



Increasing Agricultural Productivity and Resilience Through Effective Dissemination of Agro-weather Advisory Services in Ethiopia

Pilot experience from the EIAR-World Bank intervention in improved communication Tool

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Outline

- Introduction
- Re-imagining Ethiopian agriculture through climate information services
- Putting weather forecasting in context
- The National Research System is a Key Development Support Provider
- EIAR- world Bank experience on establishment of communication tool system for agro-weather advisory services extension
- Findings
- Challenges
- Opportunities
- What is ahead us?



Objectives of the presentation

 Sharing experiences, challenges, opportunities and lessons from the EIAR-World Bank collaborative project on communication component of the agro-weather advisory services extension until **farmers doorsteps.**

 To promote demand for climate information among agricultural communities



Introduction

- Historically Ethiopian economy clings to agriculture (neither petroleum nor fossil fuel); **High potentials to be exploited**
 - ❖ Impressive water resources (12 river basins)
 - ❖ 73.6 million ha of land mass suitable for agriculture
 - ❖ 16.4 million ha suitable for annual and perennial crops (Deressa, 2006)
 - ❖ About 8 mil. ha for rain-fed crops annually.
- **Majority of agricultural activities** carried out under rain-fed system which is highly variable and risky,
- **Climate and weather** have either been very good servants, or turning ruthless masters, exerting anger in extremes rendering agriculture to be a risky business and
- Also dominated by small scale farming; which is capital constrained



Introduction...



Majority of the challenges identified:-

- Poverty trap makes a major factor hindering smallholder farmers ability to benefit from improved agricultural technologies
- Ethiopian farmers also lack basic services on tailored and integrated climate information services
 - ✓ Lack of awareness and knowledge.
 - ❖ *The mental model construct 'If it rains I will plant, if it doesn't rain, I don't, so why do I worry about climate information'*
 - ✓ Lack of tailored forecast information itself,
 - ✓ Lack of trust on the forecast products (in terms of quality)
 - ✓ Lack of effective Communication Tools and institutional setting



Introduction.....

- This lack of climate risk management practices must have shunned progresses from achieving high productivity per unit area
 - A significant trailing behind world best practices
 - ❖ Technology generation and development locked into conventional practices (known as one ton farming)
 - The recent development in Ethiopian agriculture are attributed to **improved material** technologies
 - ❖ Seeds, feeds, fertilizer, pesticides etc.



Re-imagining Ethiopian agriculture through climate information services extension



- It's not only material technology that increases productivity
- ✚ But also, information for informed decisions (unlocking the potential productivity of Ethiopian agricultural resources)
 - ❖ Market information
 - ❖ Seasonal climate and weather forecasting for seasonal decisions



Climate forecasting in context to agriculture

- **In the 21st century, climate information service extension :-**
 - ❖ is becoming *indistinguishable* from the well founded seed and fertilizer service extension worldwide
 - ❖ in many countries climate information service has already ballooned to the **Climate Services Program**, i.e. well institutionalized
- **Tailored Climate Services Program defined**
 - ❖ a broader term that encompasses the dissemination of relevant weather and climate information, coupled with a range of advisory meaning coined to it, to enable decision-makers to understand and act on the information within a suitable enabling institutional setting (CCAFs Report No 13, 2013).



History of climate information services in Ethiopia

- The first forecast was publicized by the National Meteorology Agency (NMA), through various mass media on May 29, 1997 (Wolde Georgis et al, 2000).
- A preliminary research on El Niño was motivated by the desire to make long-range forecasts for the country (Kassahun, 2000), with the severe drought in 1983-84 (28 years old),
- Application of tailored forecast information is receiving attention only recently



National Agricultural Research System is a Key Support Provider to Agricultural Growth

❖ Research focusing on development of climate change adaptation and mitigation responses at scales:-

✓ Policy and farm level.

• Member of the National Task Force/ Platform

MoA, NMA, ATA, Agricultural Research, Universités

• Promotion of regular (dekadal) agro-weather advisory services extension to the selected regional states and farming zones



EIAR has taken the precedence in enhancing application of climate information for farm level decision making

- Two most documented achievements with respect to demonstrating the potential benefits of agro-weather advisory service extension

1) The EIAR-Rockefeller Foundation project in four regional states of Ethiopia since 2010

Forecast → agronomic/technological meaning → dissemination → implem.

