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Capacity Building in Earth Observation: from Outcomes to Impact and Sustainability

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(NASA SERVIR & ITC)

Session: **Friday, 14 December 2018; 16:00 - 18:00**
PA54A: Enhancing Environmental Management Decisions, Actions, and Policy by Building the Capacity to Use Earth Observations I, the Marriott Marquis; Marquis 3-4

Photograph: NASA/REID WISEMAN/EPA

ITC UNIVERSITY OF TWENTE.

SERVIR

What and Who is SERVIR?

"Connecting space to village"

A joint initiative of USAID and NASA that partners with regional technical institutions around the world to get Earth observation information into the hands of decision-makers to improve development outcomes.

- Societal benefit from space
- 20+ satellites, data free and open
- Major research portfolio
- Limited internationally

- Poverty reduction and resilience
- Working on data-dependent issues in data-scarce places
- International field presence

Regional hubs

adpc · RCMRD · ICIMOD · CILSS

Hub partners

Spatial Informatics Group · SEI Stockholm Environment Institute · Deltares Enabling Delta Life · CERSGIS · CSE 30 ans Centre de Suivi Ecologique · ICRISAT · ACMAD · RECTAS

Private sector partners: Google · esri · DigitalGlobe · aws

Research collaborators:
19 universities and research centers located in 14 states (in the U.S.)

ITC FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

Established: 1950 - Appeal by UN in framework of official development assistance – ODA (joint UT in 2010)

Aim: Build capacity for economic development in developing world

Main field of science: earth observation, geoinformation science applied to problem-solving in earth sciences, natural and water resources and urban studies (disasters, climate adaptation, water/food security, urbanisation)

Achievements: 23 000 alumni (predominantly) mid-career professionals from 170+ countries

Key numbers: 245 staff, 143 PhD, 200 MSc (150 in house)

Awards: No.9 of the world in 'remote sensing' in Shanghai Subject Ranking
Top rated master program MSc GEO 2015 – 2018
Participating Organisation in GEO for Capacity Development

Source: ITC corporate presentation

UNIVERSITY OF TWENTE.
FACULTY ITC

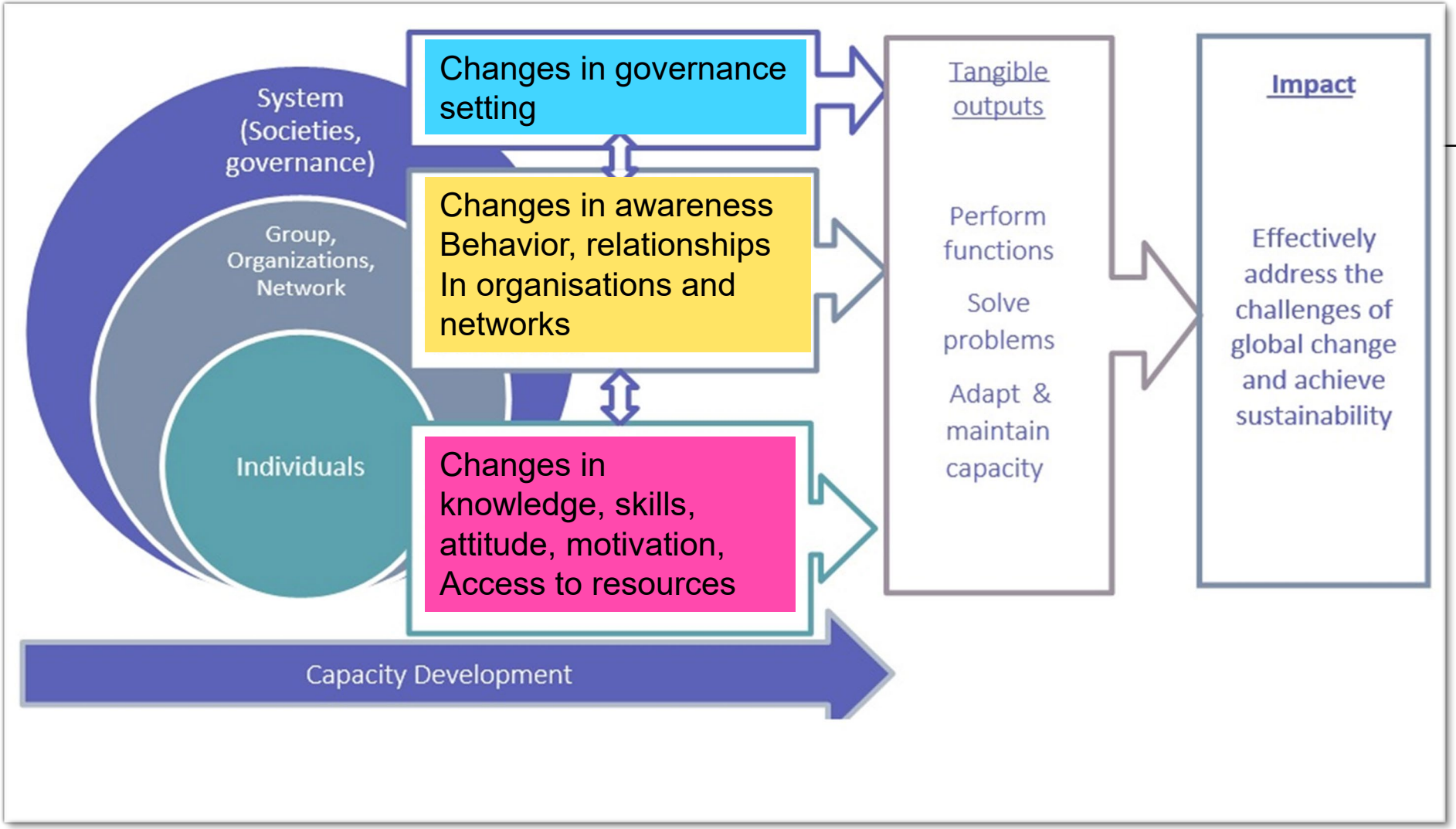
Definition of Capacity Development/Building:
UNCED: to enhance the abilities of stakeholders to evaluate and address crucial questions related to policy choices and different options for development.
UNDP: it is about transformations that empower individuals, leaders, organisations and societies.

