

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

Lessons to Bless the Church and God's Good Creation

Confirmation/*Kipa Imara*

Written by Ezekiel Megiroo

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.

This document is a section from:

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; Mollel, Godson Abel (Godson Abel Mollel), 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

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 Mollel and Knut Holter. Mama Anya, 2026.

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.....	18
4. Maasai Traditional Environmental Knowledge	32
5. Climate Science for a Pastoralist Context.....	44

Part 3: Shared Resources for the Lessons

6. Resources for Lesson 1: Biblical Creation Care	65
7. Resources for Lesson 2: Maasai Traditional Environmental Knowledge	69
8. Resources for Lesson 3: Climate Science for a Pastoralist Context	75

Appendices

A. Climate Change Vocabulary in English, Kiswahili, and Maa.....	86
B. MamaAnya.com website.....	89

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."¹ 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

¹ 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.

Lesson Groups	Author
Confirmation/ <i>Kipa Imara</i>	Rev. Ezekiel Megiroo
Secondary education in Diocese owned institutions	Mr. Lai 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

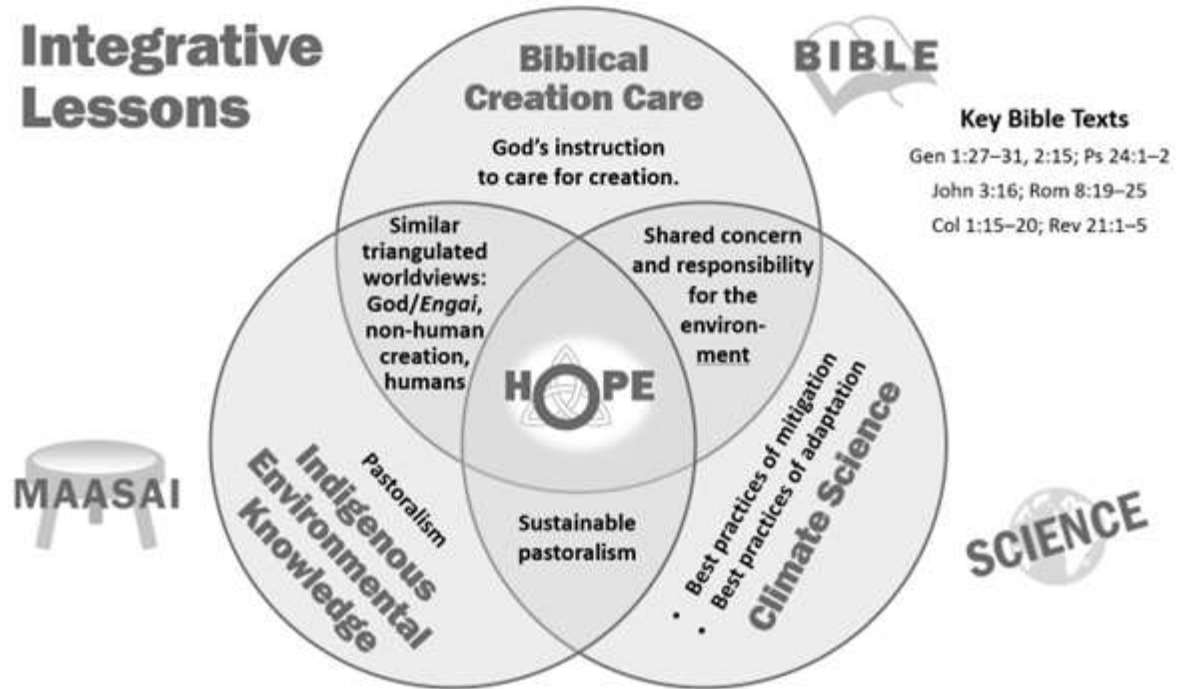
It is undeniable that increasing extreme weather events, changing rainfall patterns, and other environmental degradations have dramatically impacted the traditional Maasai, whose pastoralist livelihoods are dependent upon natural resources.

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).

