



**Asia-Pacific
Economic Cooperation**

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Agenda Item: S3.1.1

Tailored Climate Information Services: Cornerstone of Early Warning System

Purpose: Information
Submitted by: Korea



**18th Senior Disaster Management
Officials' Forum
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Tailored Climate Information Services : Cornerstone of Early Warning System

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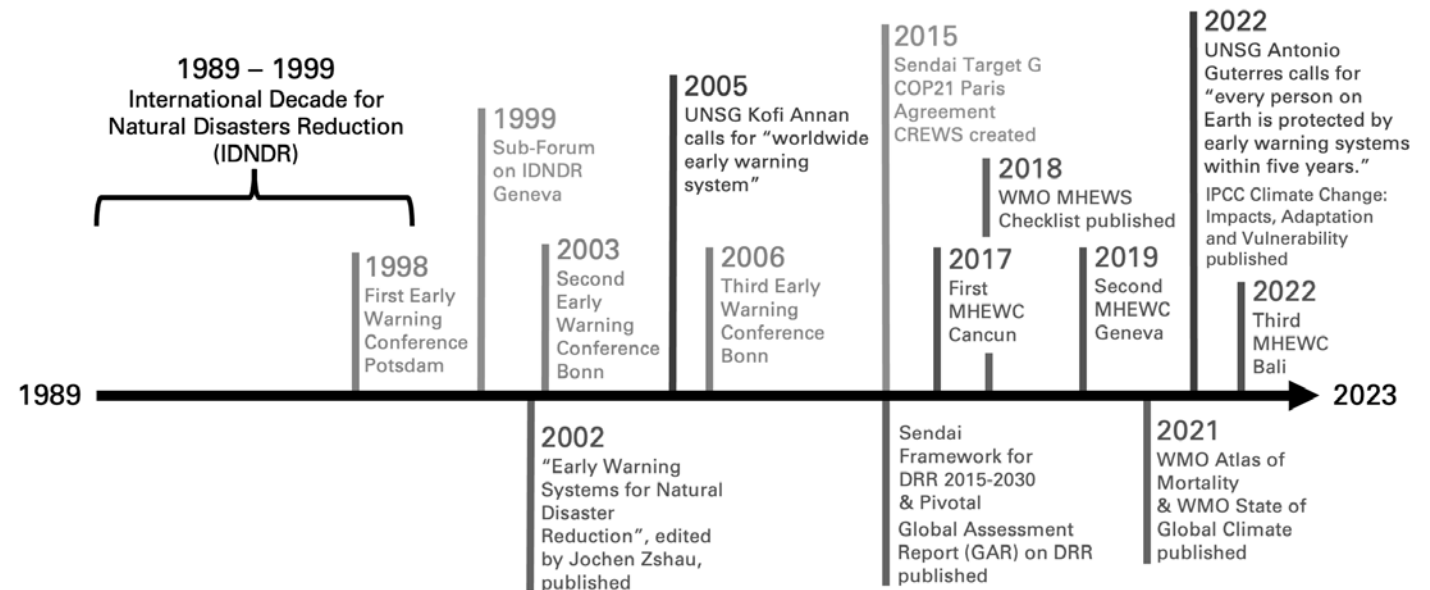
Contents

- Early Warning System
- Early Warning System and Climate (Information) Services
- Global Status of Climate Services
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Early Warning System (EWS)

- **WMO definition** (As defined 1 December 2016 by resolution 69/284, UN General Assembly)
 - **EWS**: An integrated system of **hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes** that enables individuals, communities, governments, businesses and others **to take timely action to reduce disaster risks in advance of hazardous events**
 - Early Warning Systems are a proven, effective, and feasible climate adaptation measure, that save lives and provide at least a tenfold return on investment.

<A brief history of event, publication, and announcement milestones in the development of early warning systems from 1989 to the present day>



<Early Warning System>

Risk knowledge



Disaster risk knowledge

Systematically collect data and undertake risk assessments

- Are the hazards and the vulnerabilities well known by the communities?
- What are the patterns and trends in these factors?
- Are risk maps and data widely available?

