

CLEANED R tool: “Quick but not too dirty” modeling of environmental impacts from transforming livestock value chains

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Objective

Combining open access GIS data with participatory modeling to develop a quick and but “good enough” context specific environmental impact assessment simulation tool to explore consequences of possible livestock value chain transformations in the developing world

What level of detail is “good enough” for decision-makers?

Complex environmental models
Data intensive
Locally relevant results
Long implementation phase



Simple environmental models (single dimension)
Relies on secondary data
Too general for local relevance
Rapidly implementable

Modelling methodology

Reconnaissance tour

- Understand the local context
- Identify major drivers of change
- Identify stakeholders

Participatory workshop

- Understand how stakeholders see their livestock systems
- Understand the future ambition of stakeholders

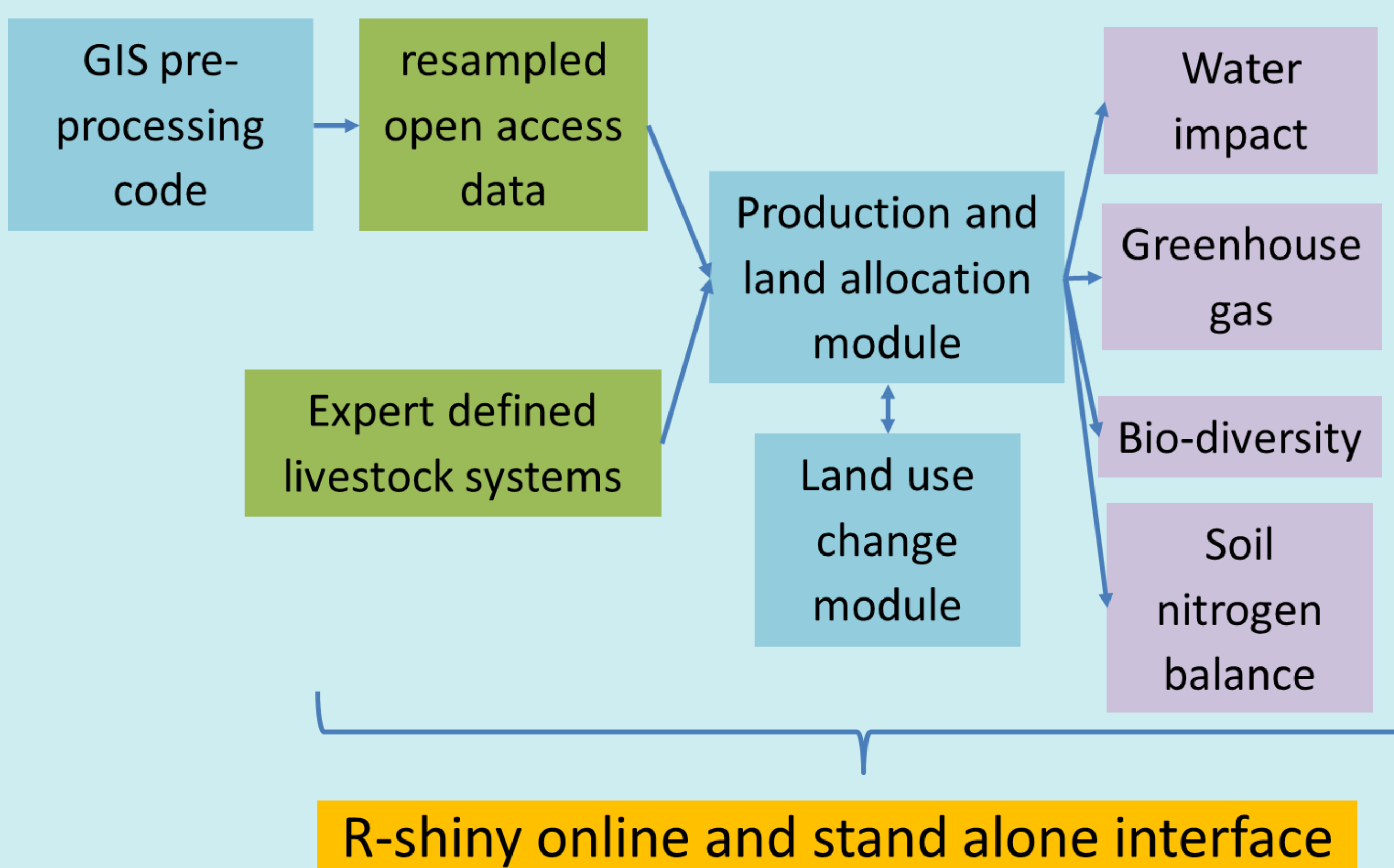
Environmental modelling

- Define the livestock categories
- Identify the relevant land use change dynamics
- Expert validation

CLEANED R tool development

- Preparing GIS layers, adjusting other parameters, defining a base run
- Expert validation

