



SBSTA -34
Side Event on
Climate Services for Adaptation
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**Climate Services for the
Agriculture Sector**

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The background of the slide features a large, light blue watermark of the FAPAN logo. The logo is circular, with the letters 'F' and 'A' at the top, 'P' and 'N' at the bottom, and 'I' and 'S' on the sides. In the center of the logo is a stylized plant or flower design.

Socio-economic Trends and Environmental Challenges

Socio-economic Trends

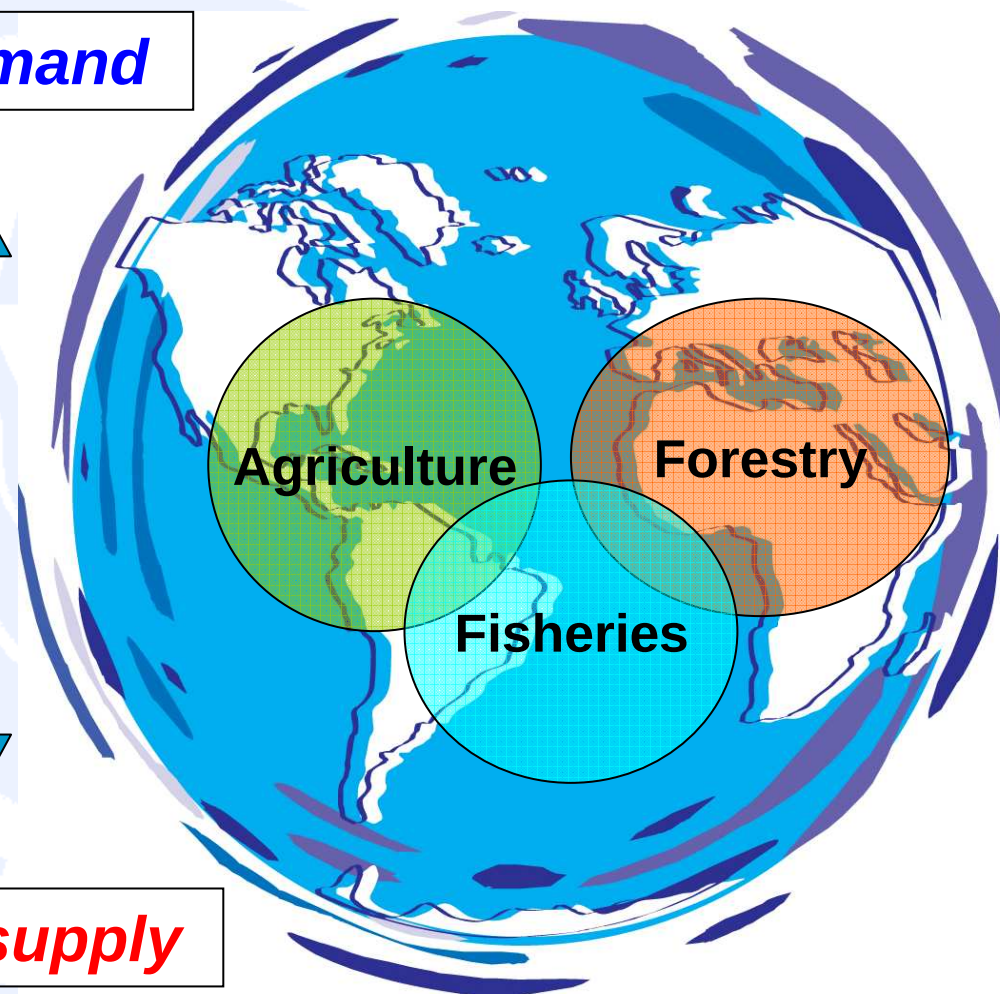
Population - Consumption - Urbanization - Migration - Economic growth - Political instability
Food - Feed - Fibre - Energy - Livelihood - Ecosystem Services

Increased demand

In the last 50 years the world population has more than doubled – from 3 billion in 1959 to 6.7 billion in 2009. In the next 40 years, it will increase another 50 percent, reaching 9.1 billion by 2050. Meeting the demand of this tripled population will put enormous pressure on the agriculture, forestry and fisheries sectors to provide food, feed and fibre as well as income, employment and other essential ecosystem services.

FAO Profile for Climate Change

Sustainable supply



