti wao.

## Bibliography

- <sup>1</sup> “Climate Change Mitigation and Adaptation: Simple Guide to Schools in Africa,” with Ann Therese Ndong-Jatta, UNESCO, United Nations Educational, Scientific and Cultural Organization, 2019, 4, <https://unesdoc.unesco.org/ark:/48223/pf0000372168>.
- <sup>2</sup> “Climate Change Mitigation and Adaptation,” 4.
- <sup>3</sup> “Climate Change Mitigation and Adaptation,” 4.
- <sup>4</sup> “Climate Change Mitigation and Adaptation,” 3.
- <sup>5</sup> “Climate Change Mitigation and Adaptation,” 4–5.
- <sup>6</sup> “Climate Change Mitigation and Adaptation,” 5–6.
- <sup>7</sup> Rinku Verma et al., “Toxic Pollutants from Plastic Waste- A Review,” *Procedia Environmental Sciences*, Waste Management for Resource Utilisation, vol. 35 (January 2016): 701–8, <https://doi.org/10.1016/j.proenv.2016.07.069>. “...plastics is burnt, releasing **toxic gases** like Dioxins, Furans, Mercury and Polychlorinated Biphenyls into the atmosphere. Further, burning of Poly Vinyl Chloride liberates *hazardous halogens and pollutes air*, the **impact of which is climate change**. The toxic substances thus released are posing a **threat to vegetation, human and animal health and environment as a whole**. Polystyrene is harmful to Central Nervous System. The hazardous brominated compounds act as **carcinogens and mutagens**. Dioxins settle on the crops and in our waterways where they eventually enter into our food and hence the body system. These Dioxins are the lethal persistent organic pollutants (POPs) and its worst component, 2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD), commonly known as agentorange is a **toxic compound which causes cancer and neurological damage, disrupts reproductive thyroid and respiratory systems**. Thus, **burning of plastic wastes increase the risk of heart disease, aggravates respiratory ailments such as asthma and emphysema and cause rashes, nausea or headaches, and damages the nervous system**. Hence, a sustainable step towards tomorrow’s cleaner and healthier environment needs immediate attention of the environmentalists and scientists. This review presents the hazards of incineration; open burning of plastics and effects of plastic in water and also a possibility of working out strategies to develop alternate procedures of plastic waste management.”
- <sup>8</sup> “Climate Change Mitigation and Adaptation,” 8–12.
- <sup>9</sup> “Climate Change Mitigation and Adaptation,” 13.
- <sup>10</sup> Maathai, *The Green Belt Movement*, xi. See also, Wangari Maathai. *The Green Belt Movement: Sharing the Approach and the Experience*. Revised edition. Lantern Publishing & Media, 2003; and Wangari Maathai. *Replenishing the Earth: Spiritual Values for Healing Ourselves and the World*. Random House, 2010.
- <sup>11</sup> Jane Goodall, Douglas Abrams, and Gail Hudson. *The Book of Hope: A Survival Guide for an Endangered Planet*. Viking, 2022.
- <sup>12</sup> Goodall, Jane. “Reasons for Hope” About the Planet’s Future, *Greater Boston*, GBH News’. 29 September 2023. <https://www.youtube.com/watch?v=LXXb5MjPbPI>.








# Part 5: Lessons for Diocese Secondary Schools (English)





## 12. Secondary School Lesson 1: English

### Biblical Creation Care

<p><b>Main Point</b></p>	 <p><b>Biblical principles of creation care are affirmed by traditional Maasai environmental knowledge, both of which align with climate science, which extends knowledge to equip us for caring for God’s creation.</b></p>	
<p><b>Learning outcomes</b></p>	<p>As a result of this lesson, the learner will:</p>	
<p><b>Cognitive: Know</b></p> 	<p><b>Bible</b></p> <ul style="list-style-type: none"> <li>• Understand the concept of creation care.             <ul style="list-style-type: none"> <li>○ Define creation care and explain its importance in both religious and ecological contexts.</li> <li>○ Identify key biblical scriptures that support the idea of humans as caretaker of God’s creation.</li> <li>○ As Christians, we are called to take <b>responsibility</b> for <b>environmental care</b> as an expression of our love for God.</li> </ul> </li> </ul> <p><b>Maasai</b></p> <ul style="list-style-type: none"> <li>• Identify biblical principles related to creation care and recognize their relevance in the Maasai cultural context.</li> <li>• Maasai sustainable practices align with <b>biblical teaching</b> about respecting and caring for God’s creation.</li> </ul> <p><b>Climate Science</b></p> <ul style="list-style-type: none"> <li>• Climate science helps us understand why the planet is warming, the impacts of climate change, and what we can do to protect the environment.</li> </ul> <p><b>Hope</b></p> <ul style="list-style-type: none"> <li>• There is hope for the future, knowing that when we care for the earth, we participate in God’s plan to restore and renew all of creation, bringing peace and balance to the world.</li> </ul>	   
<p><b>Affective: Feel</b></p> 	<p>Students will reflect on their position in God’s creation.</p> <ul style="list-style-type: none"> <li>• <b>Appreciation:</b> Develop an appreciation for the Maasai community’s sustainable practices and their alignment with biblical teachings.</li> <li>• <b>Responsible:</b> Cultivate a sense of responsibility towards environmental caretaker and creation care.</li> </ul>	

**Behavioral: Do**



- Ask students to identify future projects for applying creation care to everyday actions and engaging in practical projects that align with biblical teachings about caring for God’s creation.
- Or have the students put into their words how these projects are part of God’s commission to care for creation.

**Teaching Equipment Needed**

- Whiteboard and markers or chalkboard and chalk
- Have the Earth and sun pre-drawn on board ready to fill in with the blanket effect (to save time)
- Projector and screen (optional)

**Student Supplies/ Handouts**

- Bibles
- Bible passages (may be written on whiteboard/chalkboard)

See Resources Chapter 15 and 17

**Time**

**Content**



- 3 Picture a Maasai elder standing at dawn, overlooking the sprawling savannah, where each blade of grass, every wild animal, and the very soil beneath. For centuries, the Maasai have lived in harmony with this land, understanding the delicate balance of nature. This is much like the biblical mandate in Genesis that calls humanity to “tend and keep” or “serve and keep” the Earth.
- But what happens when this balance is threatened?
  - Is it that the consequences are deeper than dry riverbeds or dwindling herds? The very relationship that has sustained both the Maasai and the land for generations begins to strain. What was once a partnership now becomes a struggle. Thus, in these moments of imbalance, the biblical call to “tend/serve and keep” becomes not just a gentle instruction but an urgent reminder. Creation care was never really an option—it is a moral responsibility.

**Transition statement (connecting Hook to Main Point)**

- 1
- The timeless principles of creation care, so deeply rooted in both Maasai tradition and the Bible, guide us in restoring harmony with the earth today.
  - Just as the Bible emphasizes the need to maintain the balance of nature, the Maasai people understand that their survival depends on living in harmony with their environment caring for the land, preserving wildlife, and ensuring that resources are used sustainably.
  - With this understanding of the deep connection between Maasai traditions and biblical teachings, let us now deepen our understanding and explore how we can apply these principles of creation care in our daily lives.

## 2) BOOK Bible observation and/or core content

### Biblical Foundation for Creation Care



- 15 **Definition of Creation Care:** *The act of responsibly managing and protecting the environment based on religious and ecological principles. Creation Care refers to the practice of managing and protecting the natural environment based on the belief that the Earth and its ecosystems are God’s creation. This concept emphasizes the responsibility of humans to steward the Earth wisely and sustainably, ensuring that natural resources are preserved and protected for future generations. Creation care involves actions that promote environmental sustainability, such as reducing waste, conserving water, protecting wildlife, and addressing climate change. It is rooted in the biblical mandate for humans to “serve and keep” the Earth (**Genesis 2:15**) and acknowledges that all creation reflects God’s glory (**Psalms 19:1**).*

*Students, in groups of 2 or 3, are given one of the following texts: **Genesis 1:31, Romans 8:19–22**.*

*The students read their text and are asked to discuss it in their small groups with the following questions:*

- What does this Bible verse say about God’s creation?
- What does this Bible verse say about the relationship between humans and God’s creation?

*Reporters from two or three groups are invited to share their discoveries for each Bible text.*

*Notes to support the discussion:*

- **Genesis 1:31**, “God saw all that he had made, and it was very good.”
  - God is the creator. God’s creation is good.
  - This verse reflects the initial state of harmony in creation, where everything is in ordered and functioning as intended by God.
- **Romans 8:19–22**, “For the creation waits in eager expectation for the children of God to be revealed... that the creation itself will be liberated from its bondage to decay and brought into the freedom and glory of the children of God.”
  - This verse talks about a time when the natural world will be set free from decay and brokenness caused by sin.
  - It shows how the healing of people through God’s redemption is closely connected to the healing and renewal of all creation.

### God’s Charge to Care for Creation (Key Point!)

The Bible emphasizes that humans are entrusted with the care of the earth. **Genesis 2:15**. “The Lord God took the man and put him in the Garden of Eden to work it and take care of it.” The Hebrew word often translated as “work” or “tend” also means “serve,” which indicates the responsibility to minister to the creation and not mastery over it.

### *Human Responsibility and Disobedience*

- In **Matthew 22:37–39**, we see that Jesus teaches the two greatest commandments:
  - **Love God** with all your heart, soul, and mind.
  - Love your neighbor as yourself.
- If we think about climate change and environmental destruction, we can see these as being a result of failing to love what God loves: God’s creation and our neighbors.
  - **Loving God’s creation:** God created the earth and called it **good (Genesis 1:31)**. **Environmental destruction** (like pollution, deforestation, and actions that cause climate change) is a **failure to honor and care for** God’s creation, showing a lack of love for what God has made.
  - **Loving our neighbors:** The effects of climate change hurts people, and Africans will be some of the most impacted by the climate crisis, because most Africans are dependent upon the natural resources for their livelihoods.

### *Living out the call to stewardship*

**James 2:26** reminds us that “faith without works is dead.”

- Applying this to creation care, it suggests that our belief in the importance of stewardship must be accompanied by real actions.

### **The Maasai**

- The Maasai have traditionally practiced sustainable living, recognizing that their well-being is directly tied to the health of the environment. For instance, their pastoral lifestyle revolves around the careful management of grazing lands to prevent overuse, reflecting a deep understanding of the need to preserve the natural balance. Livestock are rotated between grazing areas, such that each area gets time to rest and regrow. Rotation prevents overgrazing and land degradation (see p. 214).
- However, **climate change** poses a significant threat to this balance, disrupting weather patterns, depleting natural resources, and challenging the traditional Maasai way of life.



## Climate Change Introduction

10 *Lesson 3 is the primary lesson on the science of climate change, but an introduction is provided here.*



### Climate Change Definition (Key point!)

- Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other aspects of the Earth’s climate system.
  - It **includes both natural processes and human activities** that change the Earth’s climate over extended periods.
  - This is a **natural process** that keeps the Earth warm enough for life.
  - However, **human activities** like burning fossil fuels (oil, coal, gas, plastics) and cutting down trees release extra Earth-warming gases into the air.
  - This causes the Earth to trap **too much heat**, leading to **global warming** and **climate change**, called the “**greenhouse effect**.” It can also be called the “**blanket effect**,” which may be a more understandable metaphor. **Blankets keep warmth in.** (See the image on the back cover.)

### The Blanket Effect (Greenhouse Effect) (Key point!)

- The **blanket (greenhouse) effect** is a natural process that warms the Earth’s surface. (See the back cover of this book for an illustration. Draw the basic image on the chalkboard.)
  - It happens when certain gases in the atmosphere, known as **greenhouse gases (GHG) or global-warming gases**, trap heat from the sun.
  - This leads to **climate change**, with effects like higher temperatures and stronger storms.

### Primary Sources of Climate Change (Key point!)

- The primary **global-warming gases or greenhouse gases (GHG)** that cause the blanket (greenhouse) effect are:
  - **Carbon Dioxide (CO<sub>2</sub>):** The burning of fossil fuels (such as coal, oil, and natural gas) for energy and transportation is the largest source of CO<sub>2</sub> emissions. Deforestation, which reduces the number of trees that can absorb CO<sub>2</sub>, also contributes significantly.
  - **Methane (CH<sub>4</sub>):** Methane is released during the production and transport of coal, oil, and natural gas. It is also emitted by livestock during digestion and by landfills where organic waste decomposes.
  - **And others** (more information in lesson 3).

### Climate Change and Impacts upon the Environment

However, the imbalance in nature, primarily driven by **human-caused global-warming gases**, leads to the following:

- **Increased temperatures:** Human activities—like burning fossil fuels—release CO<sub>2</sub> and other global-warming gases into the atmosphere, trapping heat, and causing global temperatures to rise.
  - This disrupts natural climate patterns and leads to more frequent and severe weather events.

- **Changing rainfall patterns:** With climate change, rainfall patterns have become more erratic, leading to droughts or floods, which disrupt the availability of pasture and water.
  - The Maasai rely on predictable seasonal rains for grazing their livestock.
  - This directly threatens the survival of their herds, which are central to Maasai culture and economy.
- **Extreme weather events,** like floods or droughts can damage the environment, further upsetting the natural balance.
- **Ecosystem disruption:** Higher temperatures and altered precipitation patterns affect ecosystems, leading to habitat loss, species migration, and changes in food chains.
- **Resource depletion:** Increased temperatures and prolonged droughts contribute to the degradation of the natural resources.
  - With grazing lands ruined by overgrazing, the Maasai people need to take cows farther to graze in distant lands to find adequate pasture.
- **Loss of biodiversity:** As the climate shifts, some species that are vital to the natural ecosystems may become endangered or extinct.
  - This loss of biodiversity disrupts the delicate balance of nature that the Maasai have long maintained, affecting everything from grazing patterns to the availability of medicinal plants.
- **Ocean changes:** Warming temperatures and increased CO<sub>2</sub> levels result in ocean warming and acidification, which damage marine ecosystems, including coral reefs.
- **Melting ice and rising seas:** The warming climate causes glaciers and ice caps to melt, contributing to rising sea levels. This disrupts coastal ecosystems and threatens human and wildlife communities.

*More bad effects upon humans and health will be discussed in lessons 2 and 3.*



## The Impact of Climate Change on the Maasai Context

- 8
- For the Maasai, climate change is experienced as significant shifts in weather patterns that impact their traditional way of life.
    - In Maasai land, climate change means changes in weather patterns, like less rain, more droughts, and unpredictable seasons.
    - These changes make it harder to find water and grass for their animals.
  - The Maasai see this as both a spiritual issue linked to *Engai*, and a result of human actions.
    - The Maasai people believe that *Engai* controls nature, including rain and weather. They see problems like droughts and unpredictable rains as a sign that *Engai* might be unhappy.
    - However, they also recognize other causes of climate change as result of human actions. These include cutting down trees, overusing the land, and modern activities like pollution and farming on grazing lands. Losing their traditional ways of caring for the land, like rotating grazing areas, also contributes to the problem.
    - So, while *Engai* is important in their beliefs, the Maasai understand that human actions also play a big role in climate change.



