



The Technical Consortium  
for Building Resilience  
to Drought in the  
**HORN of AFRICA**

# Technical Consortium – Measuring Resilience

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# What is the Purpose of the Technical Consortium?

- ✓ Long-term focus is on enhancing resilience to drought in the Horn (develop M&E agenda)
- ✓ To provide support to IGAD in developing regional and national investment programmes for the long term development of the arid and semi-arid lands (ASALs) (Country Programme Papers, Regional Programming Framework)
- ✓ To harness CGIAR research and other knowledge around drought resilience and bring to bear on sustainable development in the Horn

# Aligning Technical Consortium Activities in the Horn of Africa

*Two main areas of work:*

- 1) Respond to the demands from IGAD Member State countries to assist in further developing the investment planning papers (Country Programme Papers) to be investment-ready and provide technical assistance for other regional investment projects
- 2) Develop an M&E system for evaluating impact of activities/ interventions toward resilience, including the following:
  - Impact indicators
  - Framework for measuring resilience
  - Methodology for prioritization of investment
  - Means of assessing return on investment

# What are we aiming for by building resilience?

- *Fostering “...the ability of countries, communities, and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses – such as ...drought or violent conflict – without compromising their long-term prospects.”*
  - Department for International Development (DfID). 2011. Defining Disaster Resilience: A DFID Approach Paper. London: DFID.

# What difference does a resilience approach make to programming?

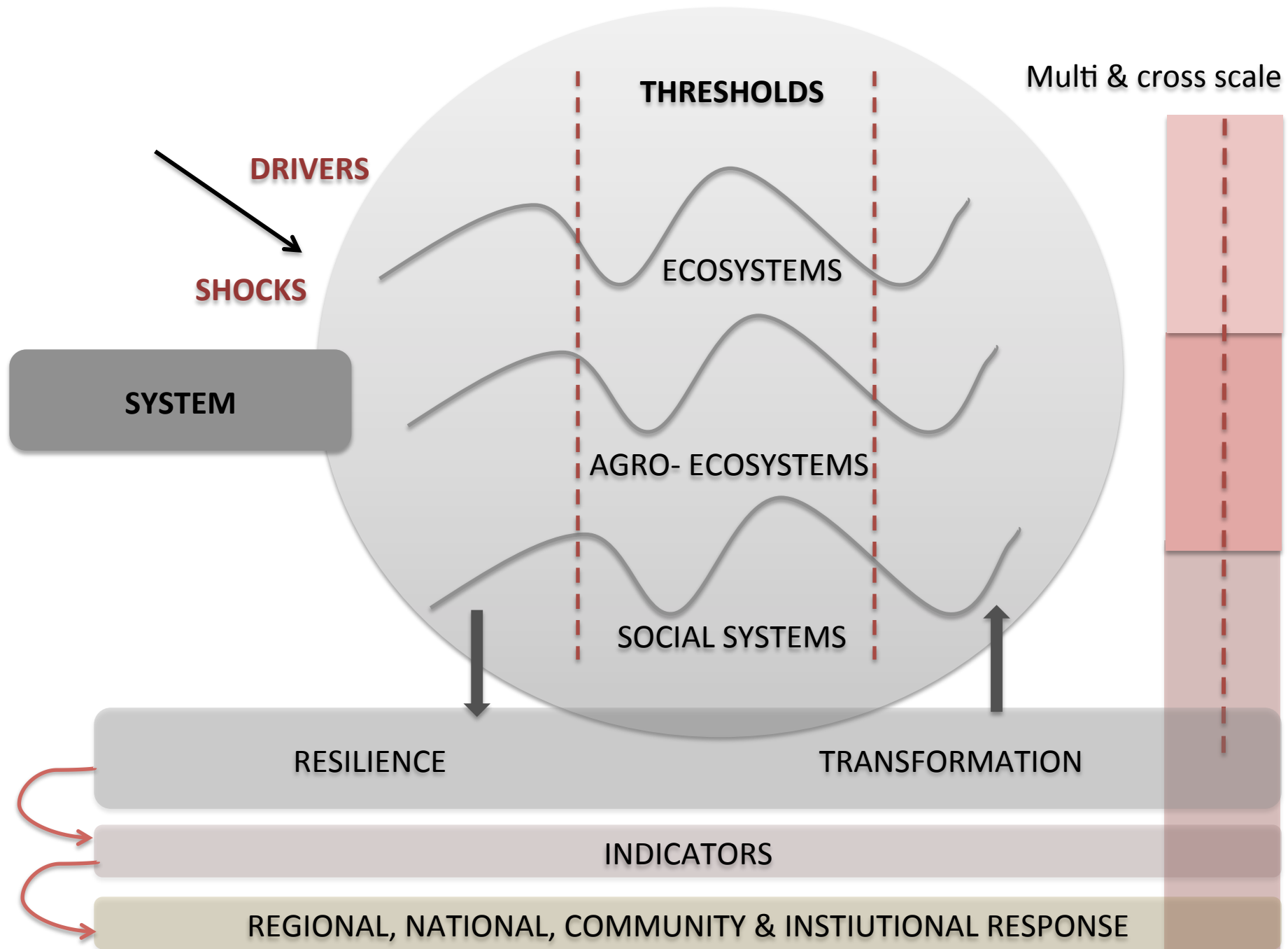
- Put adaptive capacity and vulnerability reduction at the centre
- Manage change without compromising long term prospects
- Putting people on different pathways
- Addressing root causes
- Recognize and foster learning and innovation