Monitoring and forecasting



Detection, observations, monitoring, analysis and forecasting of hazards

Develop hazard monitoring and early warning services

- Are the right parameters being monitored?
- Is there a sound scientific basis for making forecasts?
- Can accurate and timely warnings be generated?

Preparedness and response



Preparedness and response capabilities

Build national and community response capabilities

- Are response plans up to date and tested?
- Are local capacities and knowledge made use of?
- Are people prepared and ready to react to warnings?

Dissemination and communication



Warning dissemination and communication

Communicate risk information and early warnings

- Do warnings reach all of those at risk?
- Are the risks and warnings understood?
- Is the warning information clear and usable?

<Climate Services>

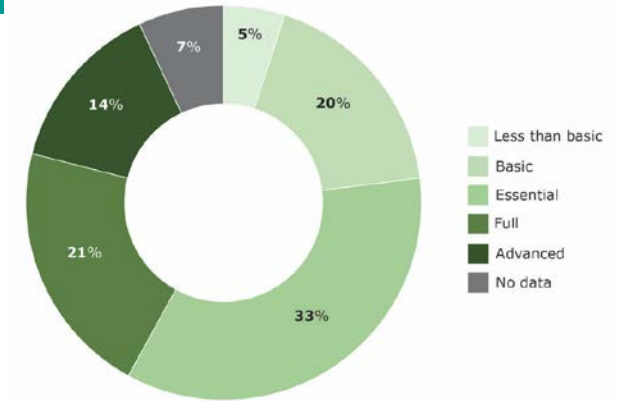
- **Transformation of climate-related data into customized products** such as projections, forecasts, information, trends, economic analysis, assessments (including technology assessment), counselling on best practices, development and evaluation of solutions and any other service in relation to climate **that may be of use for the society** at large.

- **Enable better management of the risks** of climate variability and change **and adaptation** to climate change, **through** the development and incorporation of **science-based climate information and prediction** into planning, policy and practice on the global, regional and local scale.

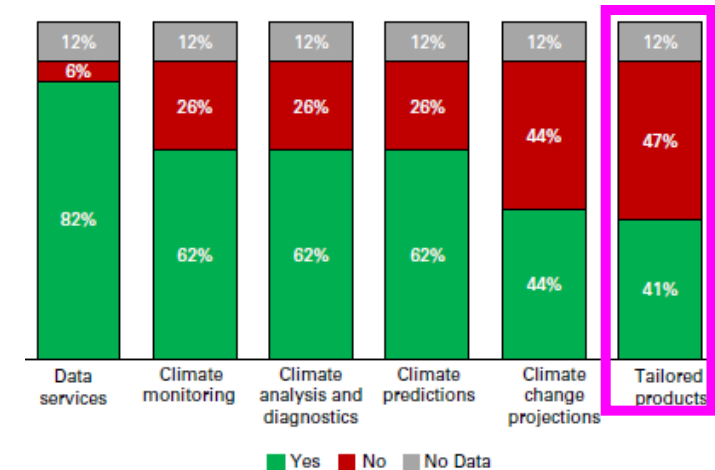
- **Early warning system focuses timely “action” (evidence-based decision making).**
- **Climate services are a key for timely action.**

- **2024 State of Climate Services**

- Based on the available data from 179 WMO Members, there has been improvement in climate services capacities over the last year.
- However, in 2024, most WMO Members (33%) were still providing climate services at an essential level only.
- One third of the world's people, mainly in least developed and small island developing economies, are still not covered by early warning systems.
- Only 14% of WMO Members are providing climate services at an advanced level, **where the co-design and co-development of tailored climate services products take place.**
- **There is room for improvement, in particular in the co-design and co-development of tailored climate services products.**