- In the Maasai context, the biblical principles are naturally mirrored in their traditional practices. The Maasai people have long recognized that their survival is intertwined with the health of the environment. Their rotational grazing practices, which allow land to recover and regenerate, reflect an understanding that aligns with the biblical call to stewardship—caring for the earth in a way that sustains its ability to provide for future generations.
- For the Maasai, the balance of nature is central to their way of life. When this balance is disrupted—whether by overgrazing, climate change, or other factors—it impacts not just the land but the entire community. In this light, creation care is a way of restoring harmony to their environment, ensuring that their land, animals, and people can thrive in harmony.

### LOOK Continued: Hope



- 3 **Matthew 6:26:** “Look at the birds of the air; they do not sow or reap or store away in barns, and yet your heavenly Father feeds them. Are you not much more valuable than they?”
- This verse reminds us that God cares for all creation, offering hope that God will continue to care for the world, even in the midst of the challenges of climate change.
  - The hope we have in creation care is grounded in the sovereignty of God. God promises restoration!
  - By embracing this hope, we can approach environmental challenges with confidence, knowing that our efforts are part of a larger divine plan for the redemption and renewal of all creation.
  - Our hope empowers us to take action, work together, and invest in future generations, trusting that God is at work in and through us to mitigate and adapt.



### Activity

- 3 Creation care is a holistic approach that involves spiritual, communal, and practical actions to maintain the balance of nature.
- From the Maasai, we learn that living in harmony with the environment is not just about survival, but also it is about fulfilling a divine responsibility to protect and nurture the earth.
  - By embracing stewardship in our daily lives, advocating for environmental justice, and engaging in community-based conservation, we can contribute to a more sustainable and harmonious world, honoring both God and the planet we call home.
- In your group of students:
- Ask students to identify future projects for applying creation care to everyday actions and engaging in practical projects that align with biblical teachings about caring for God’s creation. For example: making compost bins, creating recycled art, or designing sustainable gardens.
  - Or have the students put into their words how these projects are part of God’s commission to care for creation. For example: In **Colossians 1:16–17**, we are reminded that all things were created by God and are meant to be cared for.

## Write a Verse to a Song

- 15 Write the first verse of a song about God commissioning us to care for God's good creation to a traditional Maasai tune. Take a traditional Maasai tune and write new words based on this lesson.

*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.
- You may keep working on your verse after the class.
- In the following 2 lessons, you will also add one verse for each of the 2 lessons. So, this project will continue to develop.



### Prayer

- 2 God the Creator, *Engai eushumata*,

We come before You with hearts full of gratitude for the beauty and diversity of Your creation. We thank You for the Maasai people and their deep connection to the land, a connection that reflects the very balance and harmony You intended for all of nature.

Lord, we recognize that You have called us to be stewards of this earth, to care for the land, the animals, and all living things. We ask for Your wisdom and guidance as we seek to honor this responsibility. Help us to learn from the Maasai's example, living in harmony with the environment and respecting the delicate balance of nature that sustains us all.

As we face the challenges of climate change and environmental degradation, we pray for strength and perseverance. Grant us the courage to make the changes necessary to protect Your creation. May we advocate for justice, support those most affected by environmental harm, and take tangible steps to restore the earth to the wholeness You desire.

We pray for the Maasai community and all indigenous peoples who are on the front lines of environmental stewardship. Protect their lands, preserve their traditions, and bless their efforts to maintain the balance of nature. May their wisdom continue to guide us all toward a deeper understanding of what it means to care for Your creation.

Lord, let our actions reflect Your love for all that You have made. Help us to be mindful of the impact we have on the earth and to live in a way that honors You. In every decision we make, may we seek to restore and protect the balance of nature, ensuring that future generations can enjoy the beauty and abundance of Your creation.

In Jesus's name, we pray. Amen.

## 13. Secondary School Lesson 2: English

## Pastoralist Maasai Traditional Environmental Knowledge for Creation Care

## Main Point



The Maasai traditional environmental knowledge aligns with biblical principles of creation care (where God calls us to be stewards of the Earth [review Lesson 1]).

## Learning Outcomes

As a result of this lesson, the learner will:

## Cognitive: Know

**Bible**

- **Review:** Understand that caring for creation in line with biblical principles is a sacred duty given by God.
- Know that the “biblical creation triangle” refers to the relationship between God, humanity, and non-human creation.

**Maasai**

- Know how Maasai traditional environmental knowledge (TEK) reflects a similar sense of duty and responsibility toward the environment as seen in biblical creation care in Lesson 1.
- Understand how the Maasai traditional worldview—illustrated by the three-legged stool—is similar to the “biblical creation triangle.”

**Science**

- **Review:** Understand the core concepts of climate science (i.e., climate change, blanket/greenhouse effect, human caused global-warming gases) and their effects on ecosystems and humans.
- **Review:** Realize that climate science intersects with the spiritual and ethical dimensions of environmental stewardship described in biblical teachings.
- **Review:** Understand how climate change impacts the Maasai community’s environment and traditional way of life.
- Deepen understanding of how both Maasai traditions and climate science emphasize the importance of living in harmony with the environment and protecting natural resources.
- Understand the role of grasslands as a very effective carbon sink.
- Understand that science has studied and determined best practices to protect and care for living things and their environment to help restore or maintain a balance in nature.



## Hope



- Understand that despite the current challenges, the Bible teaches that God created the earth with a purpose and will bring a future restoration of creation (Revelation 21:1–4).
- Our efforts to address climate change are part of working towards this hopeful future.

### Affective: Feel



- A deep sense of love, respect, and responsibility for God’s creation (referenced from the ancient wisdom of Bible verses).
- Communal connection to the land through highlighted stories from the Maasai traditions.
- Inspired by Maasai traditional environmental knowledge, sustainable practices, and harmonious relationship with the land.
- Empowered to blend these traditional practices with environmental science strategies to enhance stewardship and sustainability.

### Applicative: Do



- Ask learners to identify one or two traditional Maasai practices they can adopt or promote in their community to enhance environmental stewardship.
- Ask learners to reflect on how they can integrate both Maasai knowledge and biblical teachings in their daily lives to care for the environment.
- Or write a verse to a traditional Maasai tune communicating the main point.

### Teaching Equipment Needed

- Visual aids (charts, pictures) on environmental care
- Bible for the teacher (preferably with relevant verses marked)
- Flip chart or whiteboard (pens, paper)
- *Maasai seasonal calendar (enkanyit)*
- *Grazing/land-use cycle diagram*

### Student Supplies/ Handouts

- Scripture references on creation care
- Reflection questions for group discussion
- Exercise book or notebooks
- Pen or pencil and eraser
- Colored pencils for drawing ecosystems

See Resources Chapter 16 and 17. *Italicized items are other ideas to consider yet not included in the resource.*

### Time

### Content



- 8
- From the traditional Maasai perspective, it is believed that the ancestor of the Maasai was God, and *Engai* gave sticks and rope for the herds.
  - **Storytelling Activity (same groups of 2 or 3 from lesson 1):**
    - Think about one of the traditional Maasai stories you know that emphasizes the importance of caring for the land. This could be a story about the relationship between the Maasai and their cattle, highlighting the balance they maintain with nature.
    - Summarize the story in 2 minutes with a conversation partner.
    - See Maasai information below and in the Resources, Chapters 16 and 17, if needed.

**Transition statement (connecting Hook to Main Point)**

- 1 There is a deep-rooted belief that reflects the Maasai's unique relationship with nature and their role as caretaking of the land. By understanding their traditions, we can explore how such cultural perspectives shape their interactions with the environment and inform broader lessons about sustainability and coexistence. Let's explore them now!



## Maasai Traditional Environmental Knowledge



- 10 **Maasai traditional environmental knowledge (TEK)** is deeply tied to their relationship with nature and the land. The Maasai see themselves as **guardians or caretakers** of the earth, responsible for protecting and maintaining the balance of the environment, especially in relation to their cattle, land, and natural resources. Here are key points about Maasai caretaking:

1. **Respect for the Land:**

The Maasai believe the land is sacred and must be treated with respect. They use the land for grazing cattle, farming, and living, but they also make sure to preserve it. This includes rotational grazing, which involves moving their herds between different pastures. This technique prevents overgrazing in any single area, allowing vegetation to recover and maintain soil health.

2. **Sustainable Grazing:**

The Maasai are known for their careful management of cattle. They move their herds regularly to avoid overgrazing any one area, allowing the grass and plants to regrow. This ensures that the land stays healthy and can continue to support life.

3. **Water Conservation:**

Water is very important to the Maasai, especially in the dry seasons, due to the arid and semi-arid regions they inhabit. They know where to find water sources, and they use them wisely, making sure not to waste water. They carefully manage water sources, using them sparingly and ensuring that they are not overused. This includes practices like digging shallow wells, using water pans, and protecting water catchment areas to ensure that water remains available during dry seasons.

4. **Spiritual Connection to Nature:**

The Maasai have a strong spiritual connection to nature. They believe that the land, animals, and the sky are all gifts from God (*Engai*), and it is their responsibility to care for them. Their traditional practices, such as managing resources and not permanently selling land, reflect this belief. This includes preserving sacred natural sites. Certain natural sites and landscapes, such as specific trees, rocks, or water sources, are considered sacred by the Maasai. These sites are protected from exploitation and disturbance, preserving biodiversity and ecological balance.

5. **Passing Down Knowledge:**

The Maasai pass down knowledge about caretaking from generation to generation. Elders teach the younger members of the community how to take care of the cattle, the land, and the environment, ensuring that future generations continue to respect and care for nature.

*See more in Resources Chapter 16.*

This Maasai understanding of life—or the **Maasai worldview**—can be symbolized by a **three-legged stool**.

- The Maasai understand that human flourishing (well-being) in life comes from harmonious relationships with:
  - 1) *Engai*, 2) other people, and 3) the environment.
    - These three aspects are seen as a three-legged stool, *olorika*.
    - With three legs, it can be stable—even on uneven ground—and work well.

### Biblical “Creation Triangle”

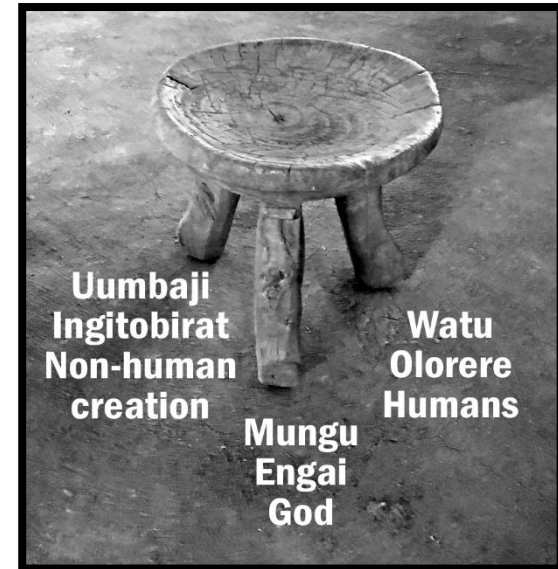
10 The Maasai worldview is similar to what is seen in the Bible, what is called the biblical “creation triangle.”

- The biblical understanding is that human flourishing (*shalom*/peace/holistic well-being) in life comes from being in a right relationship with 1) God, 2) other people, and 3) non-human creation.
- Thus, there is a core understanding of God’s world that is shared between Christians and Maasai.
- This shared understanding means that biblical teachings of creation care align with Maasai understandings, and Maasai traditional understandings affirm the Bible’s ancient wisdom.



### Bible Exploration Activity

- Break students into small groups of 2 to 3 students. Each group is assigned one Bible text: **Genesis 1:26–28, Psalm 24:1–2, Leviticus 25:1–7.**
- Ask them to read the scripture and discuss the following questions:
  - What does it say about God’s ownership of the earth?
  - What responsibility does it give humans?
  - How does this apply to our lives today in terms of environmental caretaking?
- After small-group discussion, have a reporter from each group present their insights. If there is limited time, have one reporter from each Bible text share, and invite the others to add missing aspects.



### 3) LOOK interpretation/reflection on core content

## Maasai and Biblical Creation Care

- 10 • **Group Discussion:** Students continue in their small groups and are provided with reflection questions:
- How do the Maasai practices align with the concept of stewardship found in the Bible?
  - What can we learn from these practices that can be applied today?
  - How does understanding Maasai environmental knowledge deepen our understanding of God's command to care for creation?



*Note: Students are given time for each group to share their insights. Notes to guide your discussion:*

- **In relation to the biblical principles and Maasai practices,** both traditions reflect a deep respect for God's creation.
  - By viewing the land as sacred and managing it with care, the Maasai exemplify the stewardship role that the Bible entrusts to humanity, treating the earth not as a possession but as a divine gift to be preserved and respected.
- Rotational grazing and Sabbath year rest:
  - The Israelites were instructed to refrain from working the land during the Sabbath year.
  - The Maasai conservation efforts reflect a recognition that natural resources are finite and must be used responsibly to avoid depletion. The Maasai recognize that overgrazing can lead to land degradation, loss of vegetation, and soil erosion, which would harm the environment and reduce the land's ability to support life. By rotating grazing areas, the Maasai not only preserve the land's fertility but also ensure that it can continue to provide for future generations.
- Also, by studying these practices, we gain practical insights and a deeper understanding of how to fulfill God's command to care for God's creation in a way that honors both the environment and the Creator.

*Note: In the next lesson, there will be a discussion of how Maasai TEK aligns with climate science.*

## Look Continued: Hope

- 4 • *Hope* in the Maasai context aligns with the concept of stewardship found in the Bible. The belief upholds a sustainable, harmonious future, where humans actively care for the earth and its resources.
- Both the Maasai and the Bible emphasize the responsibility of humans to care for creation, ensuring its health and sustainability for future generations. This not only ensures a balanced relationship with nature but also fulfills the biblical vision of humans living in harmony with God's creation.
  - In the Maasai traditions, hope is reflected in their practices of maintaining ecological balance and sustainability, allowing the land to rest and regenerate. Similarly, the Bible expresses hope through teachings that encourage humans to care for creation as a lasting, sacred responsibility, ensuring the earth remains a place of blessing for generations to come.



## 4) TOOK application: what to DO/take away

### Applying TEK and Biblical Creation Care

- 15
- Ask learners to identify one or two traditional Maasai practices they can adopt or promote in their community to enhance environmental stewardship.
  - Ask learners to reflect on how they can integrate both Maasai knowledge and biblical teachings in their daily lives to care for the environment.
  - Learners are asked to write down their commitment and share it with a partner or group.