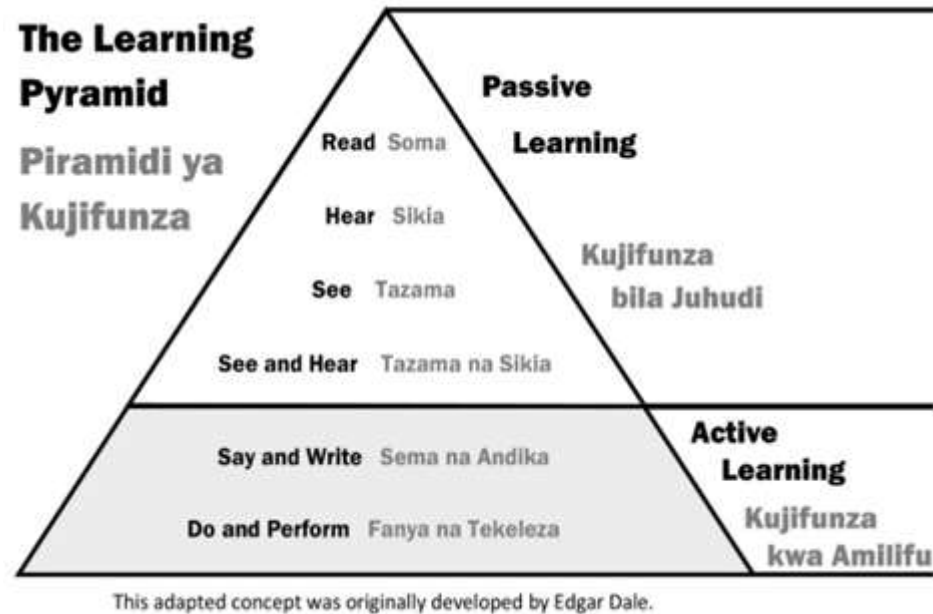
2. Teaching Tips for Teachers

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



- **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.

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 enkitaheikinoto 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 zinazoozgeza 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](#);

Iyolot oo Rmalimuni/Ilaiteng'enak

- Ore isirat oolwaa naa akeutaa ilaiteng'enak.
- Eyeuni ilaiteng'enak 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>

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.

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

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 |

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 |



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.

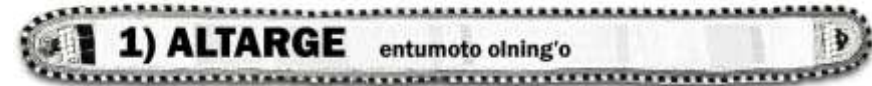
Unganisha uzoefu huu na hadithi za Wamaasai zinazoonyesha kwamba Mungu/Enkai ndiye muumbaji au jinsi Wamaasai wanavyojali uumbaji. Waombe watu 2–3 wajitolee kujibu.

- 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.



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.

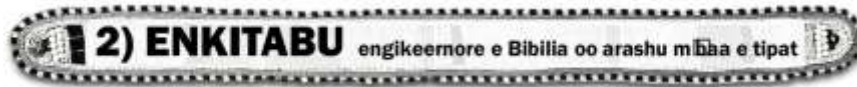
N'diko ena niyolo oo natinin/ngatinin oo Irmaasai naitodolu aajo Enkai alaitobirunoni arashu eniko Irmaasai eneshilaa nkitobirunot. Toomono iltung'anak aare metabaiki okuni (2–3) pee ewolu.

- 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)

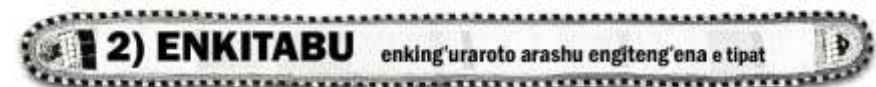
- Dupoto engarriyano oo Irmaasai—anaa enekitoning'o naipirita esidano oo nkitobirunot e Enkai oo nkias oltung'ani te erripoto oo nkitobirunot-irukore esidai nkiteng'emat te Biblia.
- Maing'urari siye tenebo kuti sirat le tipat tiatwa Biblia.



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 akamtwa 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.



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 lomon oing'waa ilturrurri loo lasirak le Biblia nitinyikuni pee elimu inaadwaa. Ore tenaa sapuk aldarasa entegelu alasirani obo loo lomon 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 te 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 hatauaacha 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 engibirribir 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.¹

Esi/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 oloiteng'eni otuutaki pee iisom orkereri le Biblia ta aldarasa pookin.