Set up of the CLEANED R tool

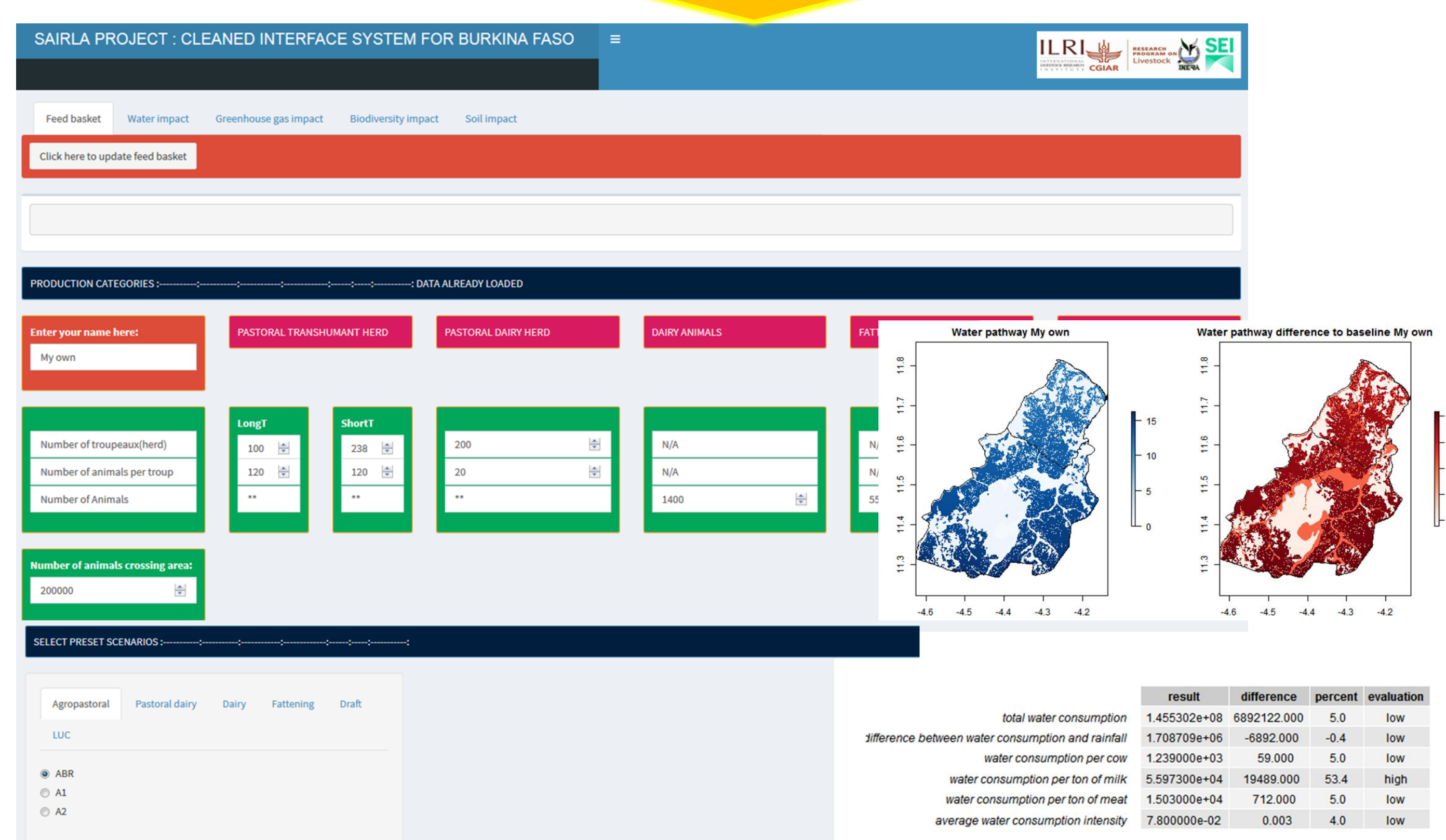


module	Model used	GIS layer
Production and land allocation	IPCC energy requirement per animal in each category Allocates the total energy to land cover based on crop and grazing land	Land cover (OSS) Maize, legume and grass productivity (GAEZ)
Land use change	Grazing land is converted to cropland based on suitability	Suitability for cropland (GAEZ)
Water	Evapotranspiration of the biomass fed to livestock	Evapotranspiration (GAEZ) Rainfall (worldClim)
Greenhouse gas emissions	IPCC tiers II computation	IPCC soil & climate layer Temperature (worldclim)
Biodiversity	UICN red list allocated to land cover	
Soil nitrogen balance	Nitrogen balance (Smaling 1993) including an erosion model (RUSLE)	Soil characteristics (soilgrids) Elevation (CSI) Soil erosivity factor (A.Vrieling) LAI (modis)

How to use the tool?

As part of a learning space with decision makers with the aim to :

1. Identify trade-offs and synergies in livestock value chains
2. Mediate existing conflict
3. Develop an inclusive and sustainable shared vision of the future



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The CLEANED-R code and tools for all countries are available via: <https://github.com/ilri/CLEANED-R/>
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