(Forecast community

Research

MioA

Farmers

2) EIAR-World Bank collaborative intervention

- Establishment of **communication tools** for dissemination of climate information at individual farm level (SMS and Interactive Voice Response System /IVRs)



Promising evidence from the EIAR, Rockefeller Foundation and World Bank projects

Our vision

To see the vast majority of Ethiopian smallholder farmers benefited from the integrated and sustainable provision of tailored climate and weather information services at individual farmers level



Rationale

- ❖ One of the most important strategies for mitigating risks is the use of **seasonal climate predictions and weather forecast services extension** for planning, early warning and formulating response strategies according to potential of a given growing season.
- ❖ Though there are several sources of forecast (National, Regional and International), generally weather forecast products are not in tailored form to be readily used by farmers

✚ **Global:** International Research Institute for Climate Prediction and Society (IRI) and National Oceanic Atmospheric Administration (NOAA)

✚ **Regional:** IGAD Climate Prediction and Application Center (ICPAC) for the Greater Horn of Africa (GHA)

✚ **National:** Country specific services



National Meteorological and Hydrological Agencies



Rationale...

- Pre-cultivation and crop growing phases decisions are important (can not be postponed)

‘Let’s wait for the time, as time can not wait for us’

‘to be early warned is to be early armed’

- Represent a substantial allocation of resources, and have a wide range of consequences that impact farmers productivity
- Given the agro-weather advisory services on good practices provided to them, farmers make improved decisions on:-
 - Land preparation (pre-season)
 - **Weather based insurance transe transaction and credit services**
 - Crop culitvar choice
 - Optimum planting date
 - Optimum planting density (seed rate per unit area)
 - Optimum fertilizer rate and time of application
 - Soil water management in the event of extended dry/wet spells during crop critical growth stages
 - Diseases and insect pests manangement
 - Harvesting and marketting related decisions



