KNOWING OUR CHANGING CLIMATE IN AFRICA

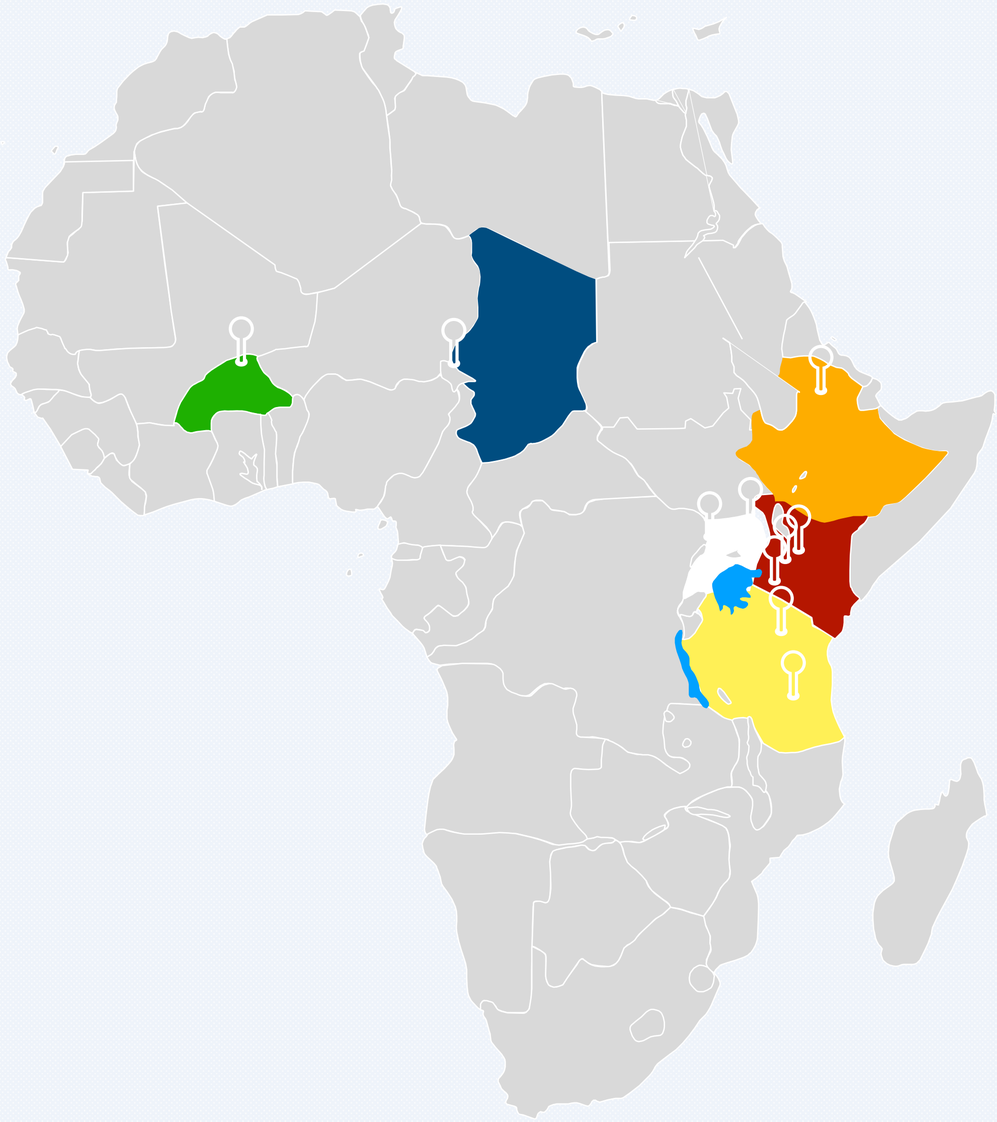
UNESCO LiNKS initiated this project to **support indigenous researchers** in documenting observations and knowledge of **pastoralist and agro-pastoralist communities in Africa** relevant to forecasting weather and adapting to climate change.

The project involved participatory research, dialogue with science agencies and engagement with national and international climate policy making.

