

DEVELOPING HOLISTIC LOCAL CLIMATE SERVICES FOR AGRICULTURE

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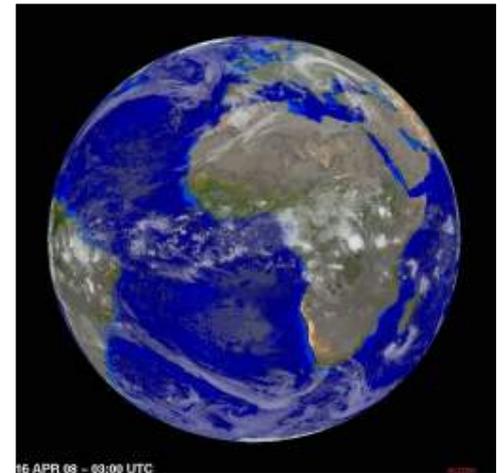
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Background and motivation

The 20th century was the century of **analysis** based on new discoveries.



The 21st century is rapidly becoming the century of **synthesis** with much greater emphasis on **holistic approaches**.



Kenya project course lecture venue, University of Eldoret



Field experiment visit at the Tugen community, Marigat



Kenya project in terms of CSA (I)

Name of the project: Holistic Grass-Root Mobile Climate Services for Local Farmers (HGMCS)

Location: Marigat (Baringo County), North-Western Kenya

Communities: Tugen and Njemps communities

Climate region: Semi-arid

Kenya project in terms of CSA (II)

Objective:

Develop and implement **holistic local climate services** in collaboration with the existing national climate service network.

Holistic approaches

- **A holistic approach** takes into account **all pertinent factors as a balanced entity** and allows **interactions** between these factors.
- **Example: Holistic climate services** – where CSA, climate knowledge and transdisciplinarity work together.

Climate-smart agriculture (CSA)

(I)

Definition CSA: Agriculture that sustainably increases productivity, resilience (**adaptation**), reduces/removes GHGs (**mitigation**), and enhances achievement of **national food security and development goals (FAO, 2010)**.

Dimensions of the CSA:

- **agriculture,**
- **development,**
- **climate variability and change**

Climate-smart agriculture (CSA) (II)

The dimensions of the CSA include
socio-economic features
embedded in an all-interactive way.

Challenges of CSA

- **Too liberal use of the CSA**
- **Interactions between the dimensions**
- **Balancing preferences**
- **Impacts of agriculture**
- **Focus largely on developing countries**
- **Can CSA meet human and environmental needs?**
- **The role of CSA to provide holistic climate services in a participatory way**

Response to the challenges of CSA

Domain for resolving problems in agricultural
and food systems:

Long-term safe operating space

with both quantitative and qualitative features.

Safe operating space

The agriculture and food systems are climate-smart, when it can be demonstrated that they bring us closer to safe operating spaces (Neufeldt *et al*, 2013).

A set of conditions

1) **To better meet human needs in a demonstrable way** (short and long terms & within foreseeable local and planetary boundaries)

2) **To hold ourselves accountable for outcomes across temporal and spatial scales and**

3) **To take into account**

- **climate variability and change**
- **socio-economic features**

Holistic Local Climate Services under CSA

- 1) Engagement and integration of the developed local climate services to the total system under the adopted local safe operating space, i.e. CSA
- 2) Participatory and trans-disciplinary working mode
- 3) Climate knowledge

Three types of experts needed in the context of CSA

Scientists

Decision-makers

Synthesizers

Epistemic Implementation Delphi Panel (EIDP)

This theoretical framework/artefact of the project (modification of the Argument Delphi (Kuusi, 1999)) comprises

- 1) **encountering stage** (general interviews and surveys),
- 2) **opening stage** (choice of experts and managers; deep interviews by using CSH),
- 3) **argumentation stage** (identification of rational action lines with expert and management groups),
- 4) **concluding stage** (choice of the rational action line to be implemented)

Encountering stage of the EIDP

- Choice of the **interview group** and the **survey group**
- General interviews and surveys
- Updates of the adopted safe operating space

General interview event at the Tugen community, Marigat



Opening stage of the EIDP

- Choice of the **experts** and the **managers**
- Deep interviews of the experts by using the Critical Systems Heuristics (CSH) (Ulrich and Reynolds, 2010)
- Reflection of the CSH boundary critique to the adopted safe operating space

Argumentation stage of the EIDP

- **Discourse cycles** by the expert and management groups on the collected interviews (see e.g. the adaptation cycle by Meinke *et al.* (2010))
- Identification of optional rational action lines
- Recommendation of the rational action line to be implemented

Concluding stage of the EIDP

- **Implementation** of the recommended rational action line (management group)
- **Evaluation** of the outcome of the implemented action line in terms of EIDP utility functions
- **If rejected**, a request to the expert group to recommend another optional rational action line to be implemented

Accomplishment of the EIDP

Positive evaluation: Holistic (local) climate services for the CSA.

Negative evaluation:

- iterate the EIDP in its four stages and
- reconsider the boundaries of the adopted safe operating space/CSA, if needed.

Field experiment of the Kenya project

Accomplished:

- 1) Encountering stage and
- 2) Opening stage: still partly unfinished.

Near future plans:

- 1) Processing of the interviews,
- 2) Finalize the opening stage,
- 3) Design and implement the prototype tablet/smart mobile local network, and
- 4) Proceed to the discourse and concluding stages to finalize the EIDP.

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