A holistic approach to CB: Capacity strengthening on **3 levels** individual, organizational,and institutional level

A needs-oriented approach to CB: Equal partnership and shared responsibilities by **Co-Creation**

A result-oriented approach to CB: **Impact**-orientation by promoting a Theory of Change model

Self sustainable

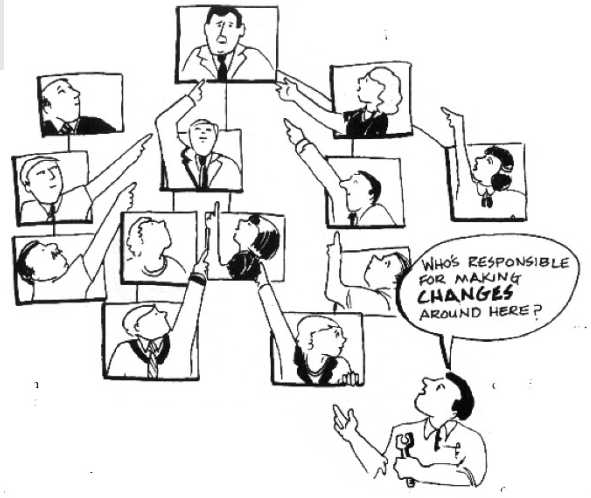

System (Societies, governance)
Group, Organizations, Network
Individuals
Changes in governance setting
Changes in awareness Behavior, relationships In organisations and networks
Changes in knowledge, skills, attitude, motivation, Access to resources
Capacity Development
Tangible outputs
Perform functions
Solve problems
Adapt & maintain capacity
Impact
Effectively address the challenges of global change and achieve sustainability

Organizational learning is a **fundamental pillar** of a holistic approach to capacity development.

The CAPABILITY to adapt and self-renew requires that **people and institutions learn from experiences,** share information and improve themselves.

A learning organization is “an organization where people continuously **expand their CAPACITY** to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free and where people are continually learning to see the whole together”.

A learning organization improves and grows based on its **own experiences**. It can be applied to any people-oriented entity: institution, network, cooperative, association, etc.