African Pastoralist research on weather and climate

This initiative fostered research projects across **six countries**:

BF Burkina Faso
TD Chad
ET Ethiopia
KE Kenya
TZ Tanzania
UG Uganda



From the People of Japan

Sweden
Sverige

Community-led Research

Research Mentoring and Peer Learning

Transdisciplinary Dialogue

Between indigenous peoples and scientists, including cooperation with international and regional climate and meteorological organisations

Project summary

Submission to the UNFCCC

Local Communities and Indigenous Peoples' Platform rolling work plan

National & International Policy Dialogue

Production of seasonal calendars in indigenous languages

Knowing our Changing Climate in Africa

African Indigenous Knowledge for Climate Adaptation

Building a **Multiple Evidence Base approach** to climate risk management and adaptation

Synergies of science and indigenous knowledge in understanding weather and climate change

“

Parties acknowledge that adaptation action […] should be based on and guided by the best available science and, as appropriate, **traditional knowledge, knowledge of indigenous peoples and local knowledge systems**.

PARIS AGREEMENT, ARTICLE 7.5

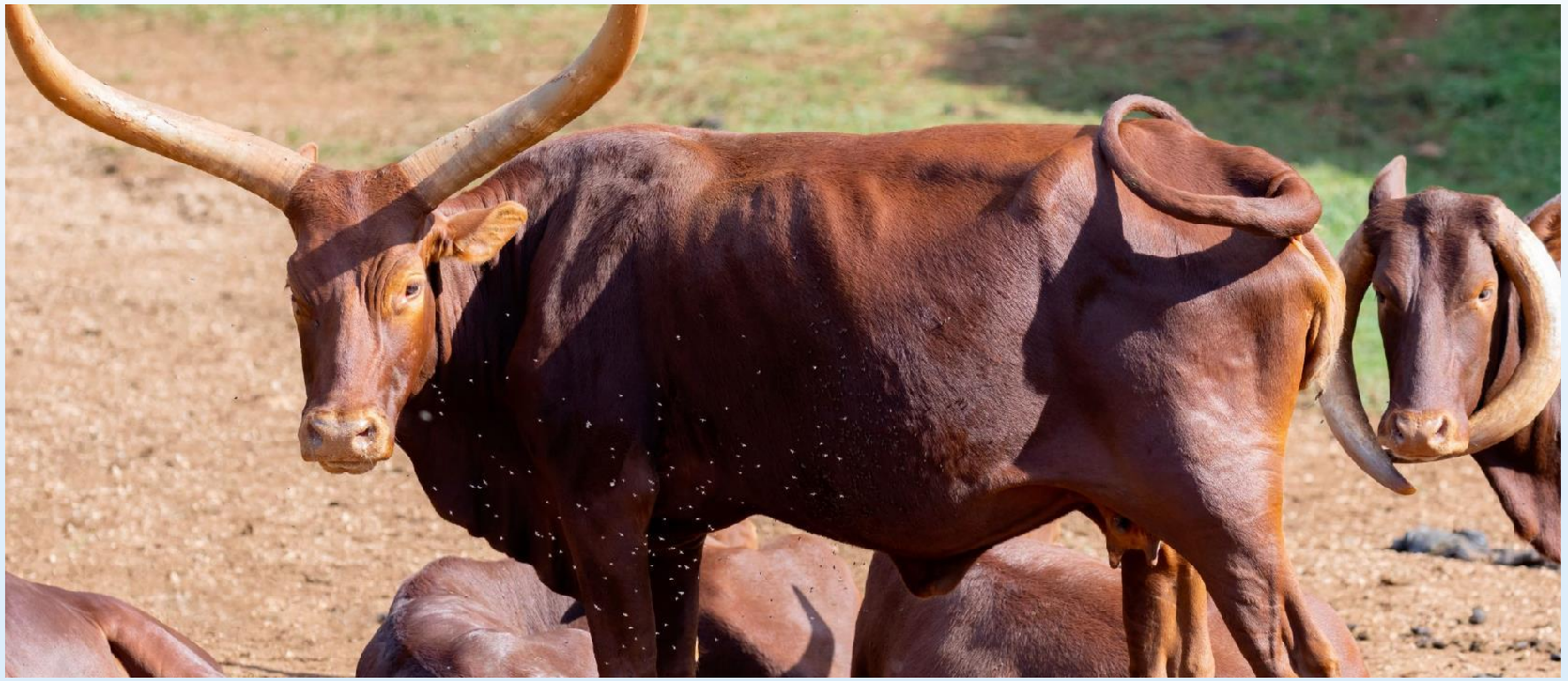
PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

A Definition of Indigenous & Local Knowledge

“Dynamic bodies of integrated, holistic, social and ecological knowledge, practices and beliefs pertaining to the **relationship of living beings**, including people, with one another and with their environments.