EIAR-Rockefeller Foundation Project

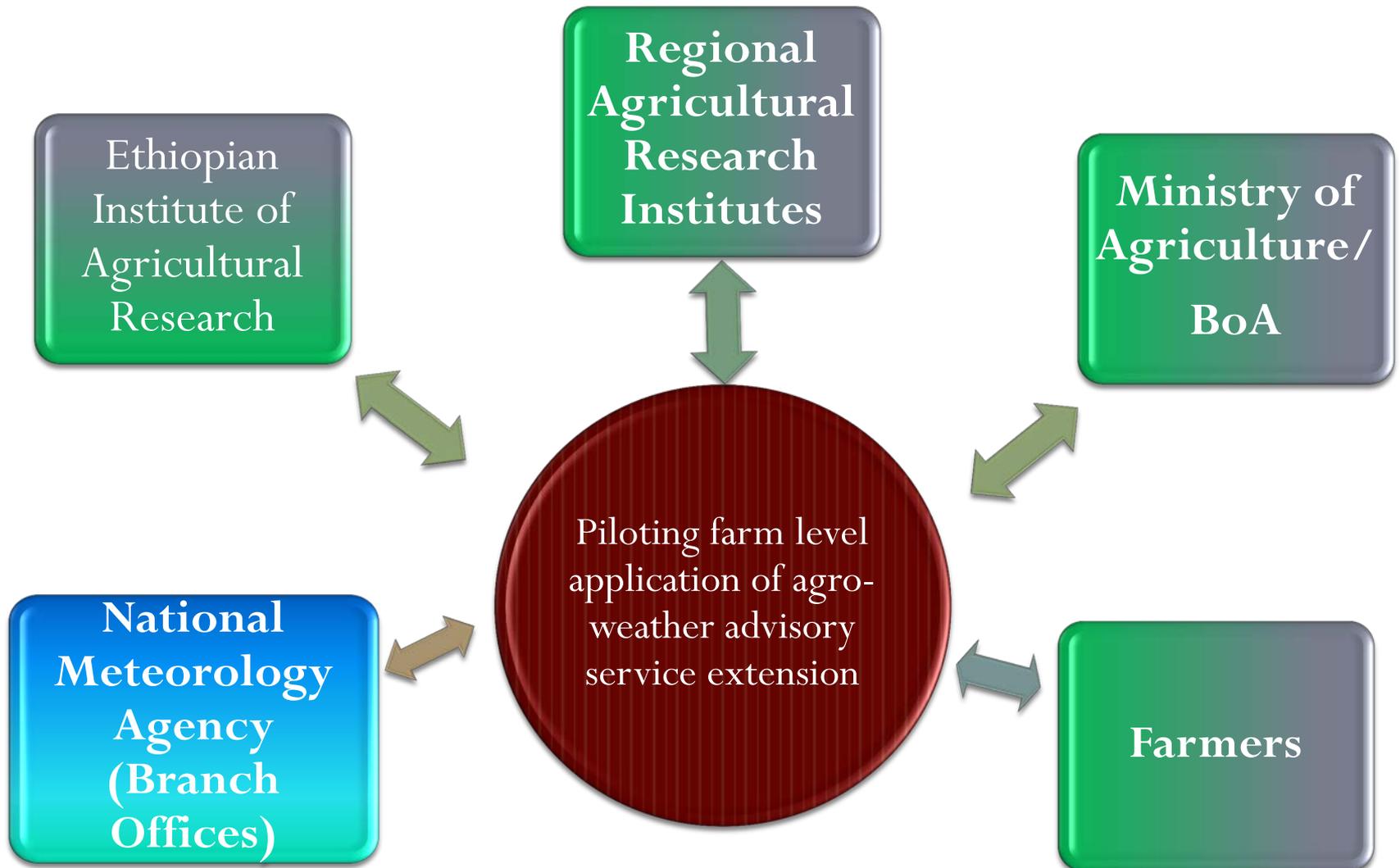
Objectives

-  To measure values of climate information and associated advice in enhancing agricultural productivity
-  To learn from the processes, challenges through climate change adaptation mainstreaming project