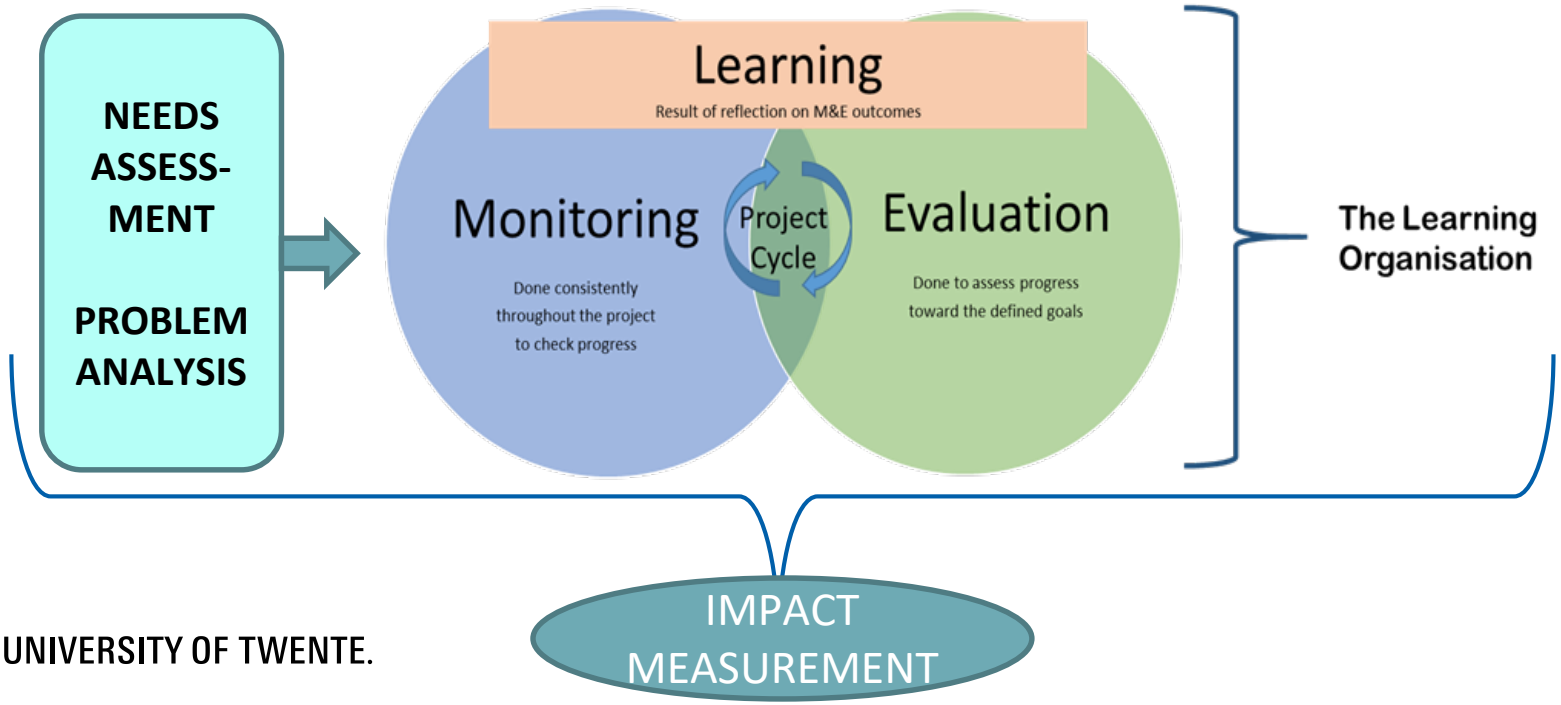


TO MEASURE RESULTS OR IMPACT OF CB ACTIVITIES, THESE SHOULD:

-BE REFERENCED BY A NEEDS ASSESSMENT AND PROBLEM ANALYSIS TO DEFINE THE DESIRED CHANGE

-BE MONITORED AND EVALUATED IN A STRUCTURAL WAY

-CONTRIBUTE TO THE CONCEPT OF "THE LEARNING ORGANIZATION"