# Prioritizing interventions

- Resilience bridges “relief” and development (Resilience with Growth)
  - Clustering investments and interventions
- Integrated analysis across disciplines considering thresholds and tradeoffs
- Indicator base for measurement allows temporal and spatial analysis and to ‘track’ resilience

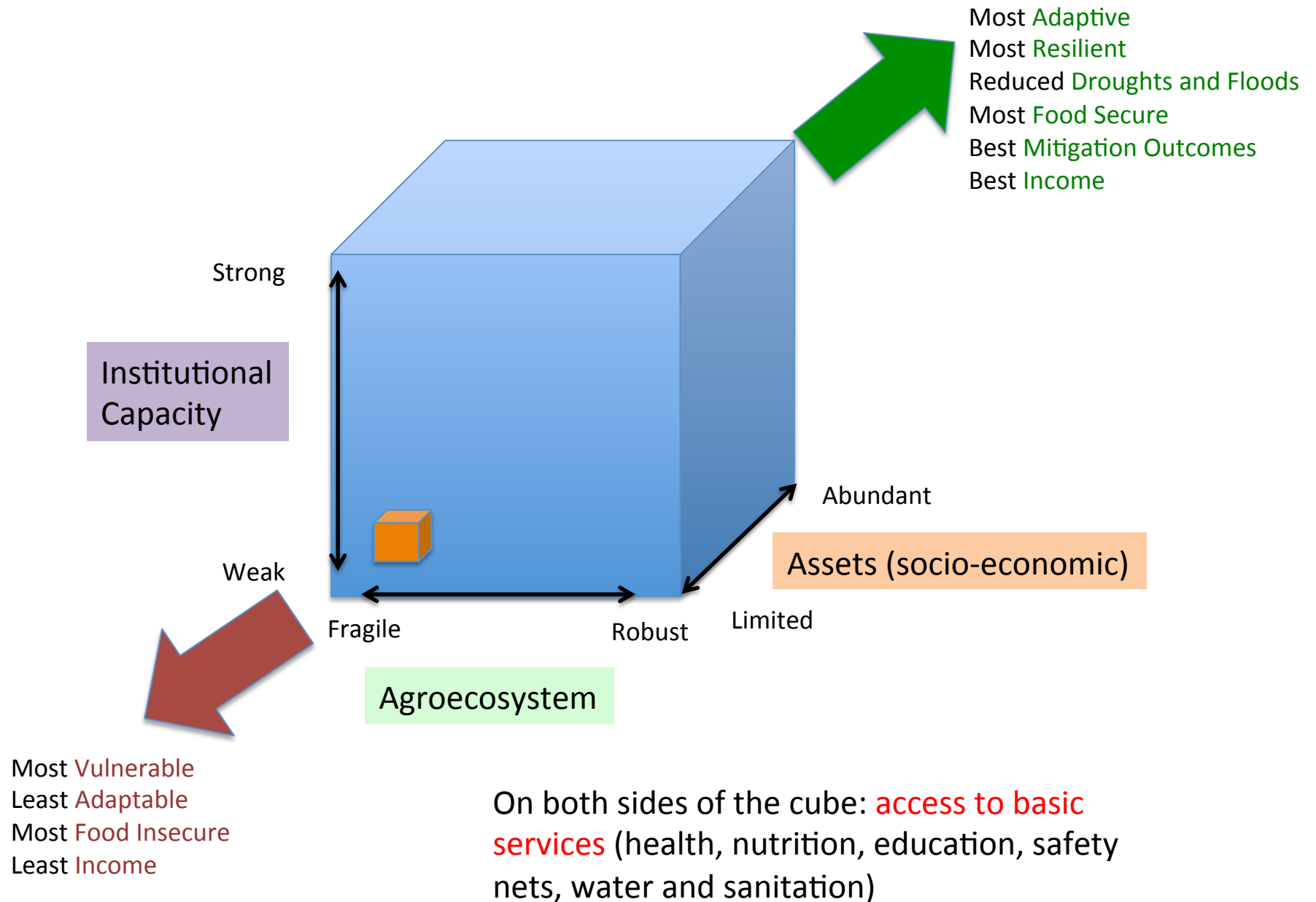
# Measuring and evaluating resilience

- Key aspects to consider:
  - How long a time period?
  - Intermediate (process) indicators as well as final outcome indicators
  - Fine scale variation versus broad scale and long term impact
  - Variables within multiple systems