Indigenous and local knowledge is **grounded in territory**, is highly diverse and is continuously **evolving**…”

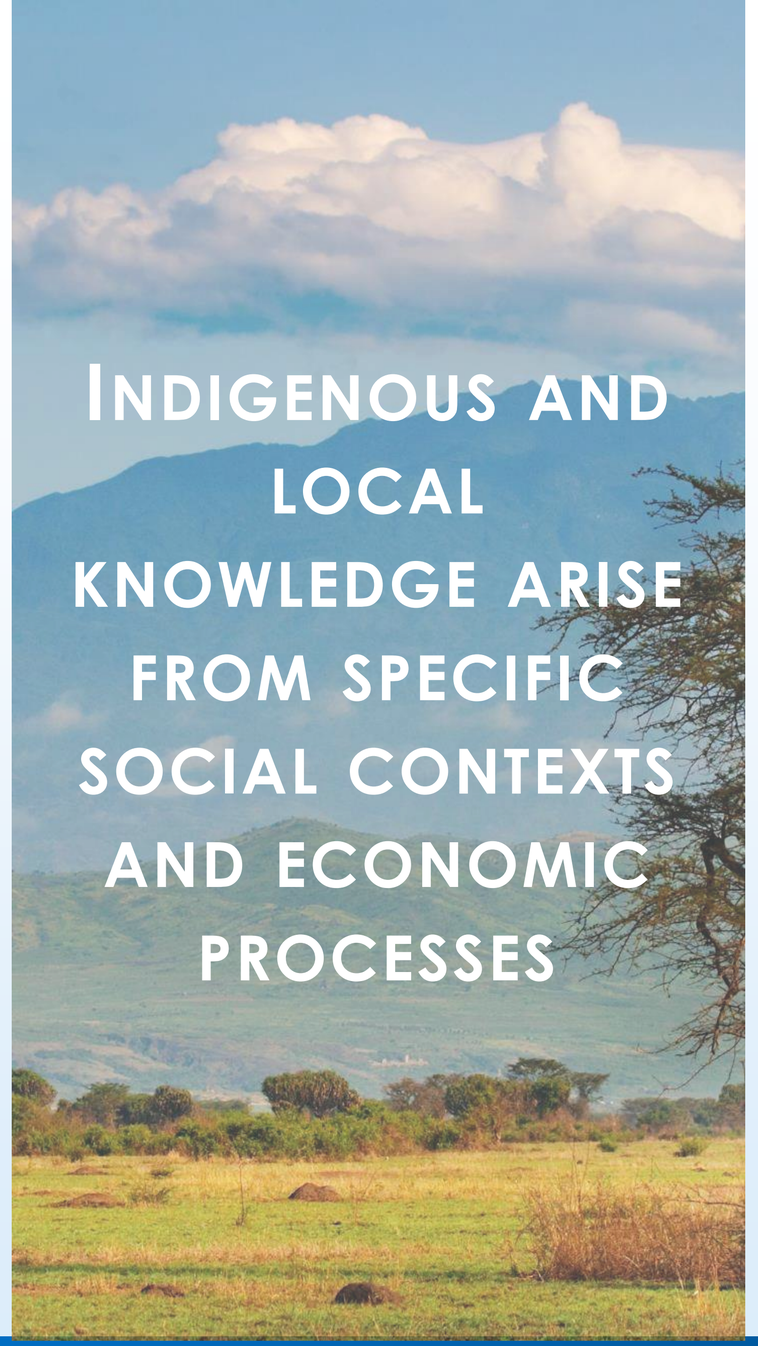
IPBES-5/1, Annex II



Culture & Languages

Landscapes & Seascapes

Climate & Livelihood



Values & Beliefs

Practices

Gender Dynamics

Co-produced knowledge

The two or more epistemologies can be **combined** to produce the best available knowledge, improving decision-making in climate issues – respecting their different origins, functions and governance. **Complementarity creates opportunities** for knowledge coproduction and improving decision-making.