- **Iroma 8:19–21** Keanyita seseni pooki toki naitayioki, te yieunoto kitok, metaboluni nkeri 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 nkeri e Nkai.
 - Itoning'o? Elakuni nkitobirunot te sinkaishu enye errwoyoroto.
- **Irkolosai 1:15–17** Ninnye nyaanyukie e ina Ai nemelilio, olkikau le pooki toki naitayioki; te nkaraki ninnye pee eitayioki ntokitin pooki, naatii shumata o naatii enkop, inaalioo o nemelilio 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.¹

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 nkitobirinot. 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 (CO₂):** 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 CO₂. Ukataji miti, ambao hupunguza idadi ya miti inayoweza kunyonya CO₂, 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 (CO₂):** 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 (CO₂). Ore en'dung'oto oo irkeek naitong'orr esiana oo irkeek oibibi orgesi le kabon (CO₂) nepon sii naleng.

- **Methani (CH₄):** 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 CO₂ 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 (CH₄):** 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 (CO₂) 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 CO₂ 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.



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

- 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 (CO₂) 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).



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 alasarani 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'ejuk 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

¹ N.T. Wright, "Ufufuo na Upya wa Uumbaji" 11/16/2018, 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—unaonyeshwa 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 eepe 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"> • Imehamasishwa na maarifa ya kitamaduni ya mazingira ya Wamaasai, desturi endelevu, na uhusiano mzuri na ardhi. • Imewezeshwa kuchanganya desturi hizi za kitamaduni na mikakati ya kisasa ya sayansi ya mazingira ili kuimarisha usimamizi na uendelevu. 	<ul style="list-style-type: none"> • Eewuaki te engariyano e mila enkop oo Irmaasai, orkwaak obikoo, oo em'baikinoto sidai e nkop. • Idimieki piitushuli kulo kwaaki lemila oo m'baa e kisasa e sayansi enkop pee eretoki enkitaheikinot oo em'bikooroto.
<p>Fanya</p> 	<ul style="list-style-type: none"> • Waombe wanafunzi watambue desturi moja au mbili za kitamaduni za Wamaasai wanazoweza kuzitumia au kuziendeleza katika jamii yao ili kuboresha utunzaji wa mazingira. • Waombe wanafunzi watafakari jinsi wanavyoweza kuunganisha maarifa ya Wamaasai na mafundisho ya kibiblia katika maisha yao ya kila siku ili kutunza mazingira. • 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). 	<ul style="list-style-type: none"> • Toomono ilooiteng'eni peeyolou orkwaak obo arashu aare le mila oo Irmaasai ooidim aataasishore te enkop enye pee itosidan erripoto enkop. • Tiaki ilooiteng'eni mibirribirra eniko enidikidik engariyano oo Irmaasai oo nkiteng'emat e Biblia tenkishui enye ekutwa pee errip enkop. • Arashu tisira orbeti liare lo osinkolio oipirita engariyano oo rkwaak lemila enkop oo Irmaasai naake sii nkoitoti sidan naaitong'orr nkibelekenyat orreje le enkop (enkitong'oroto).

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

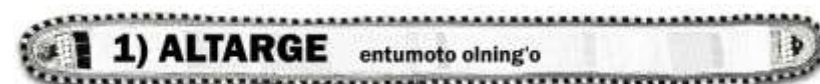
8 *Waulize wanafunzi maswali yafuatayo. Unaweza kufikiria kuanza na majadiliano ya kikundi kidogo—hasa kwa swali la kwanza—na kisha kujadili majibu katika kundi kubwa.*



- 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!



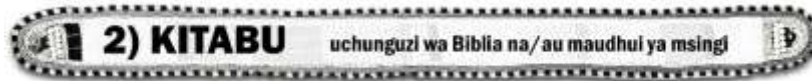
Enkarriyano e Mila te tiatua Orkwaak loo Irmaasai

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!



Maarifa ya Jadi ya Mazingira ya Jamii ya Wamaasai



- 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:

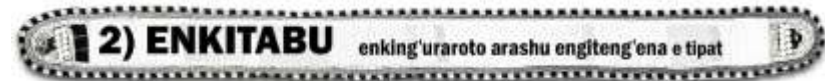
Wamaasai wanajulikana kwa usimamizi wao makini wa ng'ombe. Wanahamisha mifugo yao mara kwa mara ili kuepuka kulisha kupita kiasi eneo lolote, kuruhusu nyasi na mimea kukua tena. Hii inahakikisha kwamba ardhi inabaki na afya na inaweza kuendelea kusaidia maisha.

