

Designing an integrative concept for long-term greenhouse gas observations in Africa

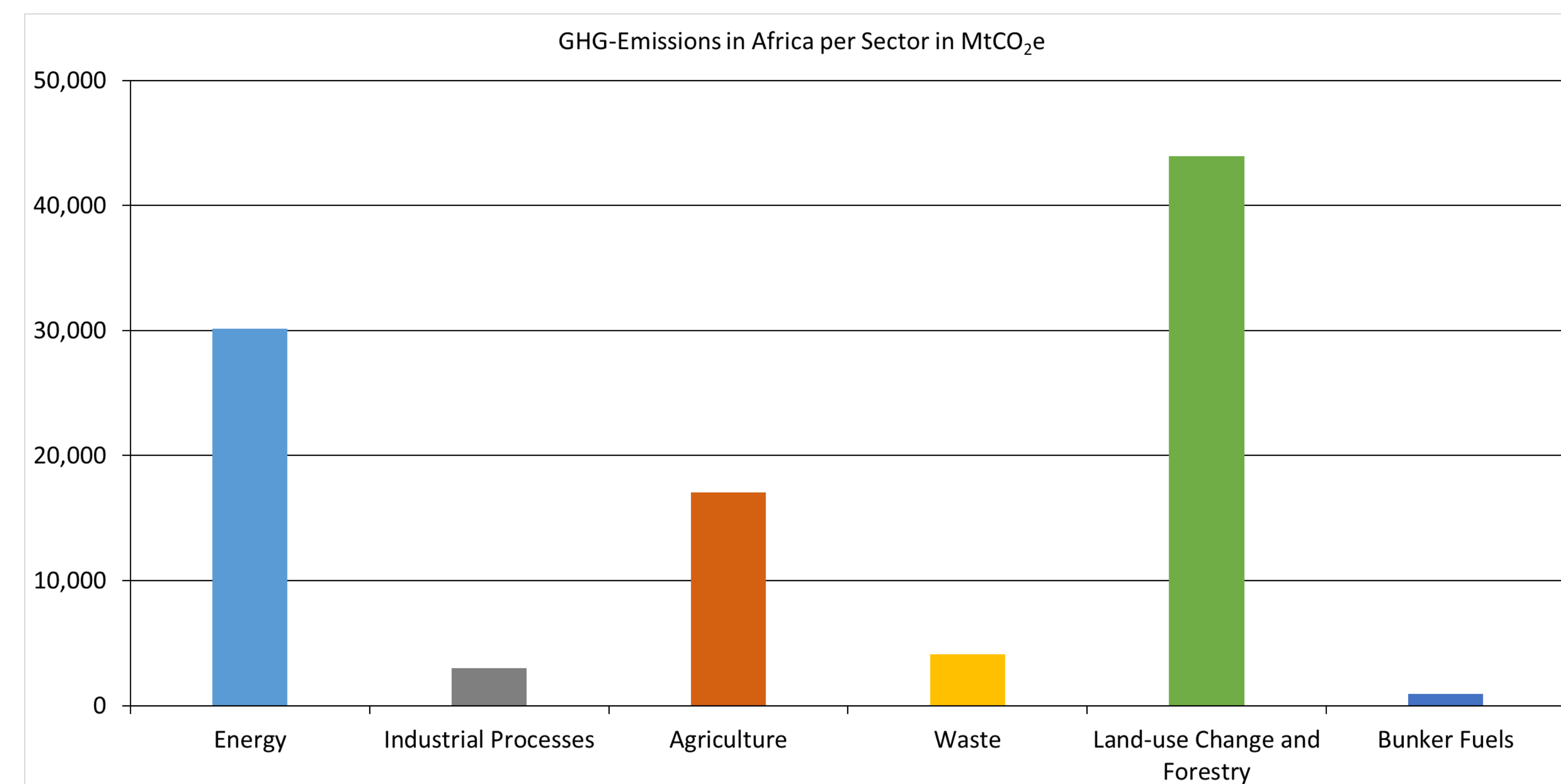
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Background

Ecosystems and societies on the African continent are threatened by the consequences of climate change. Similarly, the continuing trend of population growth jointly occurring with rapid land-use change, increased energy demand and the development of industry and transport infrastructure contribute to increasing greenhouse gas (GHG) emissions and

subsequently climate change. It is estimated that the majority of GHG emissions in Africa at present occur due to land-use change. Land-use change is partly a consequence of the extension of agricultural production and deforestation in order to cope with increasing land, food and energy demands.



GHG Emissions by Sector in Africa 1990-2014 (Based on numbers by CAIT/WRI, wri.org)

A Need in Africa

Scientific advice on GHG emissions with regard to agricultural production techniques is important for Africa to improve national and international environmental reporting as well as decision making processes on climate change and land-use policies. To give appropriate advice, sufficient qualitative and quantitative data about GHG emissions and their respective sources and sinks is essential. Currently, a comprehensive GHG observation system is lacking for the whole African continent.