Formed the basis for the EIAR-World Bank collaborative project



EIAR-Rockefeller Foundation Project implementing Partners

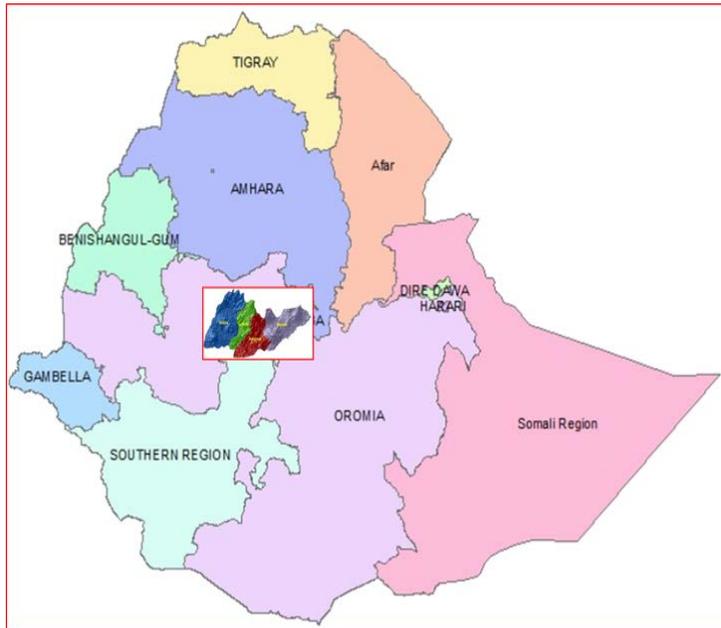




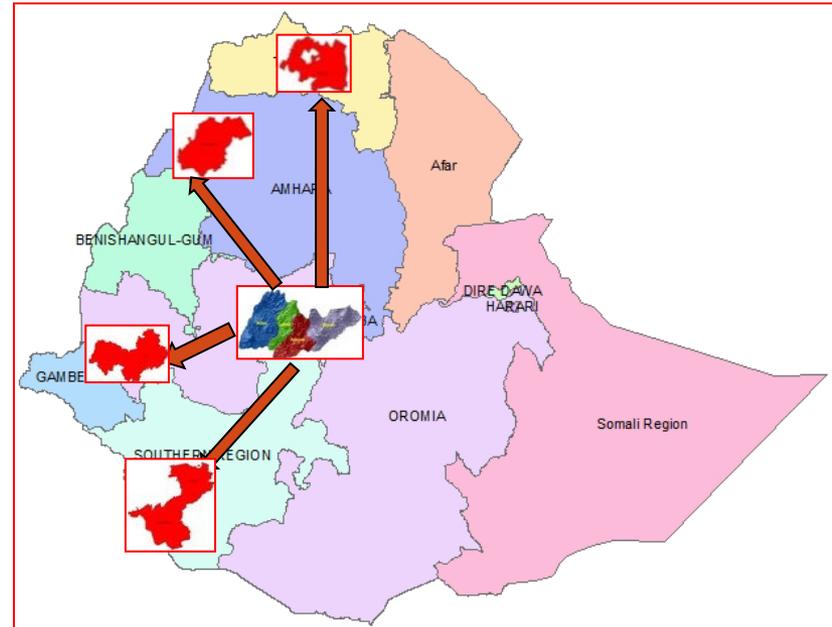
Methodology

Pilot Implementation Woredas/ Districts

2011 Oromia -> Expansion-> 2012-13-14-15



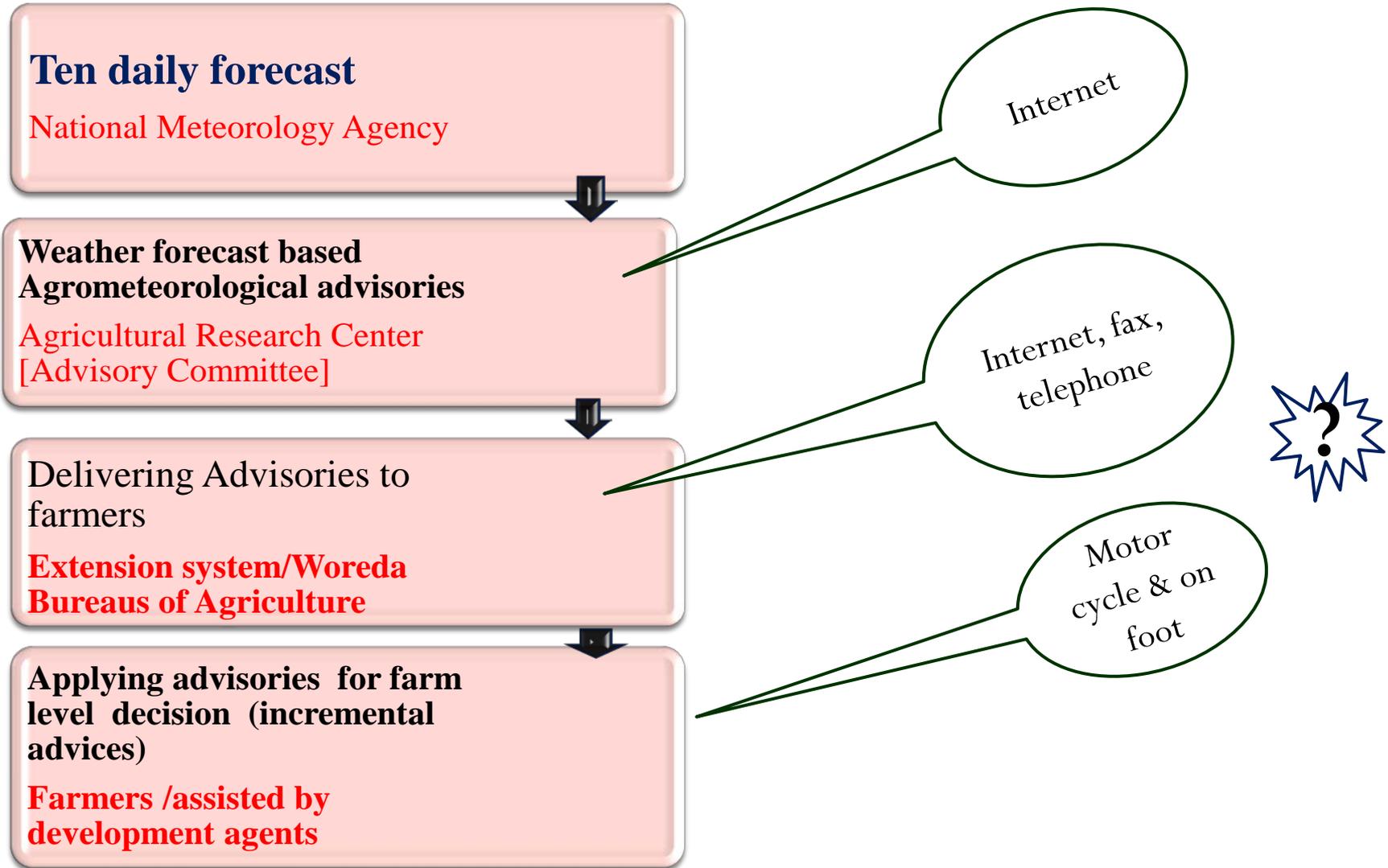
- 4 Woredas' BoA
- 48 Farmers
- 1 Agric- Research Center(Melkassa)
- 1 NMA Branch Office (Adama)