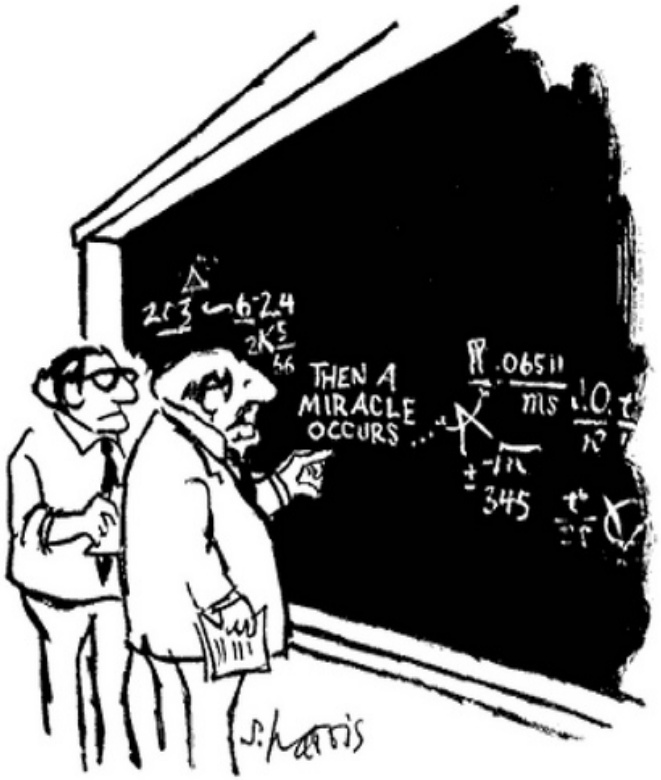
“THEORY OF CHANGE” ADOPTED BY SERVIR & ITC

Theory of Change is a description of how and why a desired change is expected to happen in a particular context.

Focus on mapping out or “filling in” what has been described as the “missing middle” between what a program or change initiative does (its activities or interventions) and how these lead to desired goals being achieved.

Reflects a complex and systemic understanding of development.

Promotes reflection on our assumptions on cause-effect relations.



“I think you should be more explicit here in step two.”

inputs → Black Box → impact

BASIC PRINCIPLES OF ToC COMPARED TO LOGFRAME

THEORY OF CHANGE	LOGFRAME
Critical thinking, room for complexity and deep questioning	Linear representation of change, simplifies reality
Explanatory: A ToC articulates and explains the what, how, and why of the intended change process, and the contribution of the initiative	Descriptive: A Logframe states only what is thought will happen / 'will' be achieved
Pathways of Change, 'unlimited' and parallel result chains or webs, feedback mechanisms	Three result levels (output, outcome, impact)
Ample attention for the plausibility of assumed causal relations	Suggests causal relations between results levels without analysing and explaining these
Articulates assumptions underlying the strategic thinking of the design of a policy, programme or project	Focuses on assumptions about external conditions

http://www.theoryofchange.nl/sites/default/files/resource/hivos_toc_guidelines_final_nov_2015.pdf

FROM IMPACT TO SUSTAINABILITY – FROM SPACE TO VILLAGE

EO developments

- **Availability** → many more satellites: e.g. EC Copernicus, small sat constellations
- **Accessibility** → ICT, the Cloud
- **Adaptability** → standards, adaptable usage (GIS/mobile)
- **Affordability** → free/low cost data, lower cost value adding
- **Acceptability** → fit-to-purpose, increased quality level

Challenges in EO capacity building

- **Last mile**: delivery to users, communications with the user
- **Usability**: creating direct impact for user
- **Sustainability**: business model, license to operate