SCIENTIFIC KNOWLEDGE

KNOWLEDGE OF INDIGENOUS PEOPLES AND LOCAL COMMUNITIES

Indigenous observations of seasonal indicators for forecasting climate and weather

Atmospheric
Wind direction, wind velocity, clouds, temperature, precipitation, dust particles

Celestial
Lunar cycles, colours of the moon, constellation appearance, star visibility, night sky obscurity

Plants
Blooming and seeding, changes to plant varieties, plant disappearance

Animals & Insects
Livestock and wildlife behaviour, changes in bird migratory patterns, changes in insect presence, timing and behaviour, taste of milk products.

Indigenous institutions and knowledge holders:
Scouts, diviners, elders, women

PEULH M'BORORO

Lessons from working with the nomadic peoples of Chad

- **Climate impacts are provoking conflict** between farmers and pastoralists
- **Community-led research helps empower people** and reduce misunderstandings about different land use patterns
- **Transhumance is already adapted** to climate variance and yet is little understood in policy and science contexts
- **There are different seasonal cycles in Chad** – the M'bororo seasonal calendar shows 5 seasons in some areas, and 7 in others – this is important for adaptation

Bahima in Uganda

- The Bahima in the north of Nakaseke district, central Uganda are agro-pastoralists.

- Bahima use various biotic and celestial indicators for weather forecasting, including temperature, humidity, winds, and behaviour of frogs, bees and various plants.
- Herders were often more concerned about the quality of rain rather than its quantity. There particularly transitional points on the calendar when forecasting is most urgent.

Ugandan Karamojong

- The Karamoja live in northeastern Uganda. Karamoja has substantial rain variances and has been subject to significant climate impacts, notably drought.
- Key lessons:
- 1. Karamojong seasonal calendar is a useful tool in establishing early warning of droughts and promoting adaptive responses;
- 2. Karamojong society is organised to ensure youth provide scouting of weather patterns and women and men elders meet in Akiriket assembly to analyse indicators to determine risks and make decisions

Peulh in Burkina Faso

3 villages in the Commune of Dori participated in the community research: Béguentigui, Léré Ibaye and Mamasiol

- The Peulh (Fulani) communities in the commune of Dori participated in the research. Burkina Faso has already exceeded an average temperature increase of 1.5°
- Peulh and Bella are pastoralists and agro-pastoralists they note major changes in the climate – intense heat, shifts in seasons and prolonged drought periods. They note the loss of trees in the Sahel.
- Their seasonal calendar and indicators are used for to support both agricultural livelihoods and transhumant pastoralism. Indicators in use include tree leafing, cloud patterns, flowers, ants, star visibility and bird migrations.
- Key messages:
- Communities still rely mostly on traditional weather observation and responses
- Concerns that climate change are provoking conflict between farmers and herders;
- Transhumance – recognised in national adaptation plan -helps protect nature but is increasingly difficult to practice;
- National meteorological authority notes value of indigenous knowledge and advises meteorologists to work more closely with communities.

Maasai in Tanzania

- Maasai community research focussed on the village of Terrat, 80kms south of Arusha, in northeastern Tanzania. Additional research in Morogoro.

- Terrat lies in the Simanjiro plains, an important wet-season grazing area between the Tarangire National Park and Mount Meru.
- Key lessons:
- Maasai herders have detailed language for cloud and weather patterns, their observations help understand climate change in practice;
- Elders hold detailed knowledge in their language, stories and memories about historical weather and climate patterns – the new types of flooding do not exist in the language and mark unprecedented change;
- Climate change is transforming gender roles and relations – this can be disturbing or an opportunity – gender has to be closely considered in climate adaptation;
- Maasai and Samburu observations cover a large territory from the north of Kenya to central Tanzania provide an important scale for understanding climate change in East Africa. Sharing information about the climate and weather within Maa speaking communities and in exchange with meteorologists help communities understand and respond to climate shocks and trends.