- 11 Woredas' BoAs
- 296 Farmers
- 5 Agric- Research Centers
- 5 NMA Branch Offices



Communication tools for in-season dekadal forecast and advisories dissemination tools





Findings/evidences



- The two stages based cumulative agro-advisory services in point were found valuable in improving farmers decisions and actions

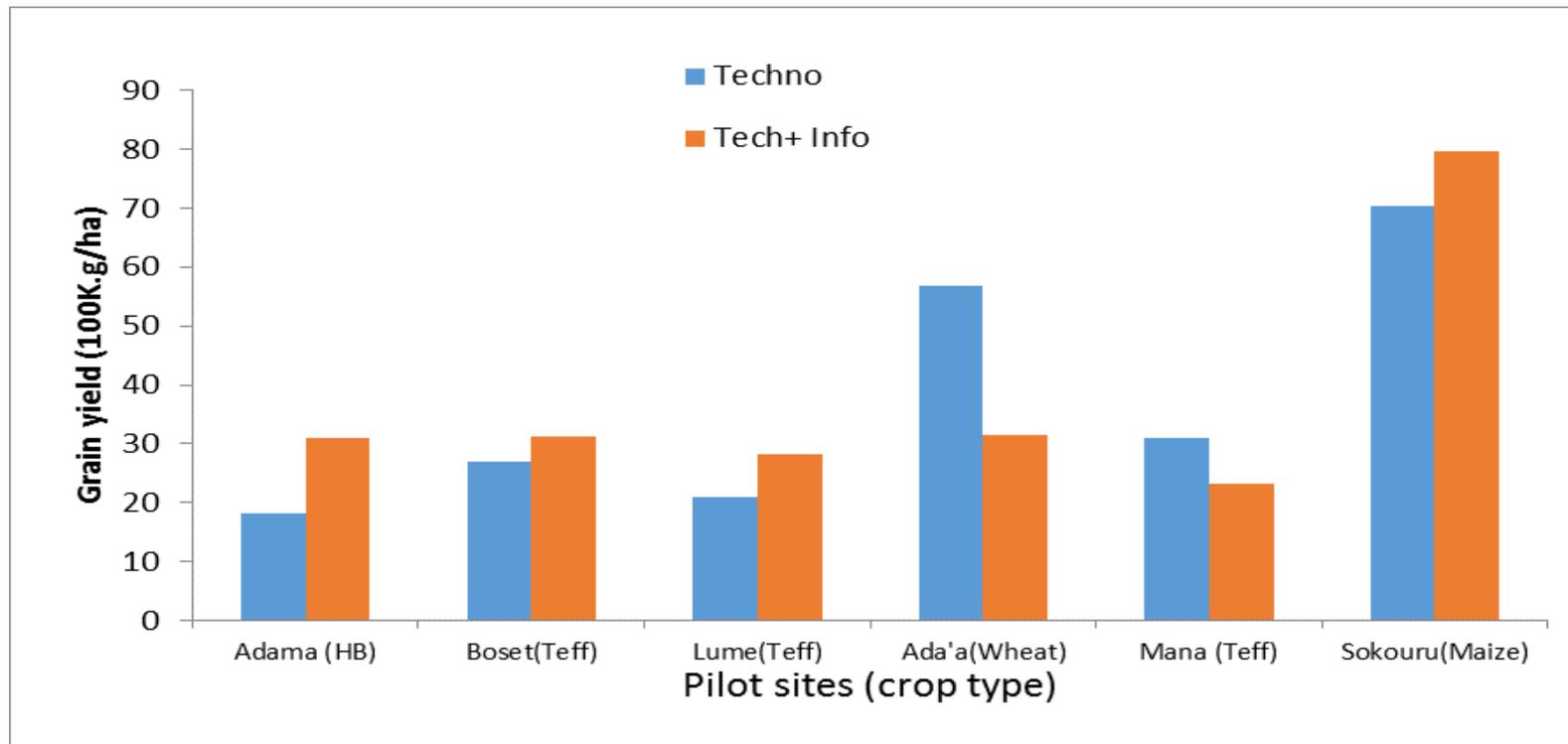


Figure 1: Yield comparison between Technology and Technology plus agroweather advisory service provision in farm ;level decision making