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,



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.

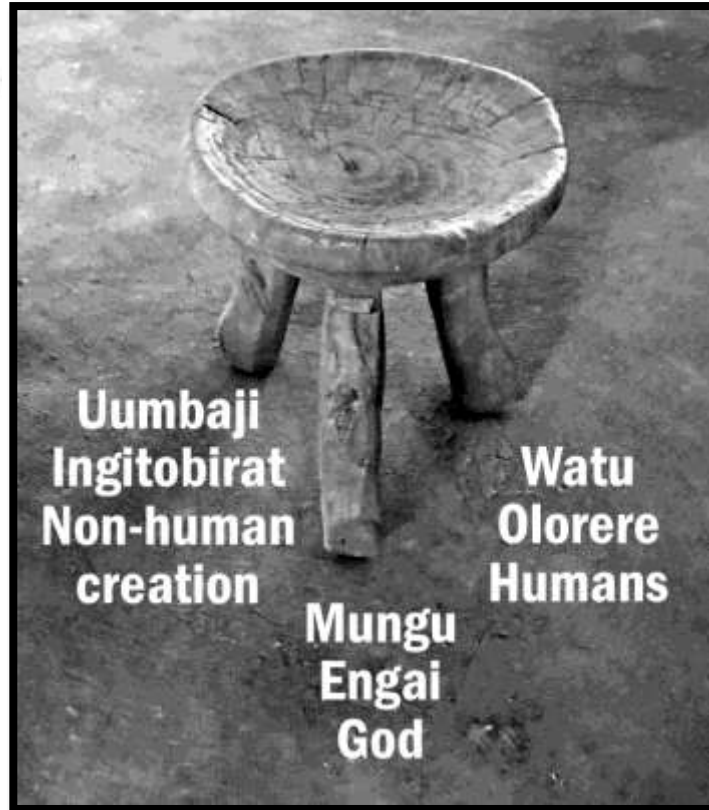
- Eyiolo Irmaasai aajo ore empuan oo iltung'anak (empuan) te enkop naa tengaraki em'baikinoto sidai oo 1) Enkai, 2) iltung'anak kulie, 3) nkitobirunot/ngitobirat neme iltung'anak.
- Ore kuna baa wuni naa ake elio enaa oltonet loo nkejek wuni, olorika.
- Ore too nkejek wuni niidim aitashe esidai—ata te 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 lturrurri kutiti oo iltung'anak 2 arashu 3. Nishori ilturrurri orkereri obo le Biblia napaasha oo enaduo ning'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 lturrurri kutiti, nijoki ilasirak loo lturrurri 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 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 eramatare 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 Jadi 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 enkoitoi sidai 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 endorrioni 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

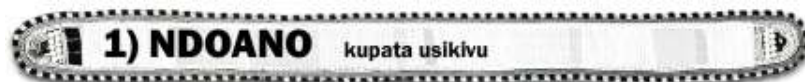
- Orkibao la alchaki arashu orkiabo oiborr oo irkalamuni sapuk osirieki.
- Teniyyeu: impichai e engarriyano enkop te mila oo Irmaasai naidikore sayansi orreje le enkop
- Teniyyeu: impichai oo irbalosini losiligi tolosho le Afrika.

Inareta oo Looiteng'eni/Ingardasini Kunyinyi

- Engardasi oo arkalamu

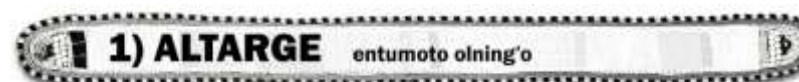
Dakika

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 itaanza 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?

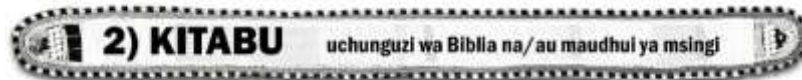
Confirmation/Kipa Imara

- 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**?