Afar in Ethiopia

- Information is collected by traditional observations and predictions, and processed through community institutions
- 1) the 'Edo' or range scouting involves scouts going on mission to assess weather and other spatially and temporally variable attributes on rangelands; 2) the 'Dagu'- a traditional and reputable knowledge network, where weather information is shared;
- 3) the 'Adda' is a body of village elders in the traditional Afar governance system who analyse information and contribute to decision making

- Afar experience major climate change impacts including decline in milk production and extreme weather impacts;
- Afar read a range of biotic and abiotic indicators to generate a 'probabilistic' forecast Afar identify six different types of wind.

- Non-weather variables such as presence of ticks assist with triangulating information

Maasai and Samburu in Kenya

In **Kenya**, research was undertaken by **Laikipia Maasai** and **Samburu pastoralists** who depend on livestock and livestock products, rangeland grazing and wild plant medicines and honey for their livelihoods.

Kenya has advanced initiatives on indigenous knowledge and meteorology;

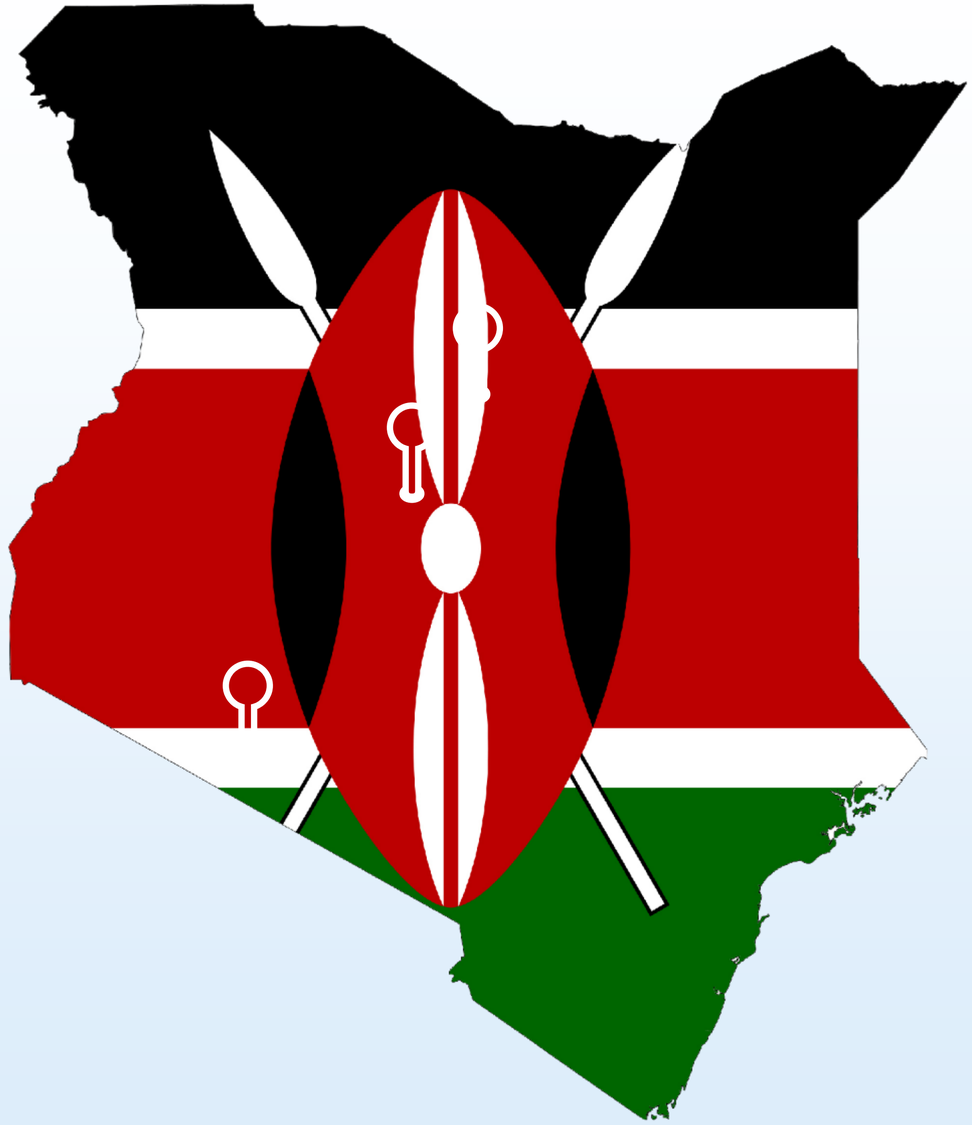
UNESCO and partners organised a technical exchange with the Kenya Meteorological Department and pastoralists – both found valuable complementary knowledge. One area of interest is on the scaling of climate information and the role of microclimates on forecasting;