Finding /evidences

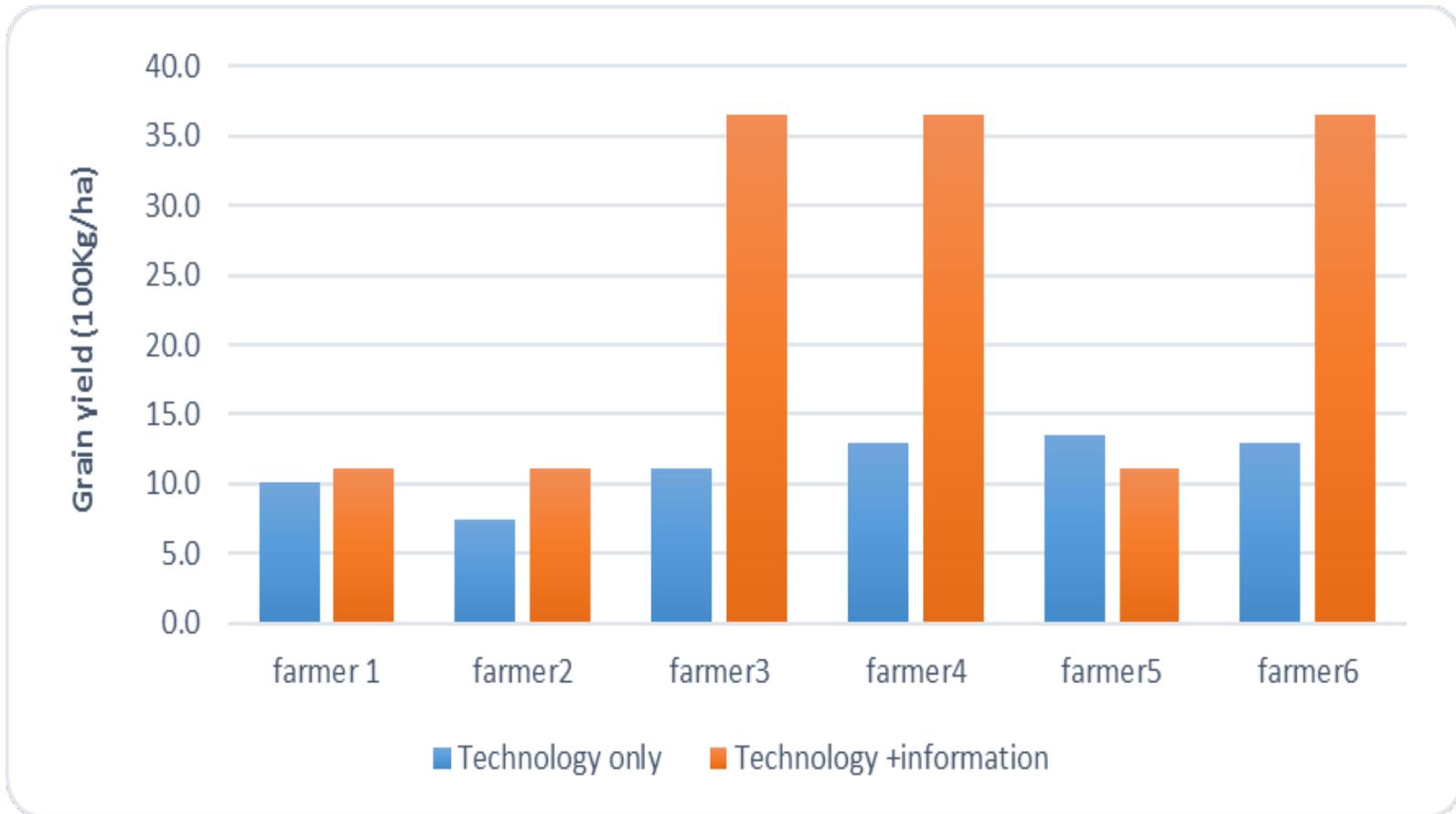


Figure 2: Grain yield of Wheat in Enderta pilot district, Tigray



Challenges encountered: Key to success



- Agro-weather advisory service dissemination channel was demanding
 - ✓ SMS, email, hard copies and traveling
- The approach was demanding on human resources and required relatively high input from experts:
 - Delays in delivering advisories to farmers (info turning obsolete)
 - Bringing together members of the advisory committee.
- Lack of trust and motivation among partner institutions. We suppose complementarity among key institutions
 - Research → generates evidences
 - Policy makers → use evidences to decide how best align institutions
 - NMA & MoA → operationalize (scale up) the service



EIAR- World Bank experience on establishment of communication tool system for agro-weather advisory services extension