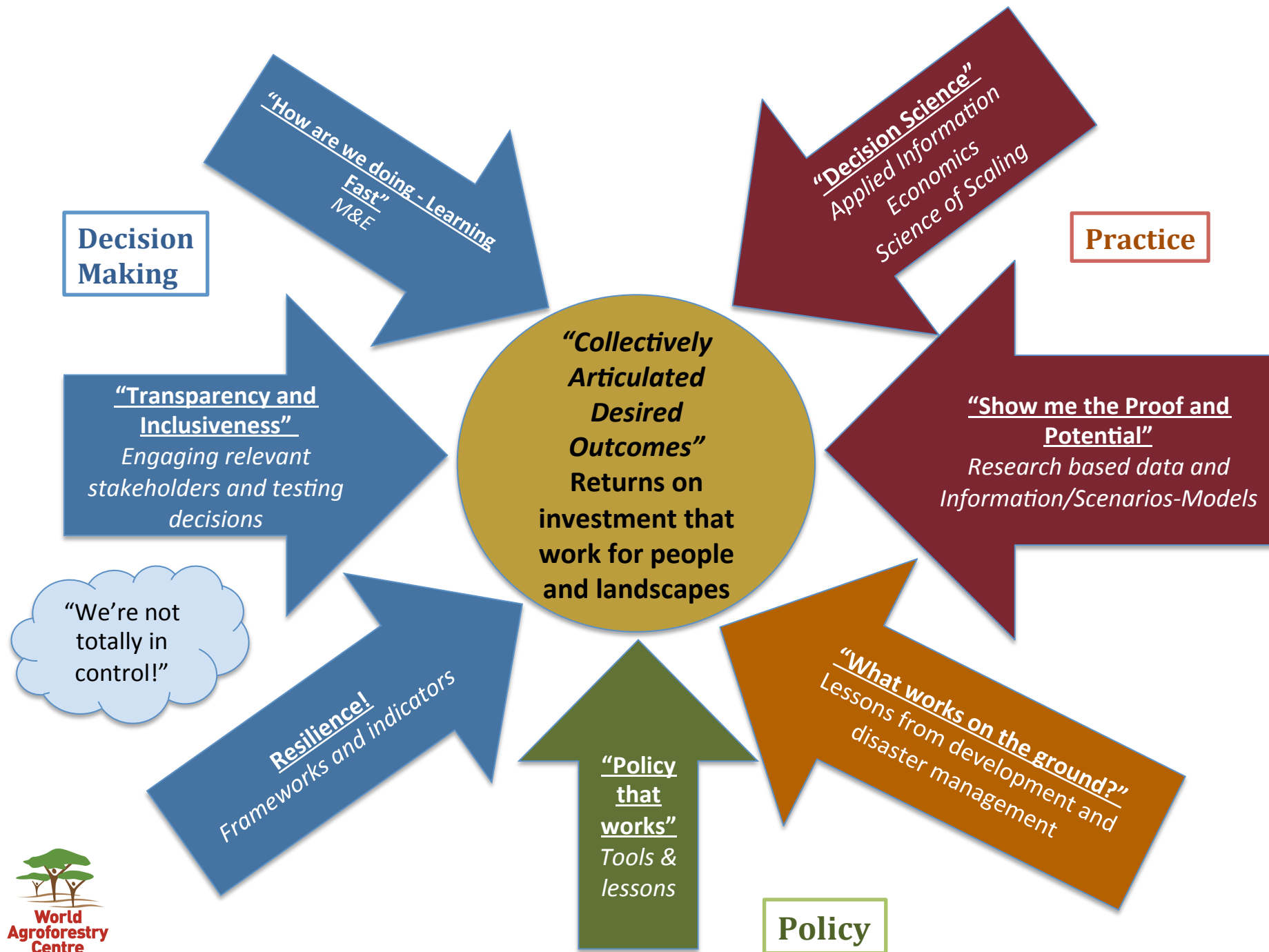


# Resilience Framework adapted from Fraser et al 2011



# Approach

- Resilience frameworks
- Expert consultation on which indicators and how to weight them – use of decision modelling as key concept
- Working with multiple CGIAR partners in Decision Laboratory