Maa and Samburu languages distinguish between short dry periods and longer droughts (where two rain cycles have failed)- variance being an anticipated feature of the climate;

Reading the night sky is a special skill, and there are particular terms and norms for the colour of the moon;

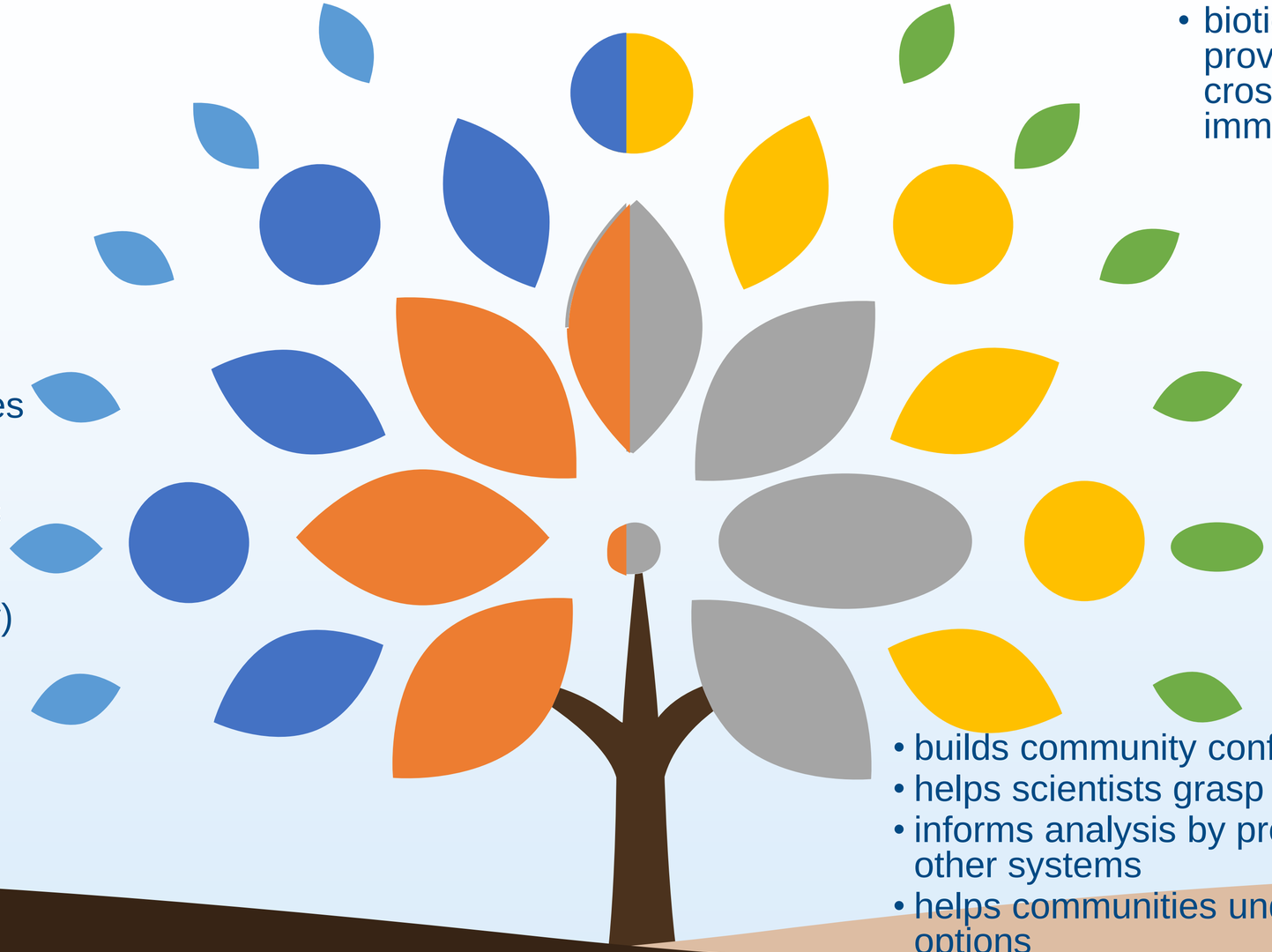
Weather prediction involves reading biotic and abiotic indicators, compared to prior knowledge. Plant phenology and movements / behaviour of insects and birds are important in anticipating rain;

Altitude and micro-climates are important in transhumance decision-making.