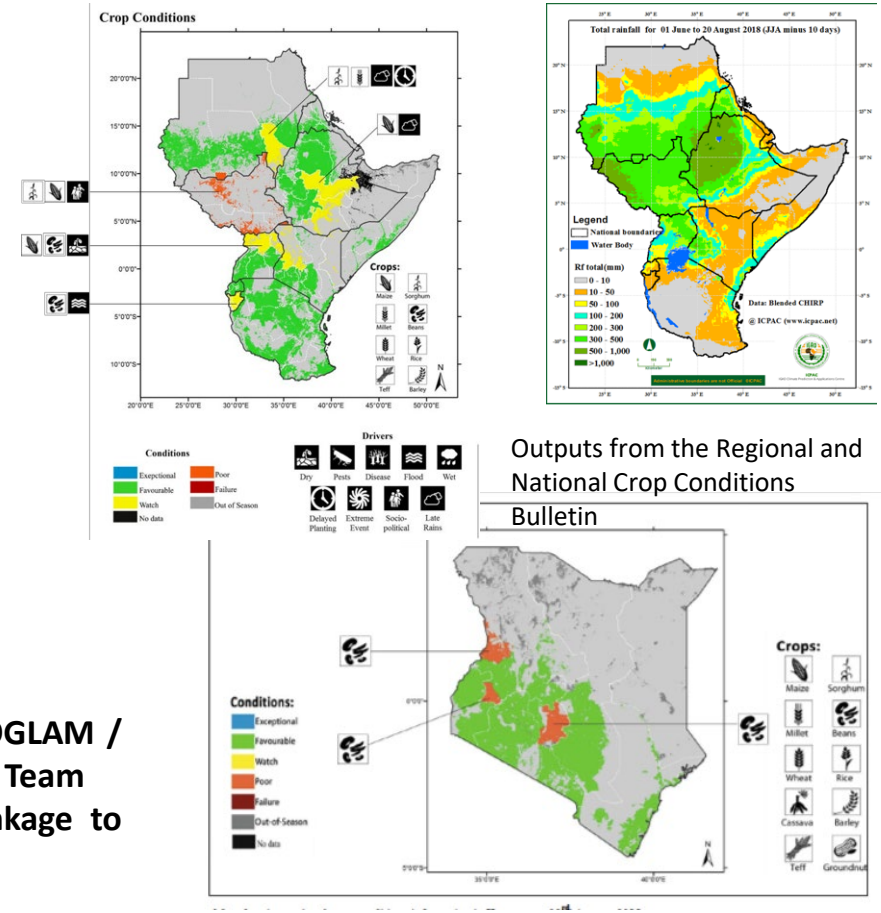
Enhancing Crop Monitors for Early Warning

Objective: Development of national and regional crop monitors by SERVIR-Eastern & Southern Africa that combines Earth observations-based productivity indicators with FEWSNET food security assessments and national in-person reports to generate crop conditions and their drivers (pests, drought, conflict).

- **National** - Provide information for national reporting mechanisms through crop condition monitoring
  - Development of bulletins and reports for high level decision-making that uses SERVIR-generated crop type maps for major crops.
- **Regional** - Link crop conditions to pre-season quarterly climate outlook at the regional climate outlook forums.

Outcomes:

- **Implementation of the national crop monitor with GEOGLAM / University of Maryland through SERVIR Applied Sciences Team**
- **Implementation of the regional crop monitor and linkage to regional climate outlook forums**