### Write a Verse to a Song

- Or  
15
- 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).
    1. Take a traditional Maasai tune and write new words based on this lesson.
    2. The content of the verses needs to connect to the lesson content.



*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.*

- In the next and last lesson, you will also add one more verse. So, this project will continue to develop.

### Prayer

2 O *Engai*, our God of the Sky and Earth,







We come before you with humble hearts, grateful for the gifts of this land. We ask for your blessings as we tend to the land and our herds. Guide us in our grazing, so that we may rotate our pastures wisely and prevent the overuse of your precious soil. Help us manage the fires that renew the grasslands, allowing new life to flourish.



Protect the sacred places that you have blessed, and let us honor them with reverence. Grant us the wisdom to conserve our water sources and share them fairly among our people. May we continue to cherish and protect the wildlife that roams alongside us, understanding that their presence is a sign of your grace and balance.

We pledge to honor and sustain the beauty of your creation, O *Engai*, in all that we do. Amen.

## 14. Secondary School Lesson 3: English

### Integrating Climate Science for a Maasai Context

<p><b>Main Point</b></p>	<p><b>Climate change is impacting the Maasai community’s traditional way of life but integrating climate science with cultural and environmental knowledge can support mitigation and adaptation for sustainable living.</b></p>	
<p><b>Learning Outcomes</b></p>	<p>As a result of this lesson, the learner will:</p>	
<p><b>Cognitive: Know</b></p> 	<p><b>Science</b></p> <ul style="list-style-type: none"> <li>• <b>Review:</b> Understand the core concepts of climate science (i.e., climate change, blanket/greenhouse effect, human caused global-warming gases or greenhouse gases, GHGs) and their effects on ecosystems and humans.</li> <li>• Understand further how climate change affects biodiversity, water sources, and weather patterns.</li> <li>• <b>Review:</b> Understand the main impacts of climate change upon ecosystems and humankind.</li> <li>• Know the difference between climate change mitigation (prevention) and adaptation (reducing risk to the bad effects).</li> <li>• Understand core principles of sustainable pastoralism.</li> </ul> <p><b>Maasai</b></p> <ul style="list-style-type: none"> <li>• <b>Review:</b> Understand how climate change affects the pastoralist Maasai traditional way of life.</li> <li>• Understand how integrating science and traditional environmental knowledge (TEK) can help the Maasai with adaptation to the bad effects of climate change and support sustainable living.</li> </ul> <p><b>Biblical Creation Triangle</b></p> <ul style="list-style-type: none"> <li>• <b>Review:</b> Understand how climate science can support creation care with its spiritual and ethical dimensions of environmental stewardship described in biblical teachings.</li> </ul> <p><b>Hope</b></p> <ul style="list-style-type: none"> <li>• Understand that climate scientists and environmentalists have hope that human efforts can mitigate climate change, which encourages hope.</li> <li>• Know key Bible texts that teach that God has promised to never abandon creation and that God will bring its ultimate reconciliation and restoration.</li> </ul>	   

	<ul style="list-style-type: none"> <li>Realize that our efforts to address climate change are part of working towards God’s hopeful future while being faithful to God’s commission to care for creation.</li> </ul>
<b>Affective: Feel</b> 	<ul style="list-style-type: none"> <li><b>Appreciation</b> for Maasai traditional environmental knowledge (TEK).</li> <li><b>Responsibility</b> toward preserving the environment for future generations.</li> <li><b>Hopeful</b> for the future with human efforts and God’s promises.</li> </ul>
<b>Behavioral: Do</b> 	<ul style="list-style-type: none"> <li>Have students brainstorm practical actions that the Maasai community could take to adapt to climate change, such as water conservation methods, sustainable grazing practices, or diversifying their livelihoods.</li> </ul>

Teaching Equipment Needed	Student Supplies/ Handouts
<ul style="list-style-type: none"> <li>Whiteboard and markers</li> <li>The Blanket Effect (The Greenhouse Effect) diagram (back cover)</li> <li><i>Flooded or eroded landscape</i></li> <li><i>Animations of rainfall change, rise or desertification</i></li> <li><i>Cattle models or pictures</i></li> </ul>	<ul style="list-style-type: none"> <li>Pens, pencils and eraser</li> <li><i>Food Chain/Food Web Worksheet</i></li> <li><i>Grazing Field Observation Sheet</i></li> <li><i>Weather Monitoring Logbook</i></li> <li><i>Livestock Nutrition and Health Handout</i></li> </ul>

See Resources Chapter 17. *Italicized items are other ideas to consider yet not included in the resource.*

Time	Content
------	---------

**1) HOOK** attention getter

5 “Have you ever wondered what would happen if the Earth’s temperature kept rising, or if our weather started changing in ways we couldn’t predict? Imagine floods, droughts, and stronger storms becoming more frequent—how would our world look then? What if this was already happening, and it’s up to us to help stop it?”

**Notes to teachers:** *By starting with a question about climate change, it invites students to consider the reality of the issue. This is followed by vivid imagery of what could happen as a result of climate change. The key is to create an emotional connection and intrigue, prompting curiosity about the topic.*

**Helpful information for teachers:** *When the rains come, the Maasai move their herds to new pastures, allowing the land to recover and grow fresh grass. This rotational grazing ensures that the land remains fertile and productive. The Maasai have inherited this practice from their ancestors. They understood that balance and respect for the land were key to their survival.*

- In the dry season, when the earth cracks under the relentless sun, the Maasai must travel long distances to find water sources for their herds. The Maasai know where to find hidden springs and seasonal rivers, passed down through generations of knowledge. Water is not just a resource; it is a lifeline, a critical element that shapes their movements and daily routines.
- The Maasai community, known for their rich cultural heritage and traditional pastoralist lifestyle, has long depended on the natural environment for their livelihood. However, in recent years, the effects of climate change such as unpredictable rainfall, prolonged droughts, and diminishing grazing lands have posed significant challenges to their way of life. Therefore, integrating climate science into the Maasai context is crucial for understanding these changes and developing strategies to adapt and thrive in a changing environment.
- By blending modern climate science with Maasai traditional ecological knowledge, we can create a holistic approach that respects cultural practices while promoting sustainable solutions. This integration not only empowers the Maasai to protect their environment and sustain their livelihoods but also enriches their understanding of the world around them, fostering resilience in the face of climate challenges.

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

- 1
- But what happens when that environment begins to change in ways we don't expect?
  - Let's explore how climate science can help us understand these changes and find ways to protect the Maasai way of life.



*Review with the students the basic climate science concepts introduced in Lesson 1, including the definition of climate change/global warming, the meaning of greenhouse effect, and common GHGs. Use examples that are relatable to the Maasai context, such as changes in rainfall patterns, drought, and the availability of grazing land.*

## Climate Change and Global Warming

12 Let's review our core climate science concepts.

- Who can give me a definition of **climate change**?
  - Climate change refers to **long-term changes** in temperature, precipitation, wind patterns, and other aspects of the Earth's climate system.
  - It includes both natural processes and human activities that alter the Earth's climate over extended periods.
  - This is a natural process that keeps the Earth warm enough for life. However, climate change is **primarily driven by human activity**:
    - Like cutting down trees (reducing the taking up of CO<sub>2</sub>), mining, bad methods of farming including the excess use of chemical fertilizer,
    - And burning fossil fuels (petrol, oil, coal) which release extra global-warming gases into the air.
  - This causes the Earth to trap too much heat, leading to **global warming** and **climate change**, called the "**blanket effect**" or "**greenhouse effect.**"



- Now a new concept: Climate change is different than global warming.
  - **Global warming** is a major factor contributing to the broader phenomenon of **climate change**, but climate change also includes non-temperature related changes, such as shifting rainfall patterns, ocean acidification, and more.
  - **Global warming** refers to the increase in the Earth's average surface temperature due to human activities, particularly the emission of global warming gases or greenhouse gases.
- Who can give me a definition of **the blanket effect (or greenhouse effect)**?
  - The **blanket effect (or greenhouse effect)** is when the Earth's surface warms up.
  - It occurs when certain gases in the Earth's atmosphere, known as global-warming gases (or greenhouse gases, GHGs), trap heat from the sun.
  - The gases let sunlight in but prevent some of the Earth's heat from escaping back into space, thus keeping the planet warmer than it would be otherwise.
- Who can tell me some of the **global warming gases (or greenhouse gases)**?
  - These gases include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and water vapor (H<sub>2</sub>O).
  - Lesser known and less important for this less:
    - Nitrous Oxide (N<sub>2</sub>O): Is emitted from agricultural activities, especially the use of synthetic fertilizers, and from fossil fuel combustion.
    - Fluorinated Gases: These synthetic gases, used in industry and refrigeration, have a high global warming potential but are present in smaller quantities.
- What is the difference between mitigation and adaptation?<sup>4</sup>
  - **Mitigation** measures are those actions that are taken to reduce global-warming gas emissions.
  - **Adaptation** measures are based on decreasing vulnerability to the effects of climate change.
  - Thus, Mitigation seeks to **reduce** the *causes* of climate change, while adaptation seeks to make people more **resilient** or **less vulnerable (less at risk)** to the *impacts* of climate change.
- Who can tell me some of the **effects of climate change**?
  - **Increased temperatures:** Human activities like burning fossil fuels release CO<sub>2</sub> and other global-warming gases into the atmosphere, trapping heat and causing global temperatures to rise. This disrupts natural climate patterns and leads to more frequent and severe weather events.
  - **Changing rainfall patterns:** With climate change, rains have become more erratic, leading to droughts or floods.
  - **Extreme weather events,** like floods or droughts can damage the environment, further upsetting the natural balance.
  - **Resource depletion:** Increased temperatures and prolonged droughts leads not only directly to diminished water for grazing lands, but also contributes to further degradation by overgrazing.
  - **Ecosystem disruption:** Higher temperatures and altered precipitation patterns affect ecosystems, leading to habitat loss, species migration, and changes in food chains. These disruptions harm biodiversity and the balance of natural systems.
  - **Loss of biodiversity:** As the climate shifts, some species that are not able to survive in warmer or disrupted ecosystems.

- **Ocean changes:** Warming temperatures and increased CO<sub>2</sub> levels result in ocean warming and acidification, which damage marine ecosystems, including coral reefs.
- **Melting ice and rising seas:** The warming climate causes glaciers and ice caps to melt, contributing to rising sea levels. This disrupts coastal ecosystems and threatens human and wildlife communities.
- **Here's some new information:** The scientists say that **climate change will affect humans** in many ways, including:
  - **Famine and food insecurity**, due to droughts and flooding that ruins crops
  - **Freshwater shortages**
  - **Health problems**
    - **More malaria** and other climate-sensitive diseases
    - **Poor air quality** causes respiratory diseases
  - **Heat waves** that are longer and hotter than normal which causes
    - **Heat related health problems**, especially for pregnant and older women
    - **Death** for vulnerable people, especially the sick and elderly
  - **Destruction of homes**, due to flooding and extreme weather
  - **Migration or “climate change refugees”** due to migration caused by lack of water, crop failure, extreme weather, etc.

## Effects of Climate Change on the Maasai

- 7
- Now, let's talk about these effects of climate change and how they affect the pastoralist Maasai.
  - Of the things we just mentioned, who can tell me one way how the Maasai will be affected? I want to hear from many of you with one concept each.
  - **Increased temperatures:** This disrupts natural climate patterns and leads to more frequent and severe weather events, including droughts that reduce grazing areas.
  - **Extreme weather events**, like floods or droughts can damage the environment, further upsetting availability of the natural resources upon which pastoralist livelihoods are dependent.
  - **Changing rainfall patterns:** The Maasai rely on predictable seasonal rains for grazing their livestock.
    - Disruption of the availability of pasture and water directly threatens the survival of their herds, which are central to Maasai culture and economy.
    - To cope with reduced grazing areas and water sources, the Maasai may have to move their herds more frequently or over longer distances.
  - **Resource depletion:** Increased temperatures and prolonged droughts contribute to the degradation of grazing lands by overgrazing, driven by the need that the Maasai people have to find adequate pasture.
  - **Loss of biodiversity:** As the climate shifts, some species that are vital to the Maasai ecosystem may become endangered or extinct. This loss of biodiversity disrupts the delicate balance of nature that the Maasai have long maintained, affecting everything from grazing patterns to the availability of medicinal plants.



- **Ecosystem disruption:** Higher temperatures and altered precipitation patterns affect ecosystems, leading to habitat loss, species migration, and changes in food chains.
- **Various effects on humans:** famine, water shortages, more malaria, other diseases will increase, etc., and, thereby, the need to sell livestock for medical treatments.



## Integrating Climate Science and Maasai Traditional Environmental Knowledge (TEK)

### Maasai Adaptations



- 7
- Due to climatic changes, the pastoralists are integrating climate science and developing the following:
    - **Sustainable pastoralism:** Maasai may have to move their herds more frequently or over longer distances. They are adapting by incorporating modern weather forecasts with traditional knowledge to better plan grazing and water use.
    - **Drought-Resistant Grazing Systems:** Developing grazing systems that are resilient against drought can help manage limited resources more effectively.
    - **Water Conservation Efforts and Efficient Water Use:** The Maasai are exploring new methods for conserving water, such as rainwater harvesting and improving traditional well construction to secure a more reliable water supply during dry periods. Improving water storage and usage practices, such as building more efficient wells and using water-saving technologies, supports the stewardship of water resources.
    - **Greener Energy:** In an effort to reduce burning wood, which releases the global-warming gases, CO<sub>2</sub>, some Maasai are using:
      - Solar panels
      - Fuel efficient stoves, which:
        - Reduces the burning of firewood by 60% (less work to collect and haul wood) and
        - Reduces the smoke in the home by 90% (less respiratory diseases) and
        - Reduces the number of children burned by cooking fires.

*See Resources, Chapter 17.*

- **Diversified Livelihoods:** In response to changing conditions, the Maasai are looking at diversifying their sources of income and food, including integrating new agricultural practices, such as eco-farming, or supplementary income sources to reduce their reliance on traditional pastoralism alone.
- **Educating the Maasai community** about climate science and its implications fosters a deeper understanding of their role as caretakers of the land. This education helps them make informed decisions that honor their stewardship responsibilities while adapting to environmental changes.

- **Creation Care/Stewardship:** The Maasai—especially youth—are developing their understanding that being a steward of God’s creation means integrating their science teachings that encourages actively participating in environmental conservation efforts, such as volunteering for clean-up projects, participating in tree-planting initiatives, or joining environmental projects.

### Alignment with Biblical Creation Care

- 3
- **Review:** Reflect on how being a caretaker of the earth is emphasized in the Bible, e.g., **Genesis 2:15**, where God places Adam in the Garden of Eden to work and serve it (take care of it). The biblical mandate to work, serve, and take care of it reflects a call to active and responsible stewardship.
  - Discuss how the Maasai can apply these principles to protect their environment align with biblical creation care. For the Maasai, this means continuing their traditional practices while embracing new knowledge and technologies that support environmental sustainability.