Value Proposition Of Indigenous Knowledge

- **Indigenous languages carry historical information** and provide taxonomies for understanding weather patterns and climate variances over decadal and possibly longer cycles
- information on the interaction of landscapes and micro-climatic phenomena (usually **opaque to meteorology**)



- biotic and abiotic indicators provide predictive reliability and cross-referencing, (& help guide immediate adaptive responses)
- **greater accuracy** in medium-term weather outlooks, notably at the scale of 3 to 6 months and possibly at multi-year scales
- **nuanced understanding** of weather phenomena & knowledge on the anticipatory and responsive behaviour of biodiversity and ecosystems

Documenting ILK:

- builds community confidence
- helps scientists grasp complementarity
- informs analysis by providing new evidence from other systems
- helps communities understand new adaptive options

Important Social And Rights-Based Issues

- Research indicates that pastoralists are subject to specific forms of social and policy exclusion which increase vulnerability;
- International and national institutions working on climate adaptation and climate services do not currently recognize the institutional and social framework of how indigenous knowledge is produced, transmitted and sustained.
- Few countries have legal frameworks to allow pastoralist spatial management to function as it was designed for climate variance, hence policy constraints create perverse impacts on potential adaptation and in turn, on knowledge systems;
- Research indicates a host of social and rights based challenges arising from climate change impacts, including ethnic discrimination, loss of land tenure and access to transhumance corridors, increasing insecurity and violence, poverty and problems of social cohesion;
- Initiatives to support coproduction of knowledge and the sharing of indigenous knowledge need to be based on a trusting relationship with scientists and thus should be framed within a human rights approach with due attention to the Free prior and informed consent (FPIC) of the knowledge holders;
- Indigenous knowledge systems are technically and analytically complex and are currently not recognized by or informing schools and curriculum development;

Gender & Climate Change

Climate change impacts men and women differently. This is causing changes in gender roles and relations. All communities have reported that sustaining the family and community takes greater energy and resources than previously.

Men can be pushed into **unemployment** or migrant labour, leaving women to run households; this **can increase domestic violence**.

The role of **indigenous women** in generating knowledge and responding to climate impacts, e.g. by leading spiritual rituals during extreme weather events, or observing the condition of fresh milk, **must be taken into account**.

Future Opportunities

- The UNESCO research and transdiciplinary dialogues show major potential for improving climate services and national adaptation policies and practices – further research is required on indigenous peoples' capacity to inform climate outlooks and the potential to co-produce relevant knowledge for climate adaptation and risk reduction;
- More community-led research will help understand climate change and adaptation actions while building greater resilience and peaceful co-existence
- Institutional relationships need mediation between relevant science agencies and indigenous peoples
- Set up participatory prediction and co-production processes (with indigenous knowledge holders and meteorologists)
  - e.g. Indigenous-led climate observatories
- Ecosystems-based approaches which draw on both meteorology and indigenous knowledge can be a focus for both upscaling and downscaling information.
- Rely on a two-way communication strategy rather than assuming that rural communities are passive consumers of climate services
- Train scientists to understand the potential of indigenous knowledge to inform climate adaptation, mitigation or climate services
- Improve national education with both science and indigenous knowledge of climate, weather and adaptation
- Ethical and rights based frameworks should inform research, policy-making and knowledge co-production initiatives
- Gender is significant in knowledge production, analysis and responses, and should be built into research, cooperation and policy-making.

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Partners and partner weblinks

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United Nations Educational, Scientific and Cultural Organization · From the People of Japan

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*"If you want to understand what is **happening in the lowlands** you have to **go to the highlands** to have a better view of what is happening down there.*

*The same thing happens if you want to understand weather: you need to **climb on the shoulders of elders** to understand it"*

Afar woman