More specific objectives , but the same goal

- To improve **communication tool** for timely dissemination of agro-weather advisory services at localized scales (info do not turn obsolete)
- To learn from opportunities and challenges associated with communication tools
- To identify key improvement areas for good quality climate information service delivery

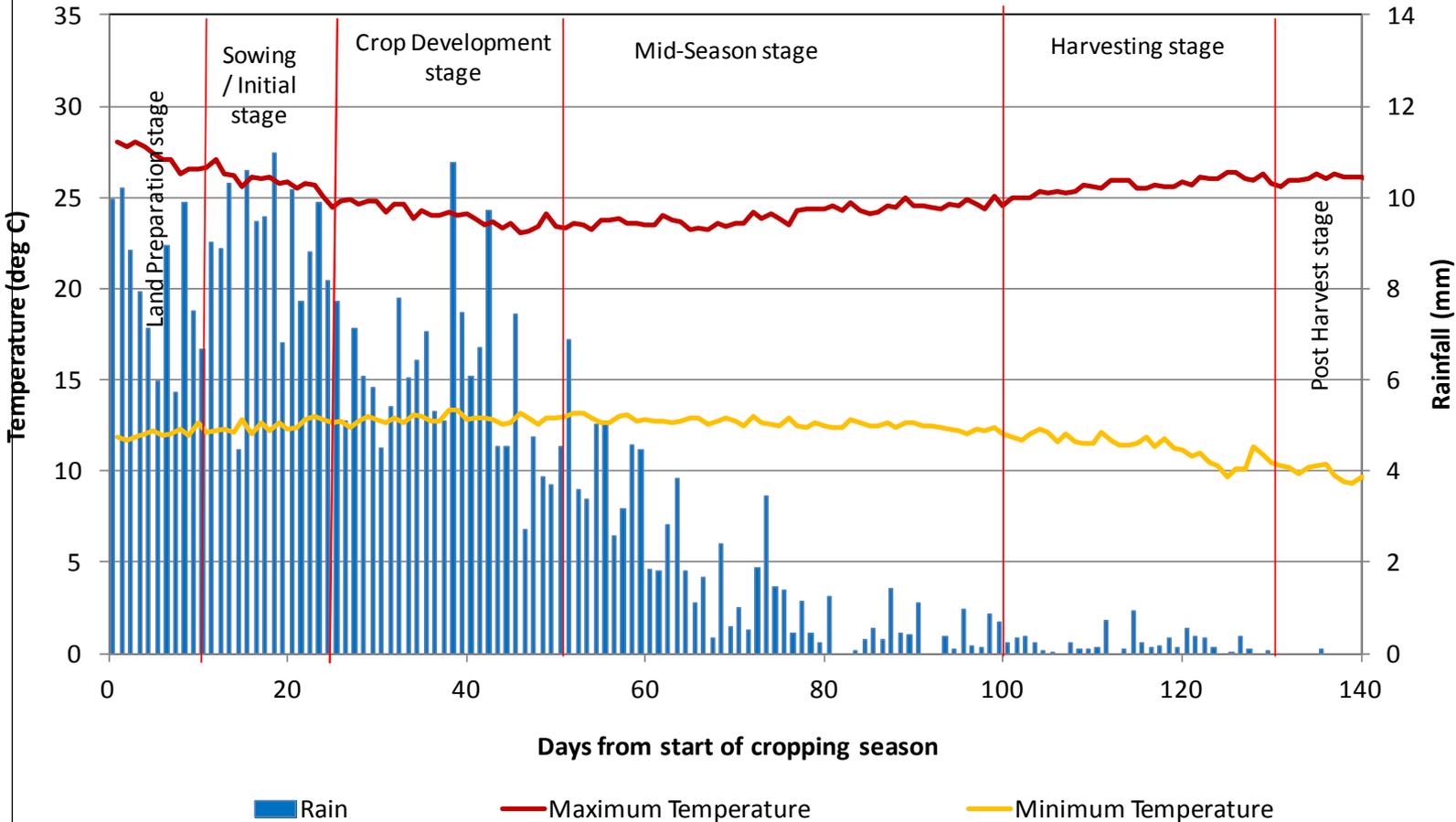
Approaches in Agro-weather advisory service development

- Installation of the system at the EIAR HQs and linking with Ethio-Telecom service (RMSI)
- Development of communication tools
 - SMS (8100)
 - IVRS (8325)
- Local climate characterization & understanding (see graph)
 - All of the advisories are based on the deviations of the weather in the cropping calendar under reference with respect to the climatological means of essential climate (weather) variables for the site
- Crop-weather modeling to simulate risks of climate on major food security crops

(Adda District, Oromia Regional Sate)

Ada'a District Ethiopia

Chickpea cropping season (Kiremt Season)



Promotional activities

- Radio program
- Documentary
- bulletins
- Web site (www.eiar.gov.et/agroweather.advisry)
- Stakeholders Workshops

Stakeholder Consultation Workshop

Decision makers from respective institutions to conceptualize the pilot, discuss on anticipated challenges, reach on consensus and design a road map.