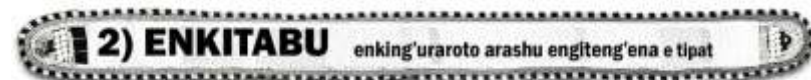


- M'birribirra ngariak sapukin naana'gari, alamei, oo osiwuo sapuk tenepona—kaja etiu olosho lang'?
- Oo naai tenetupukutuo kuna, naa yook enyeuni pee kiretoo aibok?
- Kanyoo napuku teniiter enkop aibelekenya too nkoitoi nemikijo eponu?

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 CO₂), 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/CO₂), 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'jooto 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 (CO₂), methane (CH₄), na mvuke wa maji (H₂O).
 - Haijulikani sana na haina umuhimu mkubwa kwa somo hili:
 - Gesi ya Naitrojeni (N₂O): 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 CO₂ 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 (CO₂), methane (CH₄), oo engirebuk/empurwo e engare (H₂O).
 - 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 (CO₂) 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 CO₂ 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 (CO₂) 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 dhafu 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.)

Engarriano 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?¹

Kupunguza

- Hatua za kupunguza athari ni zile hatua zinazochukuliwa ili kupunguza uzalishaji wa gesi zinazoongeza 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 CO₂ 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, 2019.²
 - “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?¹

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 (CO₂) 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, 2019.²
 - “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.”³
- **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 CO₂ 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 CO₂ inapochomwa).
- **Kupunguza, Kutumia tena, au Kurejesha Plastiki:** Kupunguza matumizi ya (yaliyotengenezwa kwa mafuta ya visukuku) na kutochoma chupa za plastiki (ambayo huweka CO₂ 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.”³
- **Eunoto Ng’ejuk oo Irkeek (Eunoto oo Irkeek):** Eimaki eniko eunoto oo irkeek neretoo eibibya kabon (CO₂) 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 entorroni 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 magari au magari. 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, CO₂, baadhi ya Wamaasai wanatumia:
 - Majiko yanayotumia mafuta kwa ufanisi, ambayo:



3) ENGING'URAROTO enkitalalaunoto arashu engibirribir 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 uhomaji 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 uendelevu 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 uendelevu.
 - 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.

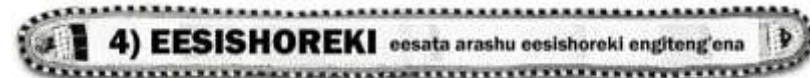
Kupunguza

- 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 nkibelekenyat 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 duoo orbeti linyi lenkaiterr nipirita aajo itanapa iyook Enkai pee kirrip nkitobirunot sidan Enkai.
- Ore orbeti liare nipirita engariyano 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!

- 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!

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.

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

¹ "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>.

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

³ Nunez.

Part 3: 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."¹
 - "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."²
 - "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."³
 - 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."⁴ 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."⁵
- **Protecting biodiversity**⁶
 - 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."⁷
 - 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."⁸
 - "Increased drought and wildfire risk make grasslands more reliable carbon sinks than trees... Trees are still critical. The study does not suggest that grasslands should replace forests on the landscape or diminish the many other benefits of trees."⁹
- **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, CH₄.

- 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:

- ¹ 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.
- ² Gardner, 24.
- ³ 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>
- ⁴ 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.
- ⁵ Meindertsma, 10–11.
- ⁶ 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. 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...”
- ⁷ 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.
- ⁸ 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/>.
- ⁹ 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 (CO₂) (image)
10. Methane Facts (CH₄)
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,² 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.³