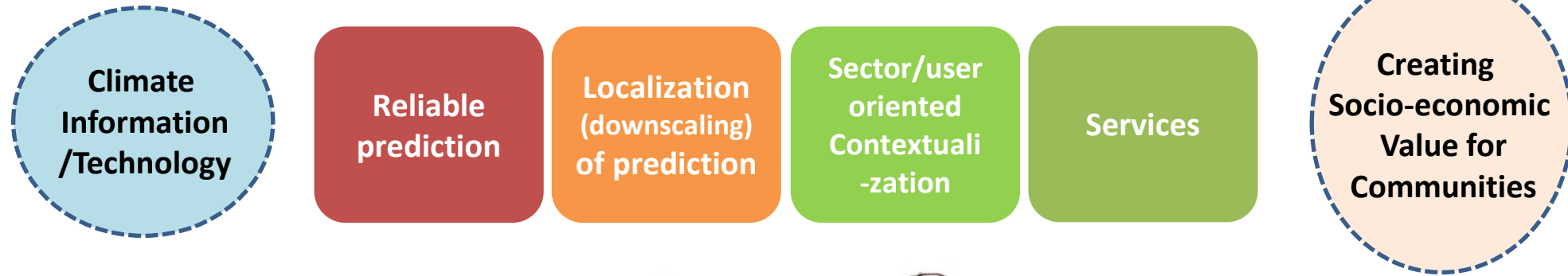
<Global distribution of climate services capacity levels, shown as a percentage of Members, for each capacity level>



<Percentage of Meteorological Services providing climate services for disaster risk reduction>

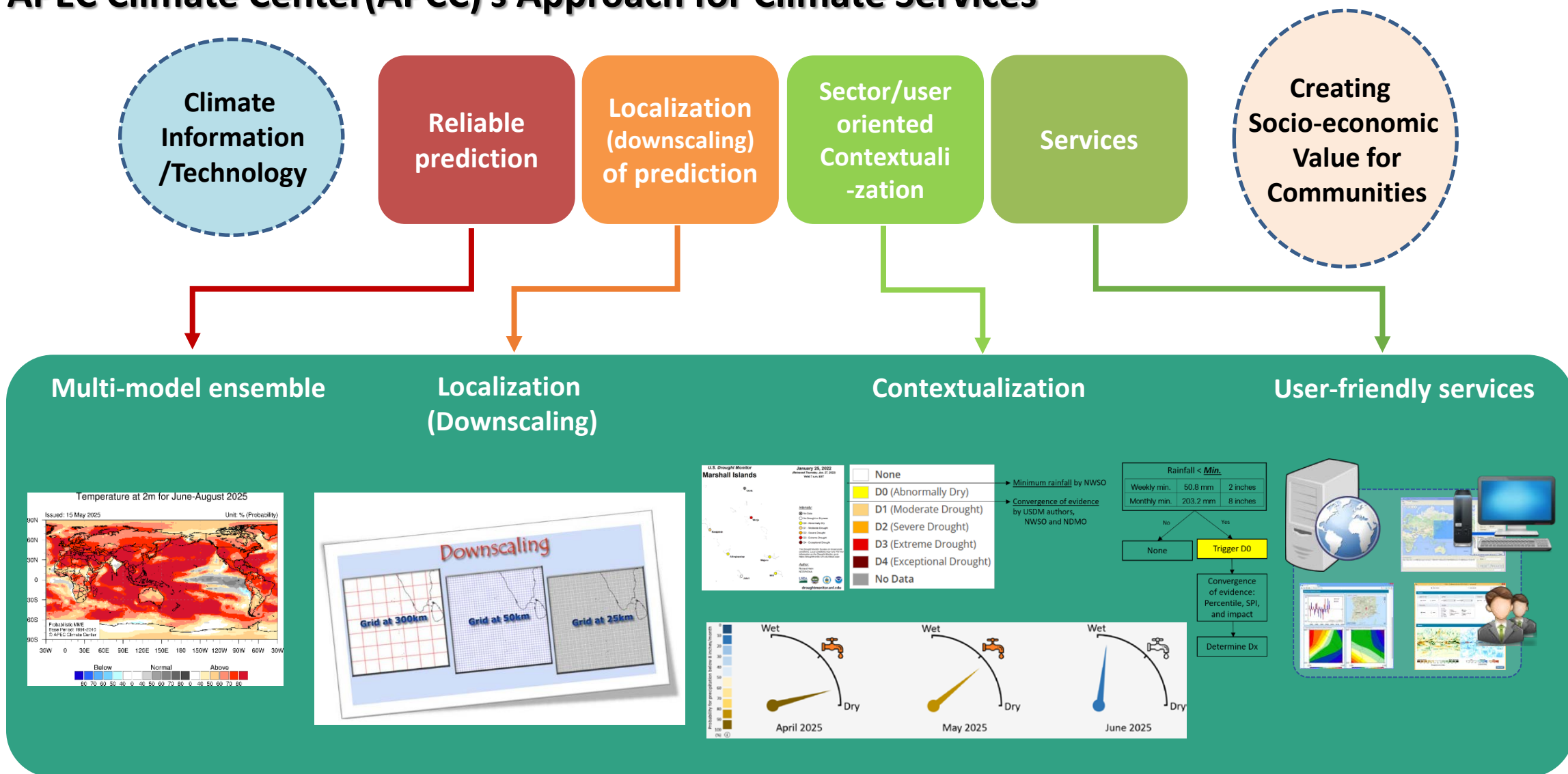
Bridging the Gap through Tailored Climate Services