# Decision modeling

- Decision modeling defines the metrics (what do we need to measure, what can we measure, how much uncertainty is there?)
- Development of probability management systems
- A methodology to quantify information value

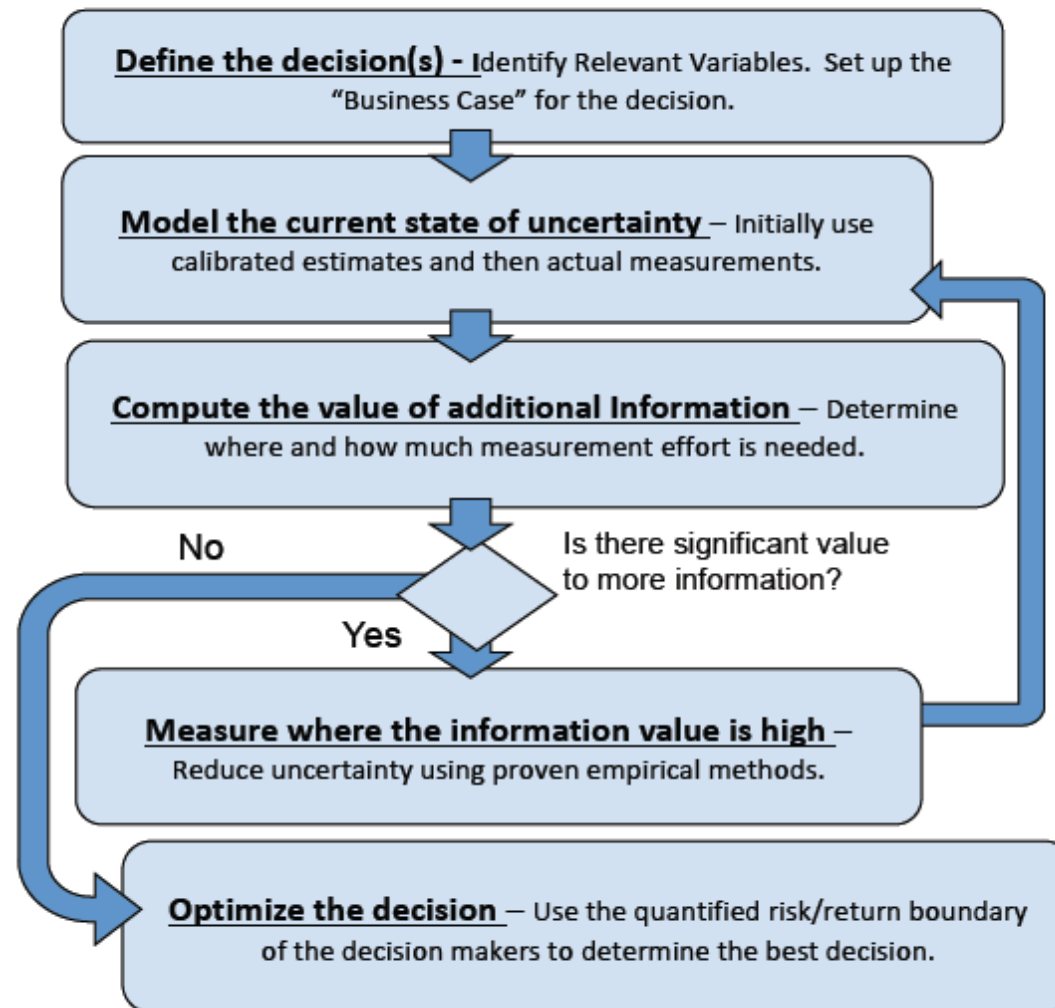
**SMART DATA** (high information data) enable  
**SMART DECISIONS**