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>1. Plant trees which absorb CO₂ (especially trees that are native to the area).</p> <p>2. Energy efficiency (reducing carbon)</p> <p>a) Use more efficient wood burning cooking stoves to reduce burning of wood (which puts global-warming gases into the environment).¹ [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>3. Reduce the use of plastic bottles and recycle the bottles that are used.</p>	<p>5. Water</p> <p>h) Develop water harvesting and storage mechanisms.³</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.⁴ [See Resources Chap. 17.]</p> <p>6. Food security</p> <p>k) Put in place food security enhancement strategies (food reserve).⁵</p> <p>l) The households' ability to purchase food is the most important food security strategy.⁶</p> <p>m) A reliable income source and asset base is crucial for household response to climate shocks.⁷</p> <p>n) 58% reported that they resort to selling livestock... in response to shocks.⁸</p> <p>7. Infrastructure resilience</p> <p>o) More secure house and facility locations</p> <p>p) Preventive and precautionary measures (evacuation plans, health issues, etc.)</p> <p>8. Ecosystem and landscapes</p> <p>q) Landscape restoration (natural landscape) and reforestation</p> <p>r) Conservation of natural ecosystem (biodiversity and water)</p> <p>9. Traditional environmental knowledge</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."⁹</p> <p>t) "Gradual and medium to long-term livelihood diversification initiative is a highly recommended</p>	<p>1. Panda miti ambayo inachukua kaboni dioksidi, CO₂ (hasa miti ambayo ni ya asili ya eneo la hilo).</p> <p>2. Ufanisi wa nishati (kupunguza kiwango cha kaboni)</p> <p>a) Tumia majiko ya kuni yenye ufanisi zaidi ya kuni ili kupunguza uchomaji wa kuni (ambao huweka gesi zinazoozeka joto kwenye dunia kwenye mazingira).¹ [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>3. Punguza matumizi ya chupa za plastiki na urejeshe tena chupa zinazotumika.</p>	<p>5. Maji</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.⁴ [Tazama picha hapa chini katika Nyenzo sura ya 17.]</p> <p>6. Usalama wa chakula</p> <p>k) Weka mikakati ya kuimarisha usalama wa chakula (hifadhi ya chakula).⁵</p> <p>l) Uwezo wa kaya kununua chakula ndio mkakati muhimu zaidi wa usalama wa chakula.⁶</p> <p>m) Chanzo cha mapato kinachotegemewa na msingi wa mali ni muhimu kwa mwikitio wa kaya dhidi ya majanga ya tabia nchi.⁷</p> <p>n) Asilimia 58 ya kaya ziliripoti kuwa zimeamua kuuza mifugo...ili kudhibiti majanga ya tabia nchi.⁸</p> <p>7. Ustahimilivu wa miundombinu</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>8. Mfumo wa ikolojia na mandhari</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>9. Maarifa ya jadi ya mazingira</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."⁹</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.²</p> <p>4. Use garbage collection instead of burning garbage.</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.”¹⁰</p> <p>10) Agro-pastoralism/small-scale agriculture</p> <p>u) Use flexible and diverse cultivation</p> <p>v) Develop seed banking.¹¹</p> <p>w) Incorporate crops that are more drought resistant than maize, “such as sorghum, pigeon-pea, finger millet, sweet potato and chickpea...”¹²</p> <p>11) Leadership and governance</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 scarcity¹³ 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.¹⁴</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.²</p> <p>4. Takataka zinazochomwa hutoa kaboni hewani.</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.”¹⁰</p> <p>10. Kilimo-ufugaji/kilimo kidogo</p> <p>u) Tumia njia rahisi na tofauti za kilimo.</p> <p>v) Kuendeleza utunzaji wa mbegu.¹¹</p> <p>w) Jumuisha mazao yanayostahimili ukame zaidi kuliko mahindi, “kama vile mtama, njegere, mtama, viazi vitamu na kunde.”¹²</p> <p>11. Uongozi na utawala</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,¹³ 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.¹⁴</p>

See p. 117–118 for a Kiswahili and Maa table.

Table Bibliography

¹ 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.

² 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>.

³ Ndesanjo, Theilade, and Nielsen, 2603.

⁴ Mwandosya, “National Adaptation Programme of Action (NAPA),” 2007, ix, <https://unfccc.int/resource/docs/napa/tza01.pdf>.

⁵ Ndesanjo, Theilade, and Nielsen, 2601.

⁶ Ndesanjo, Theilade, and Nielsen, 2601.

⁷ Ndesanjo, Theilade, and Nielsen, 2602.

⁸ Ndesanjo, Theilade, and Nielsen, 2601.

⁹ Mwandosya, ix.

¹⁰ Ndesanjo, Theilade, and Nielsen, 2607.

¹¹ Ndesanjo, Theilade, and Nielsen, 2601.

¹² 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.

¹³ Ndesanjo, Theilade, and Nielsen, 2604.

¹⁴ 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 CO₂ 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.”¹ “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.”²

¹ Goodall, Jane. *The Book of Hope: A Survival Guide for an Endangered Planet*. Viking, 2022.