## Look Continued: Hope

### Hope in Climate Science

- 8
- Climate scientists emphasize the interconnectedness of humans and nature and highlight the urgent need for action to protect the planet. The message from climate science parallels the biblical call for creation care, underscoring the role of humanity in maintaining environmental health and ensuring sustainability.
  - From the perspective of climate scientists, there is hope that if we change our behaviors—through sustainable practices, green technologies, and conservation efforts—we can reverse or mitigate some of the damage done to the planet. Hope lies in our collective ability to care for the environment in a way that ensures future generations can enjoy a thriving, healthy world.
  - **Wangari Maathai**, a Nobel laureate and Kenyan environmentalist, wrote in *The Challenge for Africa*: “Indigenous knowledge and traditions can teach us valuable lessons in environmental stewardship and how to live in harmony with the land, honoring both creation and the Creator.”



### Biblical Hope

- Through scripture, we are reminded that God has promised to never abandon creation and will result in its ultimate reconciliation and restoration.
  - **The God of hope will never abandon the creation.**
    - Know that God is the Creator and Sustainer of the world, who will never abandon God’s creation but will reconcile all things to Jesus Christ. **Colossians 1:15–20**
    - Know that “hope” in the Bible is not wishful thinking, but the hopeful expectation that what God has promised will be fulfilled (and promised glory revealed). **Romans 8:19–25**
  - **Resilience of God’s creation**
    - Realize that there is amazing resilience in God’s creation. Despite huge and ongoing effects of human-caused climate change, we are called to faithfully continue the creation care mandate of **Genesis 2:15** to nurture the restoration.



- Know that **creation care works**, we need more of it. So that many people working together in little ways can make a big change.
- Realize that our efforts to address climate change are part of **working towards God’s hopeful future** while being faithful to God’s commission to care for creation.
- **The cosmic power of the Holy Spirit for transformation and re-creation**
  - Understand that **the greatest challenge** is not lack of science, technology, or resources, but **rather greed and apathy**—and these need a spiritual transformation by the power of the Holy Spirit.
  - Know that the power that raised Christ from the dead is available to us who believe. **Ephesians 1:19–20**
  - Know that God will restore creation when Jesus Christ returns. **Romans 8:21; Revelation 21:1–5**

### Encouragement

- **Dr. Katharine Hayhoe**, a climate scientist, explains: “Caring for the earth is an expression of our love for God and for our neighbors, and should be an essential part of the Christian mission in the world.”
- Just as the Bible calls us to love our neighbors and care for God’s creation, climate science shows that taking responsibility for environmental health is essential to ensuring the well-being of current and future generations



### Activity

- 15
- Have students brainstorm practical actions that the Maasai community could take to adapt to climate change, such as water conservation methods, sustainable grazing practices, or diversifying their livelihoods.
  - For the Maasai community, adapting to climate change involves implementing practical actions that align with their traditional practices while integrating modern techniques to ensure sustainability.
  - Here are some practical actions that the Maasai could take:
    - **Install rainwater harvesting systems:** Collect and store rainwater from rooftops and other surfaces using tanks or cisterns. This water can be used during dry periods for drinking and irrigation.
    - **Create pans and dams:** Build small dams or water pans to capture and store runoff water from rain. These structures can help replenish groundwater and provide water during dry seasons.
    - **Efficient water use:**
      - **Improve construction of wells:** Reinforce traditional wells with modern materials to reduce evaporation and contamination. Ensure proper maintenance to maximize their lifespan.
      - **Drip irrigation:** Use drip irrigation systems for any agricultural activities, which delivers water directly to the plant roots, reducing water wastage.



- **Water-saving techniques:**
  - **Promote water-use efficiency:** Educate the community on water-saving practices, such as fixing leaks, using water-efficient fixtures, and minimizing water use where possible.
- **Enhance rotational grazing:** Refine traditional rotational grazing methods to ensure that pastures are given adequate time to recover. Implement systems that rotate grazing areas more frequently based on vegetation health and soil condition.
  - **Reseed and restore degraded lands:** Plant drought-resistant grass species and restore degraded pastures to improve their productivity and resilience.
  - **Monitor and manage overgrazing:** Use scientific methods to monitor the condition of grazing lands and manage herd sizes to prevent overgrazing and land degradation.
  - **Grow and store fodder:** Cultivate drought-resistant fodder crops and store them for use during dry periods. This ensures that cattle have adequate nutrition even when pasture is scarce.
- **Develop eco-tourism:** Promote eco-tourism initiatives that leverage the Maasai’s rich cultural heritage and natural landscapes, providing an alternative source of income while conserving the environment.
- **Craft and artisanal products:** Encourage the production and sale of traditional Maasai crafts and artisanal products, which can serve as a source of income and preserve cultural heritage.
- **Agroforestry:** Integrate trees and shrubs into agricultural systems to improve soil fertility, reduce erosion, and provide additional sources of income.
- Encourage students to think of ways they can contribute to environmental conservation in their own lives.

## Write a Verse to a Song

Or  
15

- Get in the same groups from the first lesson, continue writing your song to the same traditional Maasai tune. You have 10 minutes to work together.
- Your first verse was about God commissioning us to care for God’s good creation. The second verse was about traditional Maasai environmental knowledge and practices that are also best practices of climate change mitigation (reduction).
- Now, write the third verse of a song about best practices of climate change mitigation (reduction) and/or adaptation (resilience) that is:
  - 1) informed by climate science and 2) appropriate for a traditional Maasai context.
- You can also write a verse about how **we can find something we are passionate about and work with friends, so that together we can make a difference.** And we can find hope knowing that many other small groups around the world are joining with us to make a difference in caring for God’s creation. This option could be a fourth verse!
- Remember, the guidelines are:
  - Take a traditional Maasai tune and write new words based on this lesson.
  - The content of the verses needs to connect to the lesson content.
  - You can also write a verse—or fourth verse—about how everyone working together can make a big difference.

*After 10 minutes:*

- Can we have 1 or 2 groups share their verse with us? Only volunteer if you are ready and can sing it without delay.
- I encourage you to work on developing your song.

**Ending: Remember, everyone working together can make a big difference!**

### Prayer

2 Heavenly Creator,

We come before you with hearts full of gratitude for the gift of creation and the beauty of the land we call home. We acknowledge your role as the Creator and Sustainer of all things.

Lord, we seek your wisdom as we face the challenges brought by climate change. We ask for guidance in understanding the signs of our changing environment and for the knowledge to integrate science with our traditional practices. Help us to adapt with grace and to use the knowledge you have provided to us to care for our land and water.

Grant us the strength and courage to implement sustainable practices, such as conserving water, managing our grazing lands wisely, and diversifying our livelihoods. May our efforts honor your creation and reflect our commitment to being good stewards of the resources you have entrusted to us.

Bless our community with unity and cooperation as we work together to protect our environment and preserve our way of life for future generations. Let us be inspired to embrace both our cultural heritage and the insights from climate science to achieve a harmonious balance.

In your name, we pray for wisdom, strength, and protection. Amen.

60

### End of lesson

### Bibliography

<sup>1</sup> “Climate Change Mitigation and Adaptation: Simple Guide to Schools in Africa,” with Ann Therese Ndong-Jatta, UNESCO, United Nations Educational, Scientific and Cultural Organization, 2019, 4, <https://unesdoc.unesco.org/ark:/48223/pf0000372168>.

<sup>2</sup> “Climate Change Mitigation and Adaptation,” 4.

<sup>3</sup> “Climate Change Mitigation and Adaptation,” 8–12.

<sup>4</sup> “Climate Change Mitigation and Adaptation,” 13.

## **Part 6: Resources for the Lessons**







## 15. Resources for Lesson 1:

# Biblical Creation Care

### Resources Below

1. More Creation Care Related Bible Verses
2. If more time, here are more teaching suggestions
3. Creation Care Resources and Quotes from African Scholars
4. Creation Care Resource Books and Quotes

### 1. More Creation Care Related Bible Verses

*These are more Bible verses (beyond what has been discussed in the lessons) that reveal:*

- We have been given a mandate to look after what God has made.
  - We are called to care for our fellow humans.
  - Jesus died for all creation—not just humans.
  - All creation has suffered due to bad human actions.
  - God will restore creation when Jesus returns.
- 
- **Genesis 1:25-28** “God made the wild animals according to their kinds, the livestock according to their kinds, and all the creatures that move along the ground according to their kinds. And God saw that it was good. Then God said, ‘Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all the creatures that move along the ground.’ So God created man in his own image, in the image of God he created him; male and female he created them. God blessed them and said to them, ‘Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish of the sea and the birds of the air and over every living creature that moves on the ground.’”
  - **Genesis 4:9–10** Then the LORD said to Cain, “Where is your brother Abel?” / “I don’t know,” he replied. “Am I my brother’s keeper?” / The LORD said, “What have you done? Listen! Your brother’s blood cries out to me from the ground.
    - We are commissioned to care for others, which includes caring for the environment which others are dependent upon for their livelihoods.
  - **Leviticus 25:1–7** The LORD spoke to Moses on Mount Sinai, saying, “Speak to the people of Israel and say to them, When you come into the land that I give you, the land shall keep a Sabbath to the LORD. For six years you shall sow your field, and for six years you shall prune your vineyard and gather in its fruits, but in the seventh year there shall be a Sabbath of solemn rest for the land, a Sabbath to the LORD. You shall not sow your field or prune your vineyard. You shall not reap what grows of itself in your harvest, or gather the grapes of your undressed vine. It shall be a year of solemn rest for the land. The Sabbath of the land shall provide food for you, for yourself and for your male and female slaves and for your hired worker and the sojourner who lives with you, and for your cattle and for the wild animals that are in your land: all its yield shall be for food.
    - The land itself must be given a rest and not abused.

- **Leviticus 25:23-24** “The land must not be sold permanently, because the land is mine and you are but aliens and my tenants. Throughout the country that you hold as a possession, you must provide for the redemption of the land.”

- **Deuteronomy 10:14** “Behold, to the LORD your God belong heaven and the heaven of heavens, the earth with all that is in it.
  - All of heaven and earth belong to the LORD.”

- **Psalm 8:3-8** “When I consider your heavens, the work of your fingers, / the moon and the stars, which you have set in place, what is man that you are mindful of him, the son of man that you care for him? / You made him a little lower than the heavenly beings and crowned him with glory and honor. / You made him ruler over the works of your hands; you put everything under his feet: / all flocks and herds, and the beasts of the field, / the birds of the air, and the fish of the sea, all that swim in the paths of the seas.”

- **Psalm 104:14-24**

You cause the grass to grow for the livestock  
and plants for man to cultivate,  
that he may bring forth food from the earth  
and wine to gladden the heart of man,  
oil to make his face shine  
and bread to strengthen man’s heart.  
The trees of the LORD are watered abundantly,  
the cedars of Lebanon that he planted.  
In them the birds build their nests;  
the stork has her home in the fir trees.  
The high mountains are for the wild goats;  
the rocks are a refuge for the rock badgers.  
He made the moon to mark the seasons;  
the sun knows its time for setting.  
You make darkness, and it is night,

when all the beasts of the forest creep about.

The young lions roar for their prey,  
seeking their food from God.

When the sun rises, they steal away  
and lie down in their dens.

Man goes out to his work  
and to his labor until the evening.

O LORD, how manifold are your works!  
In wisdom have you made them all;  
the earth is full of your creatures.

- This selection of Psalm 104 is a beautiful creation psalm. The psalmist praises God for both creating and caring for the many, many different created beings in our world.
- **Matthew 6:26-27** “Look at the birds of the air: they neither sow nor reap nor gather into barns, and yet your heavenly Father feeds them. Are you not of more value than they? And which of you by being anxious can add a single hour to his span of life?”
  - God cares for the birds and all of God’s creation.
  - God’s care for us gives us hope in spite of challenges.
- **Romans 8:22-23** “We know that the whole creation has been groaning as in the pains of childbirth right up to the present time. Not only so, but we ourselves groan inwardly as we wait eagerly for our adoption as sons, the redemption of our bodies.”
- **1 Corinthians 10:26** For “the earth is the Lord’s, and the fullness thereof.” (Quote from Psalm 24:1)
  - Creation and all created things are inherently good because they are of the Lord.
- **Colossians 1:19-20** “For God was pleased to have all his fullness dwell in him [Christ] and through him to reconcile to himself all things, whether things on earth or things in heaven, by making peace through his blood shed on the cross.”

## 2. If more time, here are more teaching suggestions:

### *Invite students to reflect on their position in God's creation.*

- Think of how you feel when the creation provides you with all you need. (Blessed by God's good creation)
- Think of the position humans holds, being entrusted by God. Mention the tasks of Maa elders, leaders, warriors, men, women and parents and children concerning creation care. Think of God's purpose in placing you in that position in his creation. (Honored to be commissioned by God to care for creation)
- Think of your sincere response to God for such a blessing. (Committed to care for God's creation)

## 3. Creation Care Resources and Quotes from African Scholars

Here are some quotes from African men and women scholars and others on biblical creation care. They can be applied for Maasailand. They are organized into **creation care principles**, **gender and stewardship**, and **cultural perspectives**.

### *1. Creation Care Principles*

- **Kirsteen Kim** (2015, African theologian): "In Africa, caring for creation is about respecting God's gift of nature, not just protecting it."
  - This quote emphasizes that **caring for creation** is not just about environmental protection, but about **honoring and respecting** the earth as a divine gift.
- **J. Kameri-Mbote** (2000, Kenyan scholar): "African cultures, like the Maasai, believe creation should be respected, which aligns with the Bible's call to care for the earth."
  - This highlights the **biblical call to respect and care** for creation, which is also deeply rooted in **African cultural values**, such as those in Maasai culture.

### *2. Gender and Stewardship*

- **Nyambura J. Njoroge** (2009, Kenyan theologian): In Africa, women, like Maasai women, are key to protecting nature, reflecting the biblical call to nurture the earth."

- Njoroge points out how **women**, especially Maasai women, play a critical role in **protecting the environment**, which is aligned with the **biblical responsibility** to nurture creation.
- **Grace Ji-Sun Kim** (2012, Ecofeminist theologian): "Women's care for the earth reflects God's love, and their role in nature is part of biblical stewardship."
  - Kim connects **eco-feminism** with **biblical stewardship**, recognizing **women's role in creation care** as an expression of God's love and care for the world.

### *3. Cultural Perspectives on Creation Care*

- **Vusimuzi Madonsela** (2014, South African theologian): "God created the earth to be cared for by all people. In Maasailand, men and women share responsibility for creation care."
  - This quote acknowledges the **shared responsibility** of **men and women** in Maasailand for **creation care**, showing the **cultural practice of stewardship** in line with **biblical principles**.

## 4. Creation Care Resource Books and Quotes

The following are quotes on: **Core Principles of Creation Care**, **Environmental Stewardship as a Christian Duty**, and **Practical Implications and Theological Reflections**.