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The objective of SEACRIFOG

The primary objective of the project is to formulate a roadmap towards fully interoperable and accessible research infrastructures in agricultural and GHG observation research in the EU and Africa that match the needs of scientists, policy makers and end users such as farmers.

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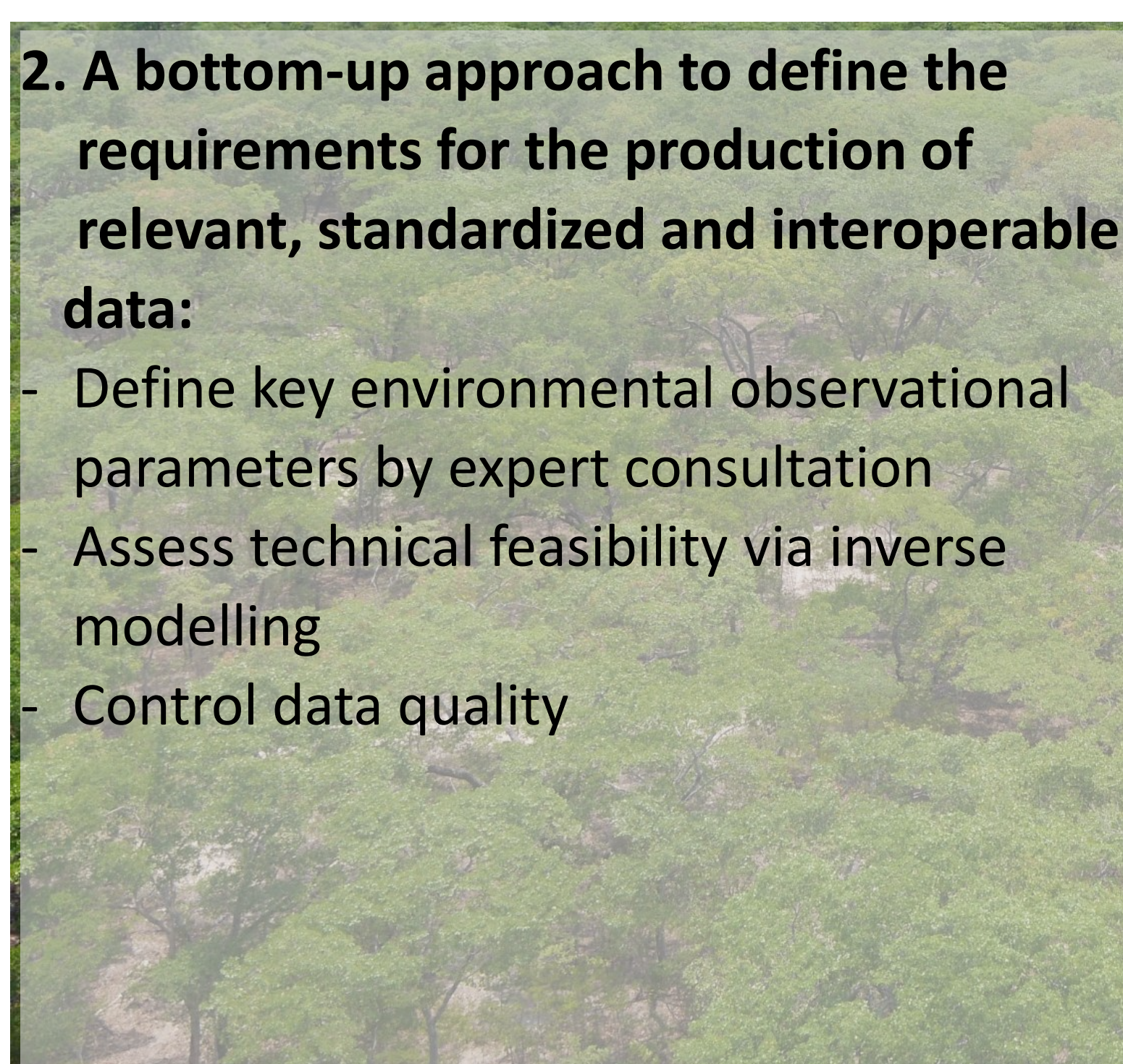
Three approaches

SEACRIFOG is an interdisciplinary research team, which is distributed across Africa and Europe. Our team comprises experts in atmospheric, terrestrial and oceanic observations. The team pursues three approaches.:




1. A top-down approach to establish a research agenda regarding climate-smart agriculture and observation of GHG emissions:

- Analyze knowledge-gaps by stakeholder consultation
- Assess current status on climate-smart food and nutrition security from livestock systems in Africa
- Identify existing networks and infrastructures by expert consultation
- Define variables by consulting experts



2. A bottom-up approach to define the requirements for the production of relevant, standardized and interoperable data:

- Define key environmental observational parameters by expert consultation
- Assess technical feasibility via inverse modelling
- Control data quality