² 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;
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.”¹

- “...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.”²

“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.”²



¹ Source: https://en.wikipedia.org/wiki/Wangari_Maathai

² Source: <https://www.nobelprize.org/prizes/peace/2004/maathai/facts/>

² 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;

Creative Commons Attribution-Share Alike 2.0 Generic license.

6. Global Warming Temperature Increase

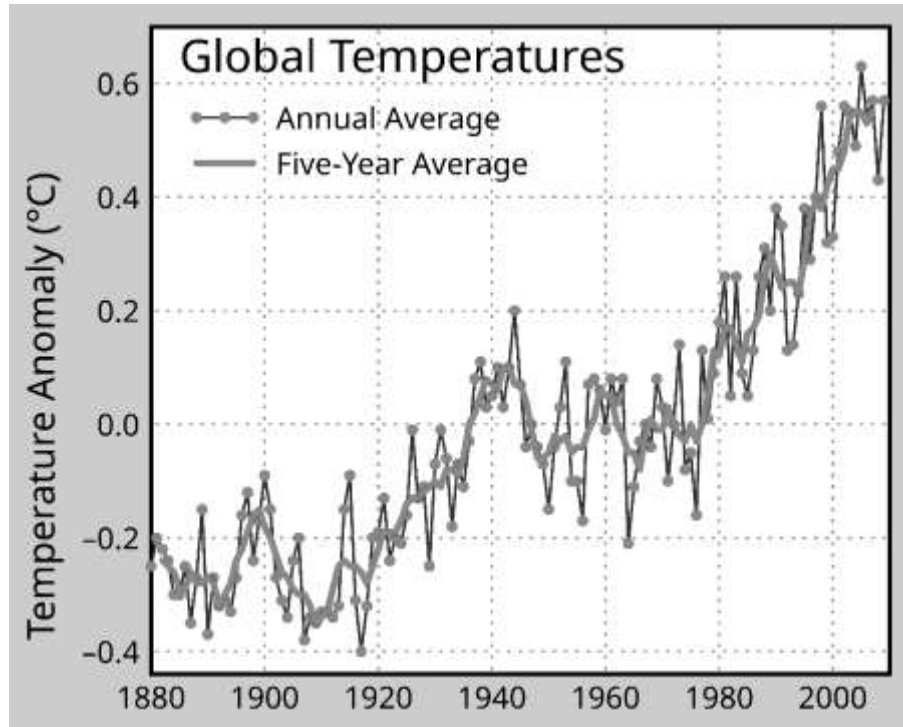
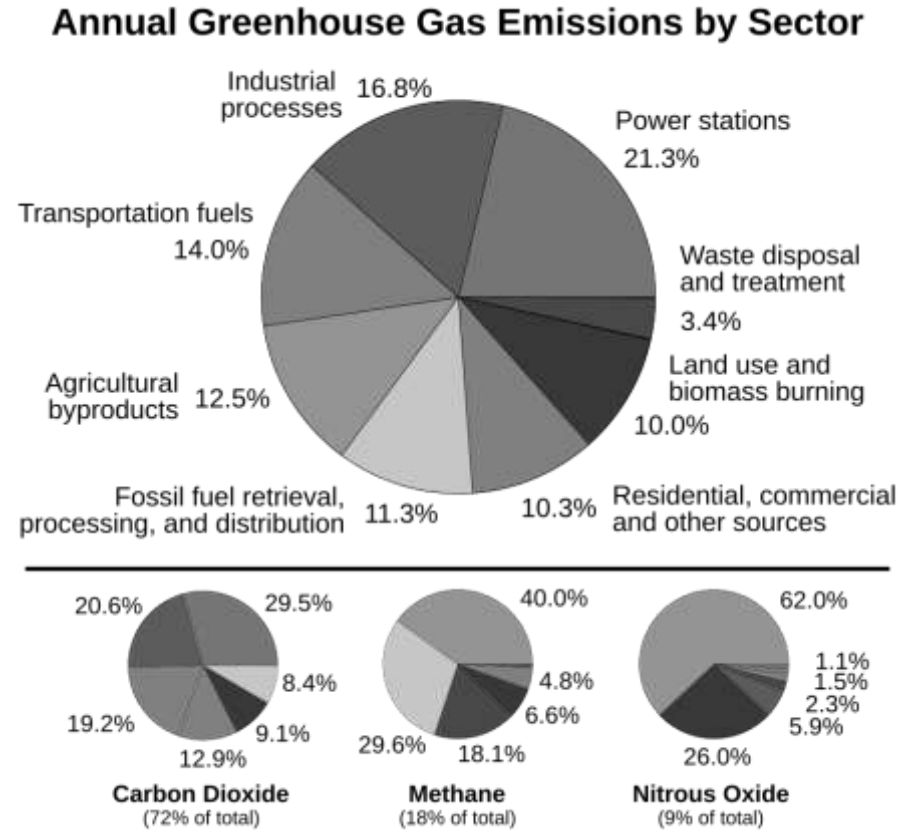