Capacity Building Trainings: Farmers and DAs

- Benefits of weather forecast and climate outlook for farm level decision making
- Measure and record rainfall using plastic rain gauge
- How to collect phenology data at different crop growth stages

የአካባቢው ሥም፡ ሰሜን ክፍለ ከተማ (መቐሌ)
 Lat. ___ Long. ___ Alt. ___
 የሚመዘገብ የአየር ሁኔታ ኢለመንት ሥም፡
ዝናብ
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1		
2		



Growth stage (የተኩሮ የሕይወት ደረጃ)	Parameters (የሚለኩት ስርዓቶች)	Replication (በመካከል የሚሰጡ የሕይወት አሰራር ስርዓቶች ሥም)					
		Farmers 1	Farmers 2	Farmers 3	Farmers 4	Farmers 5	Farmers 6
Initial stage (የመጀመሪያ ደረጃ)	Sowing date (ለሰው የሕይወት ቀን)						
Seedling Emergence (የሰው የሕይወት ደረጃ)	Emergence date (ለሰው የሕይወት ቀን)						
	Biomass (kg/plant)** (የሰው ተኩሮ አጠቃላይ ክብደት)						
	Plant Density (Plant/m ²) (በአንድ ሜትር ስኩዌር ሥፍራ ውስጥ የሕይወት የሕይወት ቁጥር)						
End of the juvenile phase (ለሰው ወይም የሕይወት ደረጃ የሕይወት ደረጃ)	Date when this stage is reached (ለሰው ወይም የሕይወት ደረጃ የሕይወት ደረጃ)						
Biomass (kg/plant)** (የሰው ተኩሮ አጠቃላይ ክብደት)	Biomass (kg/plant)** (የሰው ተኩሮ አጠቃላይ ክብደት)						
	Plant Density (Plant/m ²) (በአንድ ሜትር ስኩዌር ሥፍራ ውስጥ የሕይወት የሕይወት ቁጥር)						

** A Biomass ስርዓት መካከል የሚሰጡ የሕይወት ቁጥር አካባቢ የሕይወት ተኩሮ ስምን ይገልጻል።



Capacity Building Trainings: Researchers

- Interpretation of how expected weather and climate will affect crops and farm operations.
- Practical sessions on how to prepare advisories based on downscaled seasonal climate outlook and weather forecast information



Achievements/learning outcomes

- Bringing key stakeholders together (consortium)
EIAR, NMA, Extension Directorate of MoA and ATA
- Sensitization for intégration of the agroweather advisory services into the National Agricultural Extension System of Ethiopia
- Increased demand for potential benefits from the service
- The establishment of the of strong Climate Information Program that coordinates climate risk management at national level envisaged

Challenges encountered

- Getting services from the Ethio-Telecom was daunting
- The international consultants 'RMSI' took longer time to understand Ethiopian situation
- Both the SMSs and IVRs (as communication tools) need refinement

Opportunities

- Time is for climate
- The climate science is advancing @ highest rate
- Ethiopian government is committed to build an adaptive capacity of the society
 - ✓ Climate Resilient Green Economy (CRGE)
 - ✓ Agricultural Growth Program (AGP,)
 - ✓ Agricultural Policy Investment Framework (PIF)
 - ✓ Sustainable Land Management Program (SLM)
- Climate money is **hovering in the air**
- Time is right and ripe to confront climate change and that, international communities are with us to support
- Enthusiastic and committed Africans/Ethiopians (Diaspora)



What is ahead of us?



-  Further improvement of the communication tool system, including the contents of the agro-weather advisory (in terms of quality by time and space)
-  Research on disaggregated information on which decisions are most determinant in increasing yield by specific farming zones
-  Continued generation of scientific evidences for climate relevant policy recommendations and practices for operationalization of climate information services
-  Strengthening the incubated National Platform on climate information services extension
-  Reaching 3 million farmers over the coming three years through the scaling up program

Thank You