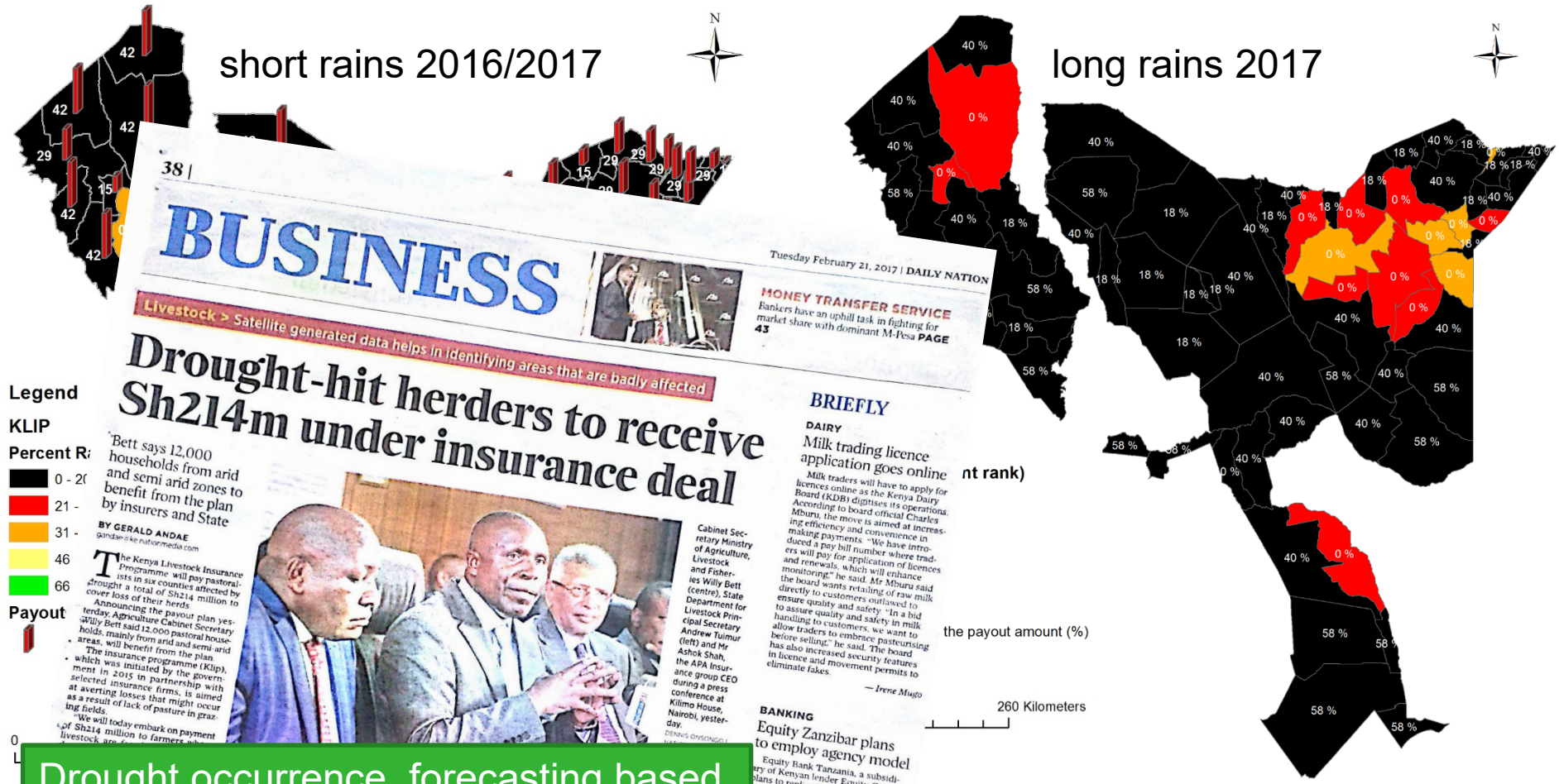


Outputs from the Regional and National Crop Conditions Bulletin

USERS: PASTORALISTS IN ETHIOPIA

short rains 2016/2017

long rains 2017

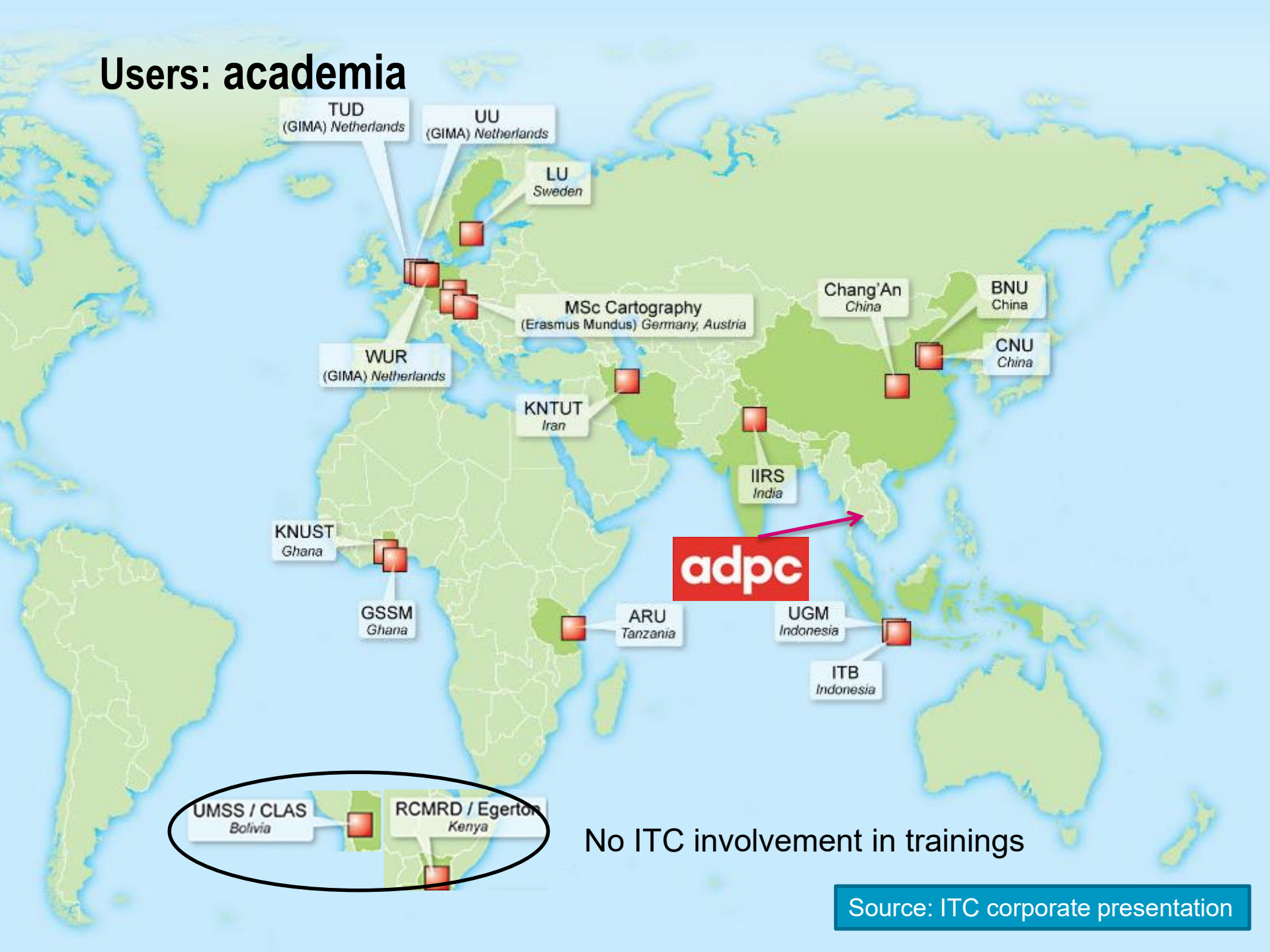


Drought occurrence forecasting based insurance product using forage scarcity index as a measure of area-average seasonal forage availability

>3m USD to 14000 beneficiaries

Anton Vrieling, a.vrieling@utwente.nl

Users: academia



No ITC involvement in trainings

Source: ITC corporate presentation

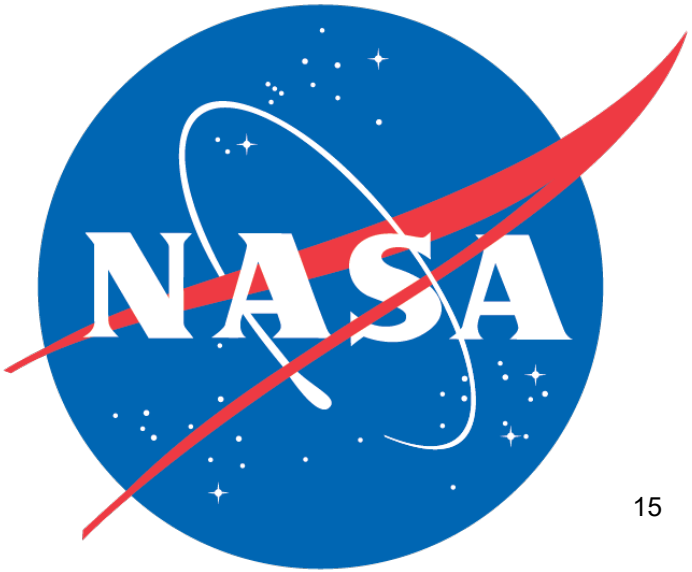
TAKE HOME MESSAGES

- A user needs assessment is important to identify the **changes** envisaged and to ensure an **impactful** CB program based on **co-creation** and **equal partnership**; the theory of change helps to achieve this.

- Bringing EO to the end users (**the last mile, from space to village**) calls for creating **direct impact for users** and a **business model** that ensures long term sustainability.

Memorandum of Understanding between NASA SERVIR and ITC

- COOPERATION ON CAPACITY BUILDING AND USING EARTH OBSERVATION DATA AND GEOSPATIAL TECHNOLOGY FOR CLIMATE RISK MANAGEMENT AND LAND USE
- ….aims joint development of training, strengthening institutional and regional capacity building, and conducting research in SERVIR Hub regions in four (4) Thematic Service Areas: Agriculture and Food Security; Water Resources and Hydroclimatic Disasters; Land Cover and Land Use Change and Ecosystems; and Weather and Climate.



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The world of ITC is the world

SERVIR

Thank you for your attention

SERVIR: Diverse Team from Across the Globe

ITC