### 1. Core Principles of Creation Care

- **Moo, Douglas J., and Moo, Jonathan A.** (2018): “Creation care is not an optional add-on to the Christian life but is integral to the biblical mandate for humanity to steward the earth as God’s vice-regents.”
  - This emphasizes that **creation care** is a fundamental **biblical mandate**, central to the Christian faith.
- **Middleton, J. Richard** (2004): “The gospel encompasses not just the salvation of humanity but also the redemption of creation, making environmental stewardship an essential aspect of Christian witness.”
  - This highlights that **stewardship of creation** is tied to **salvation**, showing the **holistic** scope of the gospel.

### 2. Environmental caretaking as a Christian Duty

- **Bouma-Prediger, Steven** (2001): “The biblical vision of creation care calls Christians to a holistic approach where environmental stewardship is seen as a form of worship and obedience to God.”
  - **Environmental stewardship** is viewed as a **spiritual act**, a way to **worship and obey God**.
- **McCormick, Michael R.** (2009): “Understanding creation care from a Christian perspective involves recognizing that the natural world is a sacred trust from God, requiring us to manage it responsibly.”
  - **Creation care** is described as a **sacred responsibility** entrusted to humanity by God.
- **Stamps, Dennis L.** (2018): “Biblical stewardship is grounded in the understanding that God entrusts humanity with the responsibility to nurture and protect the environment as part of our divine mandate.”
  - This quote stresses that **biblical stewardship** is about **nurturing** and **protecting** the earth as part of God’s command.

- **Wirzba, Norman** (2013): “Biblical foundations for environmental ethics reveal that caring for the earth is not merely a practical concern but a spiritual duty reflecting our relationship with God as the Creator.”
  - **Caring for the earth** is framed as a **spiritual duty** that reflects humanity’s relationship with God as **Creator**.

### 3. Practical Implications and Theological Reflections

- **Robinson, Timothy S.** (2020): “Christians are called to be proactive in addressing environmental issues because caring for the earth is a reflection of our commitment to God’s creation and His commands.”
  - Christians are encouraged to be **active participants in environmental solutions**, demonstrating their **commitment to God’s creation**.
- **Wright, Christopher J. H.** (2020): “The church must embrace creation care as a central element of its mission, integrating environmental stewardship into its theology and practice.”
  - The church is called to make **creation care** a key part of its **mission**, incorporating it into both **theology and practice**.
- **Bauckham, Richard** (2022): “Creation care is deeply embedded in biblical theology, reflecting God’s concern for the entire created order and our role in maintaining its integrity.”
  - **Creation care** is deeply connected to **biblical theology**, emphasizing God’s **concern** for all of creation and humanity’s role in **maintaining its integrity**.
- **White, Lynn Jr.** (2012): “A biblical vision for environmental responsibility challenges Christians to reassess their relationship with nature and embrace a more ecologically aware lifestyle.”
  - A call to **reassess relationships with nature**, encouraging a **more ecologically conscious lifestyle** as part of **biblical responsibility**.



## 16. Resources for Lesson 2:

# Maasai Traditional Environmental Knowledge

### Resources Below

1. Information about the Maasai
2. Maasai Traditional Environmental Knowledge (TEK) are Good Ways to Take Care of Creation.
3. If more time, here are more teaching suggestions
4. Scientific Analysis of Maasai Traditional Environmental Knowledge (TEK)
5. Quotes from Resource Articles and Books
6. Sustainable Pastoralism

### 1. Information about the Maasai

- **The Maasai, a semi-nomadic pastoralist** community in East Africa, have developed a range of environmental practices that contribute to ecological balance and sustainability. The Maasai live in harmony with nature, caring for their cattle as a gift from the land.
  - In recent decades, the Maasai have faced significant challenges, including land pressure due to population growth, changes in land tenure systems, and climate change.
  - These challenges have sometimes strained their traditional practices.
- **Maasai traditional environmental knowledge (TEK):** The Maasai continue to adapt, blending their traditional knowledge with new strategies to sustain their way of life and care for the environment.
  - The Maasai traditional environmental knowledge (TEK) is a testament to their deep understanding of and respect for the natural world.
  - Rotational grazing, water conservation, and communal land management enable the Maasai to live sustainably in challenging environments.
  - As modern challenges arise, the Maasai continue to adapt their traditional practices, ensuring that their cultural heritage of environmental caretaker remains vital in the care of creation in Tanzania.
- **Community-Based Wildlife Conservation:** The Maasai have developed various community-based conservation initiatives that integrate wildlife protection with pastoralist practices. For instance, they participate in wildlife management programs and support conservation areas, recognizing the benefits of preserving wildlife for maintaining ecological health and promoting tourism.

## 2. Maasai Traditional Environmental Knowledge (TEK) are Good Ways to Take Care of Creation.

1. Traditional land use plan, e.g., zoning per season
2. Management of scarce resources
3. Shared use of nature and natural resources
4. Preserving trees for domestic and medicinal purposes
5. Prohibition of killing wild animals for cultural reason
6. Keeping domestic animals for food and worship purposes
7. Traditional rules, regulations, and taboos for environmental conservation
8. The responsibility of community leadership in environmental care

## 3. If more time, here are more teaching suggestions

- **Organize a debate** on topics like “The Role of Culture in Environmental Conservation.”
  - Use the Maasai example to highlight the value of cultural knowledge.
  - Pose a real-world problem, such as managing overgrazing or conserving water.
  - Challenge students to propose solutions using Maasai-inspired principles of caretaking and coexistence with nature.
- **Create a “Creation Care” Action Plan:**
  - **Activity:** After discussing Bible texts, have students create an “action plan” for how they, their school, or community can better care for the earth.
  - **Task:** The plan should be based on the biblical idea of stewardship, where they apply the principles of caring for the earth with reverence and responsibility.
  - **Outcome:** This encourages students to think practically about how they can implement biblical teachings in their daily lives.
- **Parent Engagement:** Have the students ask their parents three key questions:
  - What are the best ways to mitigate climate change?
  - What are the causes of climate change?
  - What are the best ways to reduce climate change?
- **Traditional practices:** Divide students into groups to discuss one of these traditional practices. Each group will explain the practice’s environmental benefits and how it reflects the principle of mutual dependence.
  - **Mutual Dependence:** Maasai life is centered around the interdependence of people and the environment.
  - **Pastoral Practices:** Traditional sustainable grazing methods that ensure ecosystems are preserved.
  - **Sacred Natural Sites:** Reverence for certain trees, rivers, and mountains that are vital to Maasai spirituality and physical well-being.
  - **Water Management:** Techniques for efficient use and conservation of water resources.
  - **Fire Management:** Controlled burning to prevent larger wildfires and encourage the regeneration of vital plant species for grazing.

## 4. Scientific Analysis of Maasai Traditional Environmental Knowledge (TEK)

Compiled by Beth Elness-Hanson

- **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."<sup>1</sup>
  - "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."<sup>2</sup>
  - "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."<sup>3</sup>
  - 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."<sup>4</sup> 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."<sup>5</sup>
- **Protecting biodiversity**<sup>6</sup>
  - 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.
- **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."<sup>7</sup>
  - 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.
- **Preserving grasslands, which are "carbon sinks"** (meaning they have the ability to store large amounts of carbon). (Grasslands are also an ecosystem, but it has a special focus here in a Maasai context.)
  - Allowing grasslands to rest during the dry season by moving to high grounds (*osupuko*) and returning from high grounds (*osupuko*) to go to low grounds [*olpurkel*] when the rains return, which is a good way of managing grass, trees, and 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."<sup>8</sup>
  - "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."<sup>9</sup>
- **Environmentally sustainable livelihoods**
  - Pastoralist Maasai are not engaged in heavy industries that produce global-warming gases, such as agro-business, manufacturing, mining, and the like. However, cows do produce some methane, CH<sub>4</sub>.

- Pastoralist Maasai do not use artificial fertilizers that causes water pollution through phosphate and nitrate runoff.
- Pastoralist Maasai do not use herbicides and pesticides that are applied in industrial agro-business.
- Pastoralist Maasai do not practice blast fishing.
- Pastoralist Maasai do not engage in mining industries which often result in arsenic, lead, and other contaminants in the groundwater.
- Pastoralist Maasai do not engage in shipping that produces black carbon pollution, hydrocarbon oil spills from shipping refuse at the ports, as well as disposing excess nutrients from wastewater into the oceans.
- Pastoralist Maasai do not significantly contribute to the environmental challenges of urban cities.

### Bibliography:

- <sup>1</sup> Benjamin Gardner, *Selling the Serengeti: The Cultural Politics of Safari Tourism* (Athens, London: University of Georgia Press, 2016), 6. Footnote Ellis and Swift 1998; Coppock, Ellis, and Swift 1986; Warren 1995.
- <sup>2</sup> Gardner, 24.
- <sup>3</sup> Gaafar Rizgallah. “AU Guidelines 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>
- <sup>4</sup> J. Douwe Meindertsma and Jan J. Kessler, eds., Meindertsma, J. Douwe, and Jan J. Kessler, eds. *Planning for a Better Environment in Monduli District*. (Netherlands Economic Institute, 1997) 46.
- <sup>5</sup> Meindertsma, 10–11.
- <sup>6</sup> Philip Isdor Mpango, ed., “National Environmental Master Plan for Strategic Interventions (2022 – 2032)” (United Republic of Tanzania Vice President’s Office, June 2022), 61, [https://www.vpo.go.tz/uploads/files/MASTER%20PLAN-English\\_eBOOK\\_FINAL.pdf](https://www.vpo.go.tz/uploads/files/MASTER%20PLAN-English_eBOOK_FINAL.pdf). Now this chart from page 62, representing left to right, 1975, 1995, and 2015. After the Serengeti, which has the strictest prohibitions of no hunting or human activity, then the most “high” and “medium” biodiversity quality habitat is in Maasailand, especially Ngorongoro—where the Maasai are being restricted (no cultivation) and forcefully displaced from. Note, there is little (or undiscernible) change since 1995 from these images. Furthermore, the Loliondo area is where hunting safaris are increasingly located, which impacts the natural ecosystems of biodiversity. Note, p. 61, “...most fires are caused by human activities particularly farm preparation. Driving forces include game hunting, honey collection, charcoal burning, and burning to simultaneously improve pasture quality...”
- <sup>7</sup> Stephanie McCrummen. ““This Will Finish Us:” How Gulf Princes, the Safari Industry, and Conservation Groups Are Displacing the Maasai from the Last of Their Serengeti Homeland.” (*The Atlantic*, 8 April 2024) 24.
- <sup>8</sup> Gord Vaadeland, “Grasslands, Forests & Wetlands - Nature’s Carbon Capture & Storage Solution,” *CPAWS*, 22 March 2016, <https://cpaws.org/grasslands-forests-wetlands-natures-carbon-capture-storage-solution/>.
- <sup>9</sup> Katherine E. Kerlin, “Grasslands More Reliable Carbon Sink Than Trees,” *University of California–Davis*, 9 July 2018, <https://climatechange.ucdavis.edu/climate/news/grasslands-more-reliable-carbon-sink-than-trees>.

## 5. Quotes from Resource Articles and Books

### 1. Creation Care & Environmental Stewardship

- **Hayhoe, Katharine** (Climate Scientist and Evangelical Christian) “Caring for the earth is an expression of our love for God and for our neighbors and should be an essential part of the Christian mission in the world.”
- **Maathai, Wangari** (Kenyan Environmentalist and Nobel Laureate) *The Challenge for Africa* (2009) “Indigenous knowledge and traditions can teach us valuable lessons in environmental stewardship and how to live in harmony with the land, honoring both creation and the Creator.”

### 2. Ecotheology & Spirituality

- **Njoroge, Nyambura J.** (African Theologian) “For African communities, creation care is not only an ecological practice but a spiritual one, deeply rooted in our cultural beliefs about the sacredness of the earth and its connection to the divine.”

### 3. Gender & Environmental Justice

- **Wright, Beverly.** (Women’s Environmental Advocate) “Women’s roles in environmental conservation are not just about resource management, but also about preserving the sacred relationships between community, land, and God.”

### 4. Maasai Ecological Practices & Sustainability

- **Bertram, Chris, and Chantal Vivier.** *Pastoralism and Development in Africa: Dynamic Change at the Margins*. Routledge, 2018. “Understanding Maasai environmental practices reveals the intricate connection between pastoral lifestyles and sustainable land management, highlighting how traditional knowledge can contribute to modern environmental solutions.”
- **Homewood, Katherine.** *Ecology of Pastoralism: The Maasai of East Africa*. Routledge, 2019. “The Maasai’s ecological practices, grounded in traditional knowledge, reflect a sophisticated understanding of environmental balance and sustainability, essential for the long-term health of their landscapes.”
- **Nugent, Paul.** *Smelling the Roses: Land Use and Livelihoods among the Maasai*. Oxford University Press, 2009. “The Maasai’s land management strategies, including their rotational grazing systems, are not merely traditional practices but reflect a deep-seated ecological wisdom that ensures resource sustainability.”

### 5. Traditional Knowledge and Environmental Stewardship

- **Maathai, Wangari.** *The Challenge for Africa*. Pantheon Books, 2009. “Indigenous practices, such as those of the Maasai, offer invaluable lessons in environmental stewardship, illustrating how traditional knowledge can inform and enhance modern conservation efforts.”
- **Spear, Thomas.** *The Maasai of Matapato: A Study of Rituals of Rebellion*. University of Chicago Press, 1981. “Maasai rituals and cultural practices are intertwined with environmental stewardship, demonstrating how cultural norms can shape and sustain ecological practices.”

## 6. Sustainable Pastoralism

### *Pastoralism Making variability work*

Source: Food and Agriculture Organization of the United Nations (FAO). 2021. Pastoralism – Making variability work. FAO Animal Production and Health Paper No. 185. Rome. <https://doi.org/10.4060/cb5855en>; Creative Commons Attribution-NonCommercial ShareAlike 3.0 IGO licence. Page numbers listed refer to the document's pages.

#### **A specialization in taking advantage of variability**

##### *Working with the natural environment*

Pastoralism “refers to a wide family of livestock-based, livelihood and food production systems that are highly diverse but that all share a specialization in improving animals’ diets (and welfare) by managing their grazing itineraries at a variety of scales in time and space. Better nourished animals are healthier and more productive. Adding value by managing grazing itineraries requires adaptation to levels of variability that are characteristic of natural environments, especially the ways in which temporal and spatial variability in the distribution of moisture combines with the diversity of plant species and differences in soil and terrain morphology to result in sequences of short-lived concentrations of potential inputs. The place and time of such concentrations cannot be predicted from one year to the next, but the concentrations can be used by pastoralists who are able to arrive at the right place at the right time, and by animals that are able to benefit from the opportunities created by their herders. For this reason, pastoralism is also described as a specialization in taking advantage of variability (p. 3).

“Pastoralism is based on close interactions among animals, humans and their environment. In this document, this characteristic is referred to as working with the natural environment, not simply extracting fodder or water but actually increasing resources for livestock, and doing so in ways that make the circular interaction with the ecosystem a constitutive part of the pastoral system itself (p. 5).

“Pastoralists pay great attention to their animals’ behaviour and skills, trying to influence and improve them and secure their continuity in

the breeding population. Production systems centred on proved knowledge and integrated landscape management offer great latitude for creating ‘health’ for soil, plants, wild and domestic animals, people and the climate (p. 5).

“Pastoralism takes advantage of the variability in potential inputs – which are maximized and turned into actual inputs – by matching it with the variability (or “flexibility” or “optionality”) in its own operational processes. Mobility and flexible land tenure systems are the most obvious examples of variability embedded in the operational processes of pastoralism (p. 6).

“Pastoralism’s specialist approach makes it not only a sustainable livestock system, but also a vantage point from which to obtain a particularly clear and open view of the much-needed reconsideration of agriculture and food systems in relation to resilience and climate change. Around the world, pastoral systems have effectively managed to produce food with the natural environment rather than in antagonism with it. This alone deserves attention and the mobilization of efforts to better understand, secure and promote the specialization of pastoralism” (p. 8).

#### **Pastoralism provides a host of benefits**

##### *Climate Change*

“Pastoralism has the potential to contribute to both adaptation to and mitigation of climate change. Pastoralism requires little fossil energy and is solar powered, as animals walk to their naturally grown feed instead of having it cultivated and transported to them” (p. 12).

## 17. Resources for Lesson 3:

# Climate Science for a Pastoralist Maasai Context

### Resources below:

1. Maasai: Helpful information for teachers about the Maasai culture
2. Climate Change Mitigation and Adaptation
3. Climate Change Mitigation and Adaptation in a Pastoralist Maasai Context (table)
4. Maasai Context: Mitigation (prevention) and Adaptation (risk reduction): “Smile” Pits, Fuel-efficient stoves, Water Catchment or Reservoir
5. Teaching Notes on Hope: Wangarĩ Maathai and Jane Goodall
6. Global Warming Temperature Increase (image)
7. Sources of Greenhouse Gases (image)
8. Global-warming Gases Percent Effect on Climate Change (table)
9. Increase of Carbon Dioxide in the Atmosphere (CO<sub>2</sub>) (image)
10. Methane Facts (CH<sub>4</sub>)
11. If more time, here are more teaching suggestions
12. Additional Resources: Books and Articles

### 1. Maasai: Helpful information for teachers about the Maasai culture

- When the rains come, the Maasai move their herds to new pastures, allowing the land to recover and grow fresh grass. This rotational grazing ensures that the land remains fertile and productive. The Maasai have inherited this practice from their ancestors, who understood that balance and respect for the land were key to their survival.
- In the dry season, when the earth cracks under the relentless sun, the Maasai must travel long distances to find water sources for their herds. The Maasai know where to find hidden springs and seasonal rivers, passed down through generations of knowledge. Water is not just a resource; it is a lifeline, a critical element that shapes their movements and daily routines.
- The Maasai community, known for their rich cultural heritage and traditional pastoralist lifestyle, has long depended on the natural environment for their livelihood. However, in recent years, the effects of climate change such as unpredictable rainfall, prolonged droughts, and diminishing grazing lands have posed significant challenges to their way of life. Therefore, integrating climate science into the Maasai context is crucial for understanding these changes and developing strategies to adapt and thrive in a changing environment.
- By blending modern climate science with the Maasai’s traditional ecological knowledge, we can create a holistic approach that respects cultural practices while promoting sustainable solutions. This integration not only empowers the Maasai to protect their environment and sustain their livelihoods but also enriches their understanding of the world around them, fostering resilience in the face of climate challenges.



## 2. Climate Change Mitigation and Adaptation

### *Mitigation: Focuses on reducing global-warming (greenhouse) gases*

- Mitigation centers on the root cause of climate change: the heat-trapping greenhouse gases humans are adding to the atmosphere faster than our planet can absorb them. These can be addressed by reducing the sources of greenhouse gas emissions, or enhancing “sinks” of greenhouse gases that remove them from the atmosphere.
- **Reducing sources:** Almost three-quarters of humans’ greenhouse gas emissions come from burning fossil fuels like coal, oil and natural gas,<sup>2</sup> so mitigation often focuses on replacing those fuels with other sources of energy, like renewables and nuclear power. Mitigation can also tackle other sources of greenhouse gases: protecting forests from being cut down, for instance, or collecting methane from landfills.
- **Enhancing sinks:** Other forms of mitigation, like growing new forests and designing and building “direct air capture” systems, work by taking greenhouse gases out of the atmosphere—sometimes called “carbon removal.” These approaches are challenging to do at a very large scale, and they do not eliminate the need to drastically lower our emissions. Still, authorities like the Intergovernmental Panel on Climate Change agree that some carbon removal will be needed to head off the worst climate change scenarios.<sup>3</sup>

### *Adaptation: Focuses on reducing the risk of negative impacts from climate change*

- If mitigation is successful worldwide, then one day greenhouse gases will stop building up in the atmosphere, and the planet will slowly stop warming. Even so, we will already have created a hotter world, changed the Earth’s weather patterns, and “locked in” some future changes—like sea level rise, which may continue for hundreds of years after the Earth’s temperature stabilizes.
- Adaptation to these changes will vary from place to place. Often, it involves building or retrofitting infrastructure, like a better storm drain system to manage increased flooding. But adaptation can also include natural solutions, like restoring wetlands to buffer hurricanes, or behavior and policy changes, like growing new food crops that can better handle warmer seasons and droughts.
- Ideally, adaptation is proactive, building systems to withstand not only current but future climate change. In Bangladesh, one of the most vulnerable countries in the world to sea level rise and saltwater intrusion, the port city of Mongla is investing in embankments, drainage, flood-control gates and water treatment to get ahead of rising waters, and economic development to provide refuge and work opportunities for thousands of people displaced from nearby towns. Areas that don’t take early steps like these will find themselves adapting reactively: rebuilding after climate change has already destroyed buildings, forced people from their homes, and taken livelihoods and lives.

Source: <https://climate.mit.edu/explainers/mitigation-and-adaptation>; Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International license (CC BY-NC-SA 4.0)

### 3. Climate Change Mitigation and Adaptation in a Pastoralist Maasai Context

Mitigation	Adaptation	Kupunguza	Kukabiliana
<p><b>1. Plant trees which absorb CO<sub>2</sub></b> (especially trees that are native to the area).</p> <p><b>2. Energy efficiency (reducing carbon)</b></p> <p>a) Use more efficient wood burning cooking stoves to reduce burning of wood (which puts global-warming gases into the environment).<sup>1</sup> [See Resources Chap. 17 for an example stove.]</p> <p>b) Increase the use of renewable energy such as solar power.</p> <p>c) Use energy efficient LED lights or compact fluorescent lights (CFLs) instead of old incandescent light bulbs.</p> <p>d) Turn off electrical lights when not being used.</p> <p><b>3. Reduce the use of plastic bottles and recycle the bottles that are used.</b></p>	<p><b>5. Water</b></p> <p>h) Develop water harvesting and storage mechanisms.<sup>3</sup></p> <p>i) In acute water scarcity, temporarily migrate to areas where water is accessible.</p> <p>j) Develop water catchment areas (reservoirs) boreholes, piped water, and dams.<sup>4</sup> [See Resources Chap. 17.]</p> <p><b>6. Food security</b></p> <p>k) Put in place food security enhancement strategies (food reserve).<sup>5</sup></p> <p>l) The households' ability to purchase food is the most important food security strategy.<sup>6</sup></p> <p>m) A reliable income source and asset base is crucial for household response to climate shocks.<sup>7</sup></p> <p>n) 58% reported that they resort to selling livestock... in response to shocks.<sup>8</sup></p> <p><b>7. Infrastructure resilience</b></p> <p>o) More secure house and facility locations</p> <p>p) Preventive and precautionary measures (evacuation plans, health issues, etc.)</p> <p><b>8. Ecosystem and landscapes</b></p> <p>q) Landscape restoration (natural landscape) and reforestation</p> <p>r) Conservation of natural ecosystem (biodiversity and water)</p> <p><b>9. Traditional environmental knowledge</b></p> <p>s) Identify and sustain indigenous/traditional Maasai knowledge with practices that are good for caring for the environment; "...local knowledge systems and institutions should buttress policy-making and implementation to promote local resilience."<sup>9</sup></p> <p>t) "Gradual and medium to long-term livelihood diversification initiative is a highly recommended</p>	<p><b>1. Panda miti ambayo inachukua kaboni dioksidi, CO<sub>2</sub></b> (hasa miti ambayo ni ya asili ya eneo la hilo).</p> <p><b>2. Ufanisi wa nishati (kupunguza kiwango cha kaboni)</b></p> <p>a) Tumia majiko ya kuni yenye ufanisi zaidi ya kuni ili kupunguza uchomaji wa kuni (ambao huweka gesi zinazoongeza joto kwenye dunia kwenye mazingira).<sup>1</sup> [Tazama Nyenzo sura ya 17 kuhusu kuchoma biomasi chini na mfano wa jiko linalotumia mafuta kidogo.]</p> <p>b) Kuongeza matumizi ya nishati mbadala kama vile nishati ya jua.</p> <p>c) Tumia taa za LED zisizo na nishati au taa za fluorescent (CFL) badala ya balbu za zamani za incandescent.</p> <p>d) Zima taa za umeme wakati hautumiki.</p> <p><b>3. Punguza matumizi ya chupa za plastiki na urejeshe tena chupa zinazotumika.</b></p>	<p><b>5. Maji</b></p> <p>h) Tengeneza njia za kuvuna na kuhifadhi maji.</p> <p>i) Katika uhaba mkubwa wa maji, hamia kwa muda kwenye maeneo ambayo maji yanapatikana.</p> <p>j) Kuendeleza maeneo ya kukusanyia maji, visima, maji ya bomba, na mabwawa.<sup>4</sup> [Tazama picha hapa chini katika Nyenzo sura ya 17.]</p> <p><b>6. Usalama wa chakula</b></p> <p>k) Weka mikakati ya kuimarisha usalama wa chakula (hifadhi ya chakula).<sup>5</sup></p> <p>l) Uwezo wa kaya kununua chakula ndio mkakati muhimu zaidi wa usalama wa chakula.<sup>6</sup></p> <p>m) Chanzo cha mapato kinachotegemewa na msingi wa mali ni muhimu kwa mwikitio wa kaya dhidi ya majanga ya tabia nchi.<sup>7</sup></p> <p>n) Asilimia 58 ya kaya ziliripoti kuwa zimeamua kuuza mifugo...ili kudhibiti majanga ya tabia nchi.<sup>8</sup></p> <p><b>7. Ustahimilivu wa miundombinu</b></p> <p>o) Maeneo salama zaidi ya nyumba na kituo</p> <p>p) Hatua za kuzuia na za tahadhari (mipango ya uokoaji, masuala ya afya, n.k.)</p> <p><b>8. Mfumo wa ikolojia na mandhari</b></p> <p>q) Marejesho ya mazingira (mandhari ya asili) na upandaji miti upya</p> <p>r) Uhifadhi wa mfumo ikolojia asilia (bioanuwai na maji)</p> <p><b>9. Maarifa ya jadi ya mazingira</b></p> <p>s) Tambua na udumishe maarifa asilia/jadi ya Wamaasai na mazoea ambayo ni mazuri kwa kutunza mazingira; "...mfumo na taasisi za maarifa za wenyeji zinapaswa kuimarisha utungaji na utekelezaji wa sera ili kukuza ustahimilivu wa wenyeji."<sup>9</sup></p>

Mitigation	Adaptation	Kupunguza	Kukabiliana
<p>e) Because single-use plastic is produced from fossil fuels, obtaining and creating these plastics produces large amounts of global-warming gases.</p> <p>f) Burning plastics puts toxic chemicals into the air and land that is harmful to health.<sup>2</sup></p> <p><b>4. Use garbage collection instead of burning garbage.</b></p> <p>g) Burning garbage releases carbon into the air. (See note “f” on burning plastic.)</p>	<p>policy strategy to increase resilience among pastoral communities as opposed to the current policy which condemns pastoralism as a backward and environmentally destructive activity.”<sup>10</sup></p> <p><b>10) Agro-pastoralism/small-scale agriculture</b></p> <p>u) Use flexible and diverse cultivation</p> <p>v) Develop seed banking.<sup>11</sup></p> <p>w) Incorporate crops that are more drought resistant than maize, “such as sorghum, pigeon-pea, finger millet, sweet potato and chickpea...”<sup>12</sup></p> <p><b>11) Leadership and governance</b></p> <p>x) Include women in decision making that affects their and their children’s lives to reduce the vulnerability of the entire household</p> <p>y) Strengthen local traditional leaders as the elders are in charge of resource control and allocation especially during periods of intense scarcity<sup>13</sup> and provide infrastructural, social, legal, and financial support</p> <p>z) Strengthen the village council for how to seek government support...for infrastructural, social, legal, and financial support.<sup>14</sup></p>	<p>e) Kwa sababu plastiki ya matumizi moja huzalishwa kutoka kwa nishati ya mafuta (kama petroli), kupata na kuunda plastiki hizi hutoa kiasi kikubwa cha gesi za joto za dunia.</p> <p>f) Tumia ukusanyaji wa taka badala ya kuchoma takataka.<sup>2</sup></p> <p><b>4. Takataka zinazochomwa hutoa kaboni hewani.</b></p> <p>g) Kuchoma plastiki huweka kaboni dioksidi na kemikali za sumu katika hewa na ardhi ambayo ni hatari kwa afya ya binadamu na wanyama na mazingira. (Angalia maelezo “f.”)</p>	<p>t) “Mpango wa mseto wa maisha wa taratibu na wa kati hadi mrefu ni mkakati wa kisera unaopendekezwa ili kuongeza ustahimilivu miongoni mwa jamii za wafugaji kinyume na sera ya sasa inayolaani ufugaji kuwa ni shughuli ya kurudi nyuma na kuharibu mazingira.”<sup>10</sup></p> <p><b>10. Kilimo-ufugaji/kilimo kidogo</b></p> <p>u) Tumia njia rahisi na tofauti za kilimo.</p> <p>v) Kuendeleza utunzaji wa mbegu.<sup>11</sup></p> <p>w) Jumuisha mazao yanayostahimili ukame zaidi kuliko mahindi, “kama vile mtama, njegere, mtama, viazi vitamu na kunde.”<sup>12</sup></p> <p><b>11. Uongozi na utawala</b></p> <p>x) Wajumuishe wanawake katika kufanya maamuzi ambayo yanaathiri maisha yao na ya watoto wao ili kupunguza hatari ya kaya nzima.</p> <p>y) Waimarishe viongozi wa kimila kwani wazee ndio wanaosimamia uhibitaji na ugawaji wa rasilimali hasa nyakati za uhaba mkubwa,<sup>13</sup> na kutoa msaada wa miundombinu, kijamii, kisheria na kifedha.</p> <p>z) Iimarisha halmashauri ya kijiji jinsi ya kutafuta msaada wa serikali...kwa msaada wa miundombinu, kijamii, kisheria na kifedha.<sup>14</sup></p>

See p. 117–118 for a Kiswahili and Maa table.

### Table Bibliography

<sup>1</sup> Ndesanjo, Theilade, and Nielsen. “Water scarcity is a common determinant of migration among pastoral communities.” (Berkhout 2012; Brockhaus et al. 2013). 2602, [https://doi.org/10.1007/978-3-030-45106-6\\_128](https://doi.org/10.1007/978-3-030-45106-6_128).

<sup>2</sup> Verma et al., “Toxic Pollutants from Plastic Waste-A Review,” *Procedia Environmental Sciences*, Waste Management for Resource Utilisation, 35 (January 1, 2016): 701–8, <https://doi.org/10.1016/j.proenv.2016.07.069>.

<sup>3</sup> Ndesanjo, Theilade, and Nielsen, 2603.

<sup>4</sup> Mwandosya, “National Adaptation Programme of Action (NAPA),” 2007, ix, <https://unfccc.int/resource/docs/napa/tza01.pdf>.

<sup>5</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>6</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>7</sup> Ndesanjo, Theilade, and Nielsen, 2602.

<sup>8</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>9</sup> Mwandosya, ix.

<sup>10</sup> Ndesanjo, Theilade, and Nielsen, 2607.

<sup>11</sup> Ndesanjo, Theilade, and Nielsen, 2601.

<sup>12</sup> J. Douwe Meindersma and Jan J. Kessler, eds., 44. Meindersma, J. Douwe, and Jan J. Kessler, eds. Planning for a Better Environment in Monduli District. Netherlands Economic Institute, 1997.

<sup>13</sup> Ndesanjo, Theilade, and Nielsen, 2604.

<sup>14</sup> Ndesanjo, Theilade, and Nielsen, 2605.

## 4. Maasai Context: Mitigation (prevention) and Adaptation (risk reduction)

### “Smile” Pits (Mitigation)

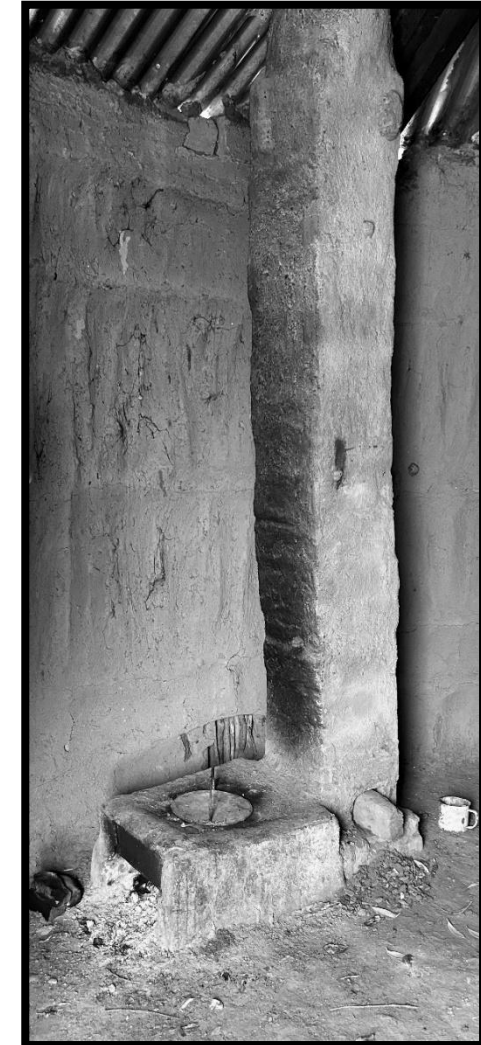
Digging many small 2-meter wide half circles—“smile” pits—“regreens” the area with plants that take out CO<sub>2</sub> from the air (and also reduces soil erosion).

- One recent example from the Lead Foundation: The Regreening Arusha Program’s “goal is to reach more than 3,600 households in Monduli district and restore at least 86,400 trees and 440 hectares of rangeland. This is achieved by reversing the process of desertification and degradation of ecosystems through the techniques of Kisiki Hai and Rainwater Harvesting in order to improve livelihoods and climate change resilience.
- See the amazing pictures at the link provided to see the Regreening Arusha Program: <https://leadfoundation.org/service/regreening-arusha-program/>
- See a short documentary of this Lead Foundation project in Engaruka at the link provided: <https://www.youtube.com/watch?v=RPJ9T4yAEGs&t=4s> (7:08 minutes)

### Fuel-efficient stoves for the Maasai (Mitigation)

In Ketumbeine, Maasai women in the Naapok Bead Project are trained to build fuel-efficient stoves. These fuel-efficient stoves:

- Reduce the burning of firewood by 60% (less work to collect and haul wood),
  - Reduce the smoke in the home by 90% (less respiratory diseases) and
  - Reduce the number of children burned by cooking fires.
- See also: <https://internationalcollaborative.org/news-resources/>



(Photos: Beth E. Elness-Hanson; with permission)

## Water Catchment or Reservoir (Adaptation)

This reservoir is in the Nanja area and was hand dug with the cooperation of 3 or 4 neighboring families who all share the water. The rain collects during the rainy season and fills the reservoir. The thorn fence keeps animals out, so it is cleaner water. The water sustains the community for most of the dry season. Then, they dig out the bottom, bringing the soil to the top of the sides of the reservoir to make it deeper. (Photo: Beth E. Elness-Hanson, with permission)



## 5. Teaching Notes on Hope: Wangari Maathai and Jane Goodall

### Jane Goodall

*Goodall began her career in 1960 in Gombe National Park, Tanzania.*

“Hope is what enables us to keep going in the face of adversity.”<sup>1</sup> “I truly believe, and I’m not alone as a scientist, that we have a window of time when if we get together and take action, we can at least slow down climate change and loss of biodiversity...I can’t save the world, but what can I do locally?...Whatever it is you care about, get together with some friends and take action. Do what you can do to solve what you are passionate about and you will find you make a difference.”<sup>2</sup>

<sup>1</sup> Goodall, Jane. *The Book of Hope: A Survival Guide for an Endangered Planet*. Viking, 2022.

<sup>2</sup> Goodall, Jane. “Reasons for Hope” About the Planet’s Future, Greater Boston, GBH News’. 29 September 2023. <https://www.youtube.com/watch?v=LXXb5MjPbPI>.

Photo: Nicolas Richoffer; [https://commons.wikimedia.org/wiki/File:Jane\\_Goodall\\_2010.jpg](https://commons.wikimedia.org/wiki/File:Jane_Goodall_2010.jpg);  
Creative Commons Attribution-Share Alike 4.0 International licens



e

## Prof. Wangari Maathai: Kenyan Woman Awarded Nobel Peace Prize (2004)

Wangari Muta Maathai (1940–2011) “was a Kenyan social, environmental, and political activist who founded the Green Belt Movement, an environmental non-governmental organization focused on the planting of trees, environmental conservation, and women's rights. In 2004 she became the first African woman to win the Nobel Peace Prize.”<sup>1</sup>

- “...for her contribution to sustainable development, democracy and peace.” Wangari Maathai was the first African woman to receive the Nobel Peace Prize. She was also the first female scholar from East and Central Africa to take a doctorate (in biology), and the first female professor ever in her home country of Kenya. Maathai played an active part in the struggle for democracy in Kenya, and belonged to the opposition to Daniel arap Moi’s regime.
- “In 1977 she started a grass-roots movement aimed at countering the deforestation that was threatening the means of subsistence of the agricultural population. The campaign encouraged women to plant trees in their local environments and to think ecologically. The so-called Green Belt Movement spread to other African countries, and contributed to the planting of over thirty million trees.
- Maathai's mobilisation of African women was not limited in its vision to work for sustainable development; she saw tree-planting in a broader perspective which included democracy, women's rights, and international solidarity. In the words of the Nobel Committee: “She thinks globally and acts locally.”<sup>2</sup>

**“The 30 million trees planted by Green Belt Movement volunteers—mostly rural women—throughout Kenya over the past 30 years are a testament to the individuals’ ability to change the course of environmental history.**

**“Working together, we have proven that sustainable development is possible; the reforestation of degraded land is possible; and the exemplary governance is possible when ordinary citizens are informed, sensitized, mobilized and involved in direct action for their environment.”<sup>2</sup>**



<sup>1</sup> Source: [https://en.wikipedia.org/wiki/Wangari\\_Maathai](https://en.wikipedia.org/wiki/Wangari_Maathai)

<sup>2</sup> Source: <https://www.nobelprize.org/prizes/peace/2004/maathai/facts/>

<sup>2</sup> Wangari Maathai. *The Green Belt Movement: Sharing the Approach and the Experience*. Revised edition. (Lantern Publishing & Media, 2003) xi.

See also: Maathai, Wangari. *Replenishing the Earth: Spiritual Values for Healing Ourselves and the World*. Random House, 2010.

Photo: Kingkongphoto & www.celebrity-photos.com; [https://commons.wikimedia.org/wiki/File:Wangari\\_Maathai\\_in\\_2001.jpg](https://commons.wikimedia.org/wiki/File:Wangari_Maathai_in_2001.jpg);

Creative Commons Attribution-Share Alike 2.0 Generic license.

## 6. Global Warming Temperature Increase

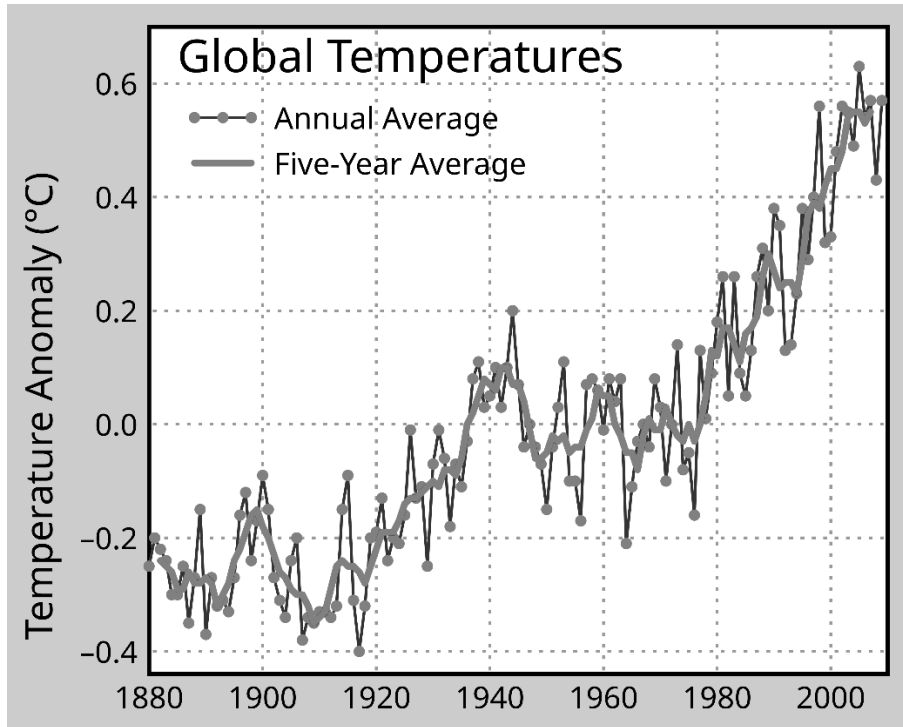
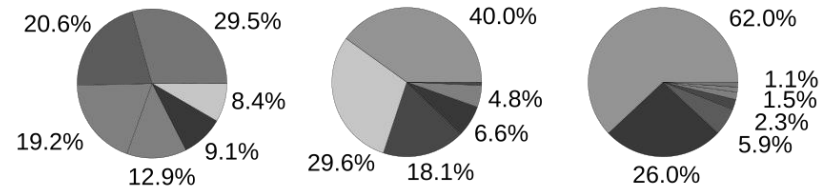
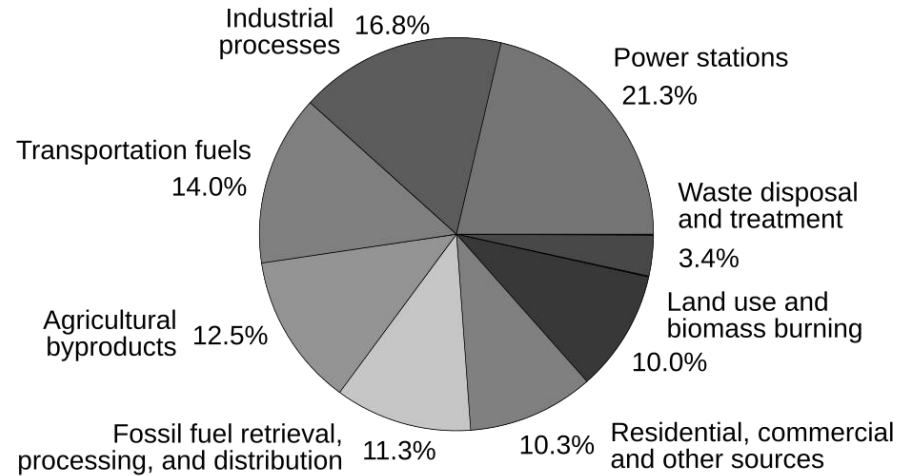


Image: Public Domain, Author, Schapel: Instrumental Temperature Record GISS.svg Instrumental Temperature Record GISS - File:Instrumental Temperature Record GISS.svg - [https://commons.wikimedia.org/wiki/File:Instrumental\\_Temperature\\_Record\\_GISS.svg](https://commons.wikimedia.org/wiki/File:Instrumental_Temperature_Record_GISS.svg)