Image: Public Domain, Author, Schapel: Instrumental Temperature Record GISS.svg Instrumental Temperature Record GISS - File:Instrumental Temperature Record GISS.svg - https://commons.wikimedia.org/wiki/File:Instrumental_Temperature_Record_GISS.svg

7. Sources of Greenhouse Gases Image



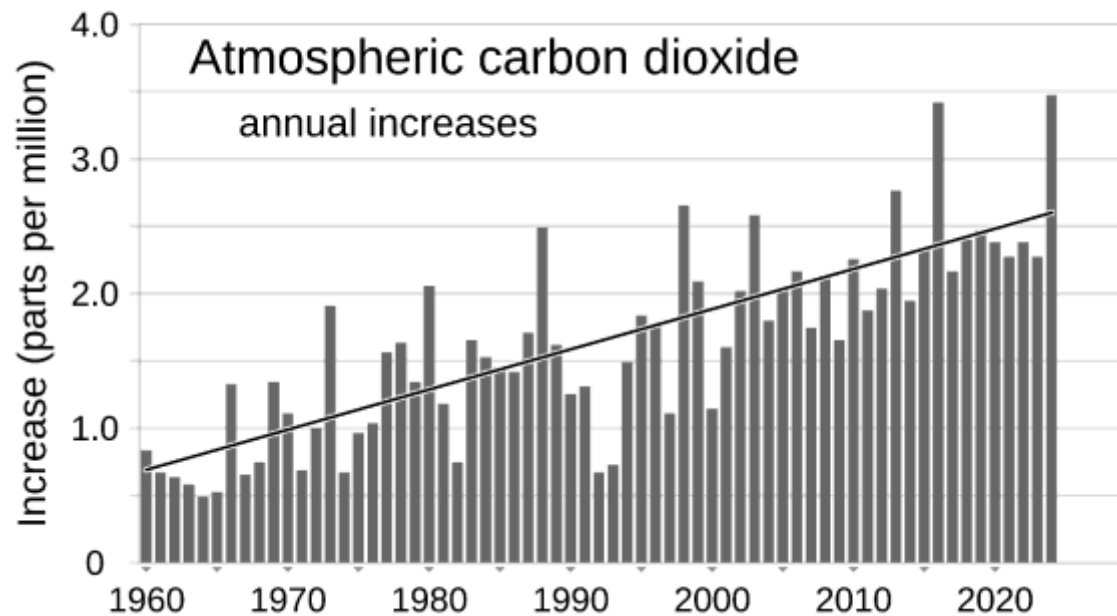
Source: https://commons.wikimedia.org/wiki/File:Greenhouse_gases.svg
 Greenhouse Gas by Sector.png: Robert A. Rohde, Creative Commons Attribution-Share Alike 3.0 Unported license.

8. Global-warming Gases Percent Effect on Climate Change

Source: https://commons.wikimedia.org/wiki/File:Greenhouse_Gases.jpg; Public Domain (modified, expanded info)

Effect on climate	Chemical formula	Name	Source
60%	CO ₂	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 ₄	methane	wetlands, organic waste, livestock, modern agriculture, burning biomass
5%	N ₂ O	nitrous oxide	fertilizers, fuels, medical uses, rocket propellants, and motorcar racing
2%	PFCs	perfluorocarbons	paint, textile and aluminum production
1%	SF ₆	sulphur hexafluoride	electrical industry, rubber production
1%	H ₂ O	water vapor	irrigation, evaporation of rain, ice melting

9. Increase of Carbon Dioxide in the Atmosphere (CO₂)



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

10. Methane Facts (CH₄)

- 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 enkiyape 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/olosho

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.