- **APEC Climate Center(APCC)'s Approach for Climate Services**



Bridging the Gap through Tailored Climate Services

• APEC Climate Center(APCC)'s Approach for Climate Services



Bridging the Gap through Tailored

- Issues

Procedure	Issues
1. Production	Uncertainty and Lack of Specificity: Forecasts often lack detail on timing, quantity, and spatial distribution.... Predictability varies (e.g., "coastal El Niño" is less predictable) Complexity of Phenomena: Understanding and communicating the nuances of climate phenomena is difficult
2. Dissemination	Insufficient Lead Time: Messages reaching the local level can have significantly short lead times.... Lack of Contextualized & Actionable Information: Messages are not always tailored or easy for users to apply to their specific risks and decisions Conflicting Messaging: Different sources (official, media, politicians) may provide inconsistent information, causing confusion Limited Interaction: Lack of sustained communication between forecast producers and users ("usability gap") reduces the utility of information

Procedure	Issues
3. Utilization/ Adoption	Access & Interpretation: Users need to understand probabilistic forecasts, but this can be difficult, and local understanding is influenced by past experiences. Understanding may not always be achieved, particularly in <u>less structured communication settings</u> Difficulty Translating to Action: Translating forecasts into specific preparatory or response actions is challenging for both organizations and individuals Financial Constraints: Low economic capacity at the household level limits investment in preparedness actions. Humanitarian organizations also face funding constraints for preparedness vs. response. Lack of Integration with Social Protection: Existing social protection programs may not be ready to quickly incorporate forecast information Focus on Mitigation: Efforts often focus on mitigating negative impacts rather than capitalizing on potential benefits from favorable conditions. Over-adoption or Mistaken Adoption: When farmers adopt based on positive perception or peer influence without full understanding, it can lead to inappropriate actions Vulnerability Context: Ability to act is constrained by existing poverty and other stressors; information alone is insufficient ("cannot eat information").... Trust and Perception: Lack of trust in sources, influenced by past "false alarms" or misleading information, hinders uptake

Bridging the Gap through Tailored Climate Services

- **Examples: 1. Climate Information Services for Resilient Development Planning in Vanuatu**
Vanuatu Klaemet Infomesen blong Redy, Adapt mo Protekt (Van-KIRAP)

- Funding/Duration: GCF/Jan. 2018 – Dec. 2025
- Accredited Entity/Technical Partners: SPREP/APCC, CSIRO, BoM