# What do we want to know?

- How much information do we need?
- What defines whether information is unreasonably expensive?
- What is the value of doing one more survey or experiment, or collecting more data? Is it worth trying to collect more precise data or do we have enough for the decisions we want to make)
- What information has high value for improving decisions to achieve our desired outcomes?

# Decision Science

Figure 1: The Steps of The Applied Information Economics Process



# Elements of Decision Science

- **Define the Decision(s)** – What are our desirable system-level outcomes? (Food security, enhanced livestock productivity, better rangeland health, improved asset bases etc) What are we actually trying to measure? This helps us determine costs, benefits, timing, risks and even external factors to get to the core of the real decision.

# Elements of Decision Science

- **Model What We Know Now** – cost estimates, forecasts of benefits, project risks and other variables in typical big investment decisions are almost never known exactly. Can use Monte Carlo simulation to present a snapshot of the current state of uncertainty about a problem before additional measurements are made.



# Elements of Decision Science

- **Compute the Value of Information:** Not all variables in a decision model are worth measuring and those worth measuring are often a surprise to the decision makers. This approach targets only the variables in a decision that are most likely to significantly reduce overall uncertainty in the decision.

# Elements of Decision Science

- **Measure What Matters:** Relatively little data or simple observations may be required for extremely uncertain variables. Can use empirical methods such as Bayesian statistics (looks at degrees of belief or, more specifically, probabilities) which exploit prior knowledge and can be used even when data is messy or sparse. The measured variables will have less uncertainty – the model of uncertainty can then be updated.

# What to expect from decision modelling:

- You decrease the **chance** of an undesirable outcome
- You can reduce the **magnitude** of the undesirable outcome
- You are able to **defer** the undesirable outcome

# What type of empirical evidence do we need?

- Measurement is the reduction of uncertainty, it is not the Gold Standard
  - Often need different data than we think
  - Often need less data than we think
  - Even small reductions in uncertainty can have considerable value
- Expressing uncertainty dissolves assumptions & allows all benefits, costs and risks to be included, however intangible (especially ecosystems)
- There are usually only a few variables with high information value
- We are often measuring the variables that have least economic value

# Meta-Analysis of Data Availability/ Scarcity in the Horn of Africa

Review, assess and collate relevant data sources to serve as baseline in a monitoring and evaluation framework. This includes multiple layers across households, communities, district, national and regional for the Horn of Africa, e.g.:

- Livestock production including mortality and morbidity
- Markets and trade
- Demographic and population data
- Biomass
- Biodiversity
- Land degradation
- Livestock health
- Livestock Resources
- Crops
- Basic services (education, health, nutrition and water)
- Agricultural data – crop yields by major type
- Biomass vegetation cover

# Next Steps for the Technical Consortium

## **Immediately**

- Meta-analysis of data availability & gaps across the Horn of Africa
- Further develop the decision analysis model with relevance to systems variables (ecosystem, socio-economic, policy + institutional environment )
- Hold a small expert consultation – we are not saying this is the only methodology for assessing resilience, it is one that allows us to isolate the variables which are the most important, quantify uncertainties around e.g. contextuality, benefits and costs and tradeoffs.

## **Intermediate**

Work with other organizations in developing standardized databases and stochastic libraries – (meta data analysis will assist in populating this)

Ensure collaboration with national governments, RECs, initiatives such as FSIN to enable open sharing of data and ensure stewardship of this resource by the Member States

This will enable the database to be maintained, the frequency of collection established and national governments and central statistics agencies to feed into it

## **Longer term**

Develop the decision modelling tool with common variables and systems

Carry out trials in two sites (northern Kenya and southern Ethiopia) of the tool