## 7. Sources of Greenhouse Gases Image

### Annual Greenhouse Gas Emissions by Sector



**Carbon Dioxide**  
(72% of total)

**Methane**  
(18% of total)

**Nitrous Oxide**  
(9% of total)

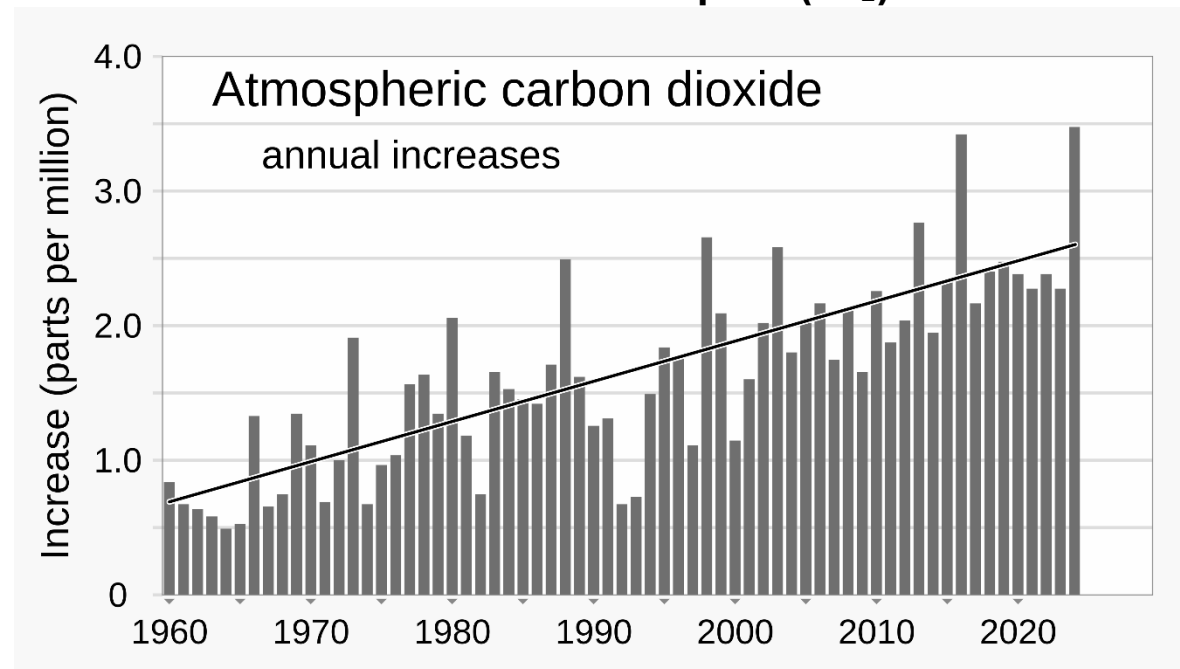
Source: [https://commons.wikimedia.org/wiki/File:Greenhouse\\_gases.svg](https://commons.wikimedia.org/wiki/File:Greenhouse_gases.svg)  
Greenhouse Gas by Sector.png: Robert A. Rohde, Creative Commons Attribution-Share Alike 3.0 Unported license.

## 8. Global-warming Gases Percent Effect on Climate Change

Source: [https://commons.wikimedia.org/wiki/File:Greenhouse\\_Gases.jpg](https://commons.wikimedia.org/wiki/File:Greenhouse_Gases.jpg); Public Domain (modified, expanded info)

Effect on climate	Chemical formula	Name	Source
60%	CO <sub>2</sub>	carbon dioxide	burning fossil fuels (like coal and petrol in cars) deforestation, wildfires, burning wood
16%	HFCs	hydrofluorocarbons	refrigerants, aerosol propellants in medicinal applications, and degreasing solvents
15%	CH <sub>4</sub>	methane	wetlands, organic waste, livestock, modern agriculture, burning biomass
5%	N <sub>2</sub> O	nitrous oxide	fertilizers, fuels, medical uses, rocket propellants, and motorcar racing
2%	PFCs	perfluorocarbons	paint, textile and aluminum production
1%	SF <sub>6</sub>	sulphur hexafluoride	electrical industry, rubber production
1%	H <sub>2</sub> O	water vapor	irrigation, evaporation of rain, ice melting

## 9. Increase of Carbon Dioxide in the Atmosphere (CO<sub>2</sub>)



Source: RCraig09, Creative Commons Attribution-Share Alike 4.0 International license.

[https://commons.wikimedia.org/wiki/File:1960-\\_Annual\\_increases\\_in\\_atmospheric\\_carbon\\_dioxide.svg](https://commons.wikimedia.org/wiki/File:1960-_Annual_increases_in_atmospheric_carbon_dioxide.svg)

## 10. Methane Facts (CH<sub>4</sub>)

- Approximately 40% of methane gas emissions are from natural sources.
- The rest (60%) is produced by human activity, known as anthropogenic emissions.
- The largest human-caused source of methane is agriculture, which produces about one quarter of methane emissions.
- closely followed by the energy sector, which includes emissions from coal, oil, natural gas and biofuels.

(<https://www.iea.org/reports/global-methane-tracker-2022/methane-and-climate-change>)

## 11. If more time, here are more teaching suggestions

- **Adapt Teaching Materials to Different Maasai Regions:** While the core lesson is relevant across Maasai communities, consider adjusting examples or activities based on the specific challenges faced in different regions (e.g., water scarcity, soil degradation).
- **Local Experts:** Consider inviting local environmental experts or Maasai elders who practice sustainable land management to share their experiences and knowledge.
- **Study and teach others about the Maasai:** including traditional practices, beliefs, and their deep connection to the land. Understanding their cultural heritage helps appreciate their way of life.
- **Engage with Maasai community leaders and members** to hear their perspectives on climate change and environmental issues. Their traditional knowledge and experiences provide valuable insights into adapting to changes.
  - “How did our ancestors take care of the land and animals to ensure they stay healthy?”
  - “What natural signs do you look for to know when it’s time to move the cattle or plant crops?”
  - “How do you make sure that water sources and pastures are used wisely and not overused?”
  - “What lessons from the past can we use today to protect nature and our way of life?”
  - “How did the elders in our community teach you to care for the environment when you were young?”
  - “In your view, how has the climate changed over the years, and what did you do to adapt?”
- **Integration of Maasai Tradition and Modern Science:**  
Objective: Show how combining Maasai traditional knowledge with modern climate science can lead to effective climate action. Here are the instructions:
  - Discussion (5 minutes):
    - **Ask:** “How can we use our Maasai traditions alongside modern science to tackle climate change?”
    - Discuss how traditional Maasai practices, such as sustainable land and water management, align with modern scientific methods for mitigating and adapting to climate change.
  - Class Activity (5 minutes):
    - **Pair Work:** In pairs, students discuss how a traditional Maasai practice could be combined with a modern climate solution. For example, traditional water conservation methods could be paired with modern rainwater harvesting techniques, or traditional grazing methods could be adapted with modern sustainable farming practices.
    - **Class Sharing:** Invite students to share their ideas with the class.
- **Real-Life Examples:** Take students on a visit to a Maasai community or a local farm where they can see how people are adapting to climate change. This helps them learn directly from the community’s practices.
- **Talk to Elders:** Students can ask their grandparents (babu or koko) about how they adapt to changes in the weather and environment. These stories can be shared in class to learn from past generations. Here’s a question that students can ask their grandparents (babu or koko) about adapting to changes in the weather and environment:
  - “Babu/Koko, how did you and people in your time adjust to changes in the weather or environment? Have you noticed any differences in how the weather is now compared to when you were younger?”
  - This question encourages grandparents to reflect on their personal experiences and observe any environmental changes over time, helping bridge the generational gap and connect traditional knowledge with current environmental shift.

## 12. Additional Resources: Books and Articles

### *Combining Climate Science and Traditional Maasai Knowledge*

- **Brockington, Dan, and Jim Igoe.** *Pastoralism and Climate Change: Bridging Science and Indigenous Knowledge*. Routledge, 2017. Highlights how connecting science with Maasai traditions creates culturally relevant climate solutions.
- **Homewood, Katherine and Trench, Pauline.** *Climate Change and the Future of Pastoralism in Africa: A Maasai Case Study*. Routledge, 2022. Explores how blending climate science with Maasai traditional knowledge helps address climate change's impacts on pastoralism.
- **Leach, Melissa, and Scoones, Ian.** *Sustainable Livelihoods and Climate Change: The Maasai and Beyond*. Routledge, 2021. Focuses on merging climate science with indigenous systems to build effective adaptation strategies.
- **Moss, Keith.** "Climate Change Adaptation Strategies Among the Maasai: Integrating Traditional Knowledge and Climate Science." *Global Environmental Change*, vol. 40, 2022, pp. 100–112. Discusses how blending Maasai knowledge with climate science creates culturally suitable and effective adaptation strategies.
- **Ogutu, Joseph O., and Owen-Smith, Norman.** "Integrating Indigenous Knowledge and Climate Science for Pastoralist Adaptation: Lessons from the Maasai." *Pastoralism: Research, Policy and Practice*, vol. 9, no. 1, 2018, pp. 23–37. Explores how integrating indigenous knowledge and science can strengthen resilience and adaptation.

### *Building Adaptation and Resilience*

- **Gibson, Craig C., and Stephen A. Marks.** *Integrating Climate Adaptation into Maasai Pastoralism: Policy and Practice*. Cambridge University Press, 2019. Examines how scientific and traditional insights can foster resilience against environmental challenges.
- **Homewood, Katherine.** "The Impact of Climate Change on Maasai Pastoralism: A Review of Current Knowledge and Future Directions." *Environmental Science & Policy*, vol. 70, 2021, pp. 1–10. Reviews how combining science with Maasai practices aids in addressing climate variability impacts.
- **Ndegwa, Samwel.** "Climate Change and Pastoralism: Analyzing the Maasai Adaptation Strategies in the Context of Climate Science." *African Journal of Environmental Science and Technology*, vol. 15, no. 2, 2018, pp. 91–105. Examines how Maasai strategies informed by both tradition and science showcase the potential for integrated climate management.
- **Nugent, Paul.** *The Climate Crisis and Pastoralism: Insights from the Maasai*. Oxford University Press, 2020. Discusses adaptive strategies that integrate scientific and ecological practices of the Maasai.



## Appendix A:

### Climate Change Vocabulary in English, Kiswahili, and Maa

Initial Maa translation by Mr. Lashumbai Kilolong, Dr. Neema Kitasho and Mr. Julius Laiser continued with the development of the concepts. Additional contributions by Dr. Daniel Kosia Mokoro and Mr. Joseph Kosia. This is a vocabulary in development.

English	Kiswahili	Maa
Maasai indigenous knowledge for the care and protection of creation	maarifa ya asili ya Wamaasai kwa ajili ya kujali na utunzaji wa uumbaji	eng'eno e tipat oo Irmaasai narripyeki inkitobirunot
traditional Maasai knowledge of care for the environment	maarifa ya kitamaduni ya Wamaasai kuhusu utunzaji wa mazingira	eng'eno/engarriyiano o orreje lo ilmaasai narripyeki enkop
adaptation	ustahimilivu	emokunotto/eng'iryata
average surface temperature	joto wastani la eneo	enkirowuaj te enkop
biodiversity	bioanuwai	iseuseu enkop
biofuel	nishati itokanayo na mabaki mimea	engima empuuti oo ingaitubulu
carbon dioxide	kaboni dioksidi	enkijape e kabon
carbon footprint	kanyagio za kaboni	iraruat e kabon
carbon neutral	uwiano wa kaboni	kabon nemeponari
caring for the environment	kutunza mazingira	erripoto/enking'urata enkop
clean energy	nishati safi	nishati sidai
climate	tabianchi	orreje le enkop
climate change	mabadiliko ya tabianchi	engibelekenyatta orreje le enkop
compost	mbolea	endulugumi
creation care	utunzaji wa uumbaji	enking'urata/erripoto o ingitobirat
deforestation	ukataji wa miti	endung'oto orkeek
drought	ukame	alamei
eco-friendly	rafiki wa ikolojia	naning'ore iltirenito

Creation Care in Maasailand

English	Kiswahili	Maa
ecosystem	mfumo wa kiikolojia	enchula oopookin toltiren
emissions	utoaji wa gesi hatari au gesi la joto duniani	emburuo torriono/engijape nainyalisho
energy-efficient	nishati fanisi	enishati/enkima nanarikino
environment	mazingira	enkop
environmental care	kutunza mazingira	enking'urata/erripoto enkop
exhaust fume	moshi wa magari	emburuo oo motokaani
extinction	kutoweka	engidaaya/enkiting'oto
extreme weather event	tukio kali la hali ya hewa	erishata sapuk enkijape enkop
famine	njaa	esumash/alamei
flood	mafuriko	ingarriak sapukin naaruko
food waste	mabaki taka ya chakula	irmong'oitie loon'daikin
fossil fuels	mafuta ya visukuku	iila e tetrolu
global average temperature	wastani wa halijoto duniani	engirowaj rishati te enkop
global warming	ongezeko la joto duniani	emponata engirowaj te enkop
greenhouse effect or blanket effect	athari ya blanketi la joto angani	inaayau, orkila lenkirowaj toloing'ang'e
greenhouse gas (GHG) or global-warming gases	gesi zinazopasha joto dunia or gesi iongezayo joto la dunia ( <i>gesi ya chafu</i> is not preferred in this project)	irmuumwani ooirowaje enkop
habitat	makazi ya asili	manyisho e tipat
heat wave	wimbi la joto kali	engima nairowua naleng', ingatitin enkima sapuk
infectious diseases	magonjwa ya kuambukiza	imoyiaretin naahurtakinoi
mitigation	kupunguza/kudhibiti	engirishata
non-renewable energy	kawi isiyotumika tena nishati isiyojizalisha	enishati nemeponari
ozone	ozoni	erishata olaing'ang'e le ozon
petrol	petroli	petroli
pollutants	vichafuzi	olchafu /enkitarruoroto/altaka

Creation Care in Maasailand

English	Kiswahili	Maa
recycling	kuchakata	enkigilata oonkitobirunot
reforestation	upandaji miti	eunoto orkeek
refugee	mkimbizi	ilaisikak
renewable energy, energy from the sun and wind	nishati jadidifu, nishati kutoka kwa jua na upepo	enishati naponikino, enishati naing'waa engolong' o osiwuo
reservoir (of water)	hifadhi (ya maji) utunzaji wa maji	en'chumata o inkariak
sea-level rise	kupanda kwa kiwango cha maji baharini	edokunotto engare enaipasha
solar panels	seliumeme za jua	esolla
sunlight	mwanga wa jua	ewang'an engolong'
sustainability	endelevu	nemeiting'/enkata naado
temperature	halijoto	engirowaj
weather patterns	mabadiliko ya hali ya hewa	ingibelekenyat enkijape tolaing'ang'e
weather	hali ya hewa	enkijape
wind	upepo	osiwuo
wind turbine	vinu vya upepo	emashine osiwuo
world	dunia	enkop/oloshu



## Appendix B:

### Website Resource: Visit MamaAnya.com

<https://www.mamaanya.com/>

- The website also provides all the lessons for downloading without cost. Karibu!
- The lessons are developed to be a blessing for the Maasai.
- Thus, they are shared with a **Creative Commons license, CC BY-NC-SA: Attribution-NonCommercial-ShareAlike**.
- See the colophon/publishing information for more description of the permitted use.
- The website lessons have the potential for corrections of typographical errors, updated information, and revisions that arise from working with these lesson plans and developing them accordingly. Hopefully, the use and development of the lessons will continue.