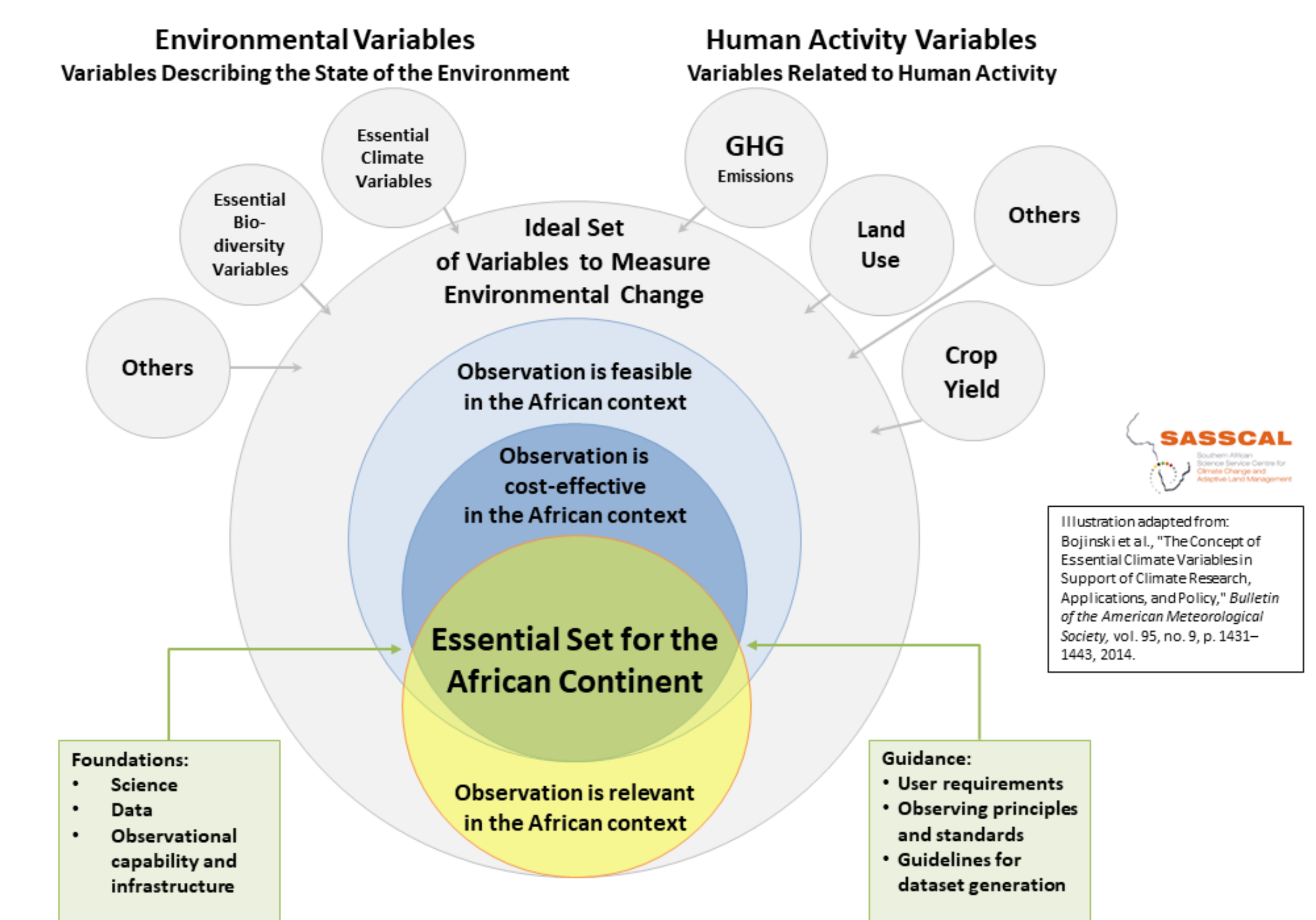
3. A practical approach to root the concept in reality:

- Design a demonstration case that will articulate different (international, regional, national) levels of climates and different (atmospheric, oceanic) components
- Perform capacity-building by trainings
- Ensure the sustainability of the proposed options by setting up a dialogue platform with national, regional and global actors, as well as innovative partners (private sector)

Definition of Key Variables

Experts of the environmental observation scientific community are asked to contribute to the collection of variables and rate those, using a specifically developed collaborative web tool. The collection and rating is the key factor for

the definition of the essential set of variables adapted after Bojinski et al. (2014) in the SEACRIFOG framework.



Inventory of existing networks and infrastructures

The collaborative web tool complies with the option to record existing and planned research infrastructures. The consulted experts are asked to contribute to the inventory of infrastructures in addition to a previous literature survey. The exact

place, biotope observed, time coverage and additional administrative data are inquired. The inventory and subsequent mapping indicate that the needed observation infrastructures in Africa are unevenly distributed, in regard of location and observed biotope.