- **Reliable/Localized prediction**

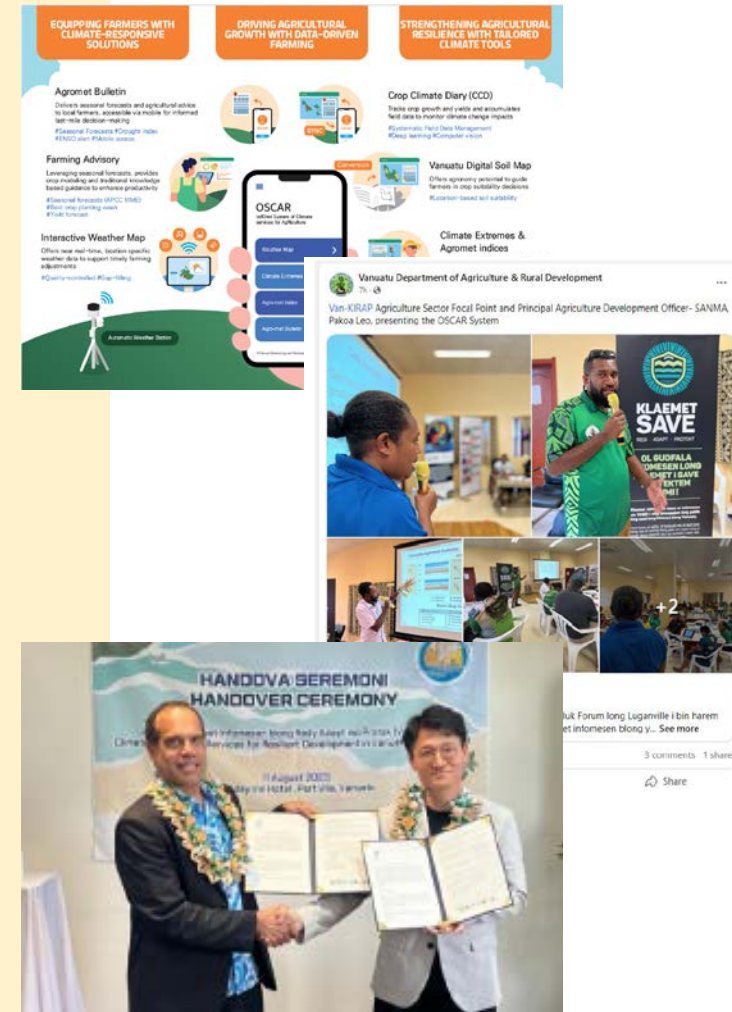
- (1) APCC Multi-model ensemble seasonal prediction downscaled to Vanuatu
 - (2) Undertaking field trials and validation for Taro and Cassava

- **Contextualization**

- (1) Collecting, modeling, analysis and reporting of agro-met data
 - (2) Development of an agricultural climate information services system
to determine optimal agriculture crop planning options (decision-making)

- **Services**

- (1) Develop Agro-met information portal (on-line IT infrastructure and software)
 - (2) Training of trainers, official handover to the Government of Vanuatu



Bridging the Gap through Tailored Climate Services

- **Examples: 2. Strengthening Climate Resilience in Peru through Enhanced Climate Information Services and Capacity Building for Climate Change Monitoring and Prediction**

- Funding/Duration: KOICA/Sep. 2025 – Aug. 2027 (Track-2)
- Technical Partners : APCC, Weatherpia, SENAMHI

- **Reliable/Localized prediction**

(1) APCC Multi-model ensemble seasonal prediction downscaled/tailored to Peru

* Peru: 38 types of climate zone and El Nino → coastal/mountain regions, rain forest

- **Contextualization**

(1) Improving the provision of sectoral (Agriculture) climate information

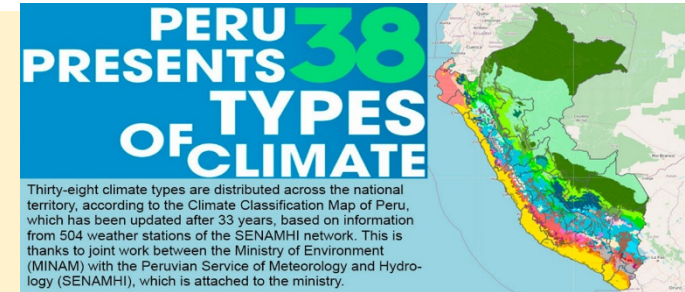
(2) New installation/improvement of PGA (Plataforma de Gestion Agroclimatica)

- **Services**

(1) Advancing weather/climate data platform

(2) Capacity building (staffs for tailored climate prediction, farmers for Agro-met information)

(2) Enhancing local communication



Bell tolls (for victims) vs Bell rings (to save people)

- People-centered (last-mile population)
 - Evidence-based
- Target-specified (region, sector, users)
 - End-to-end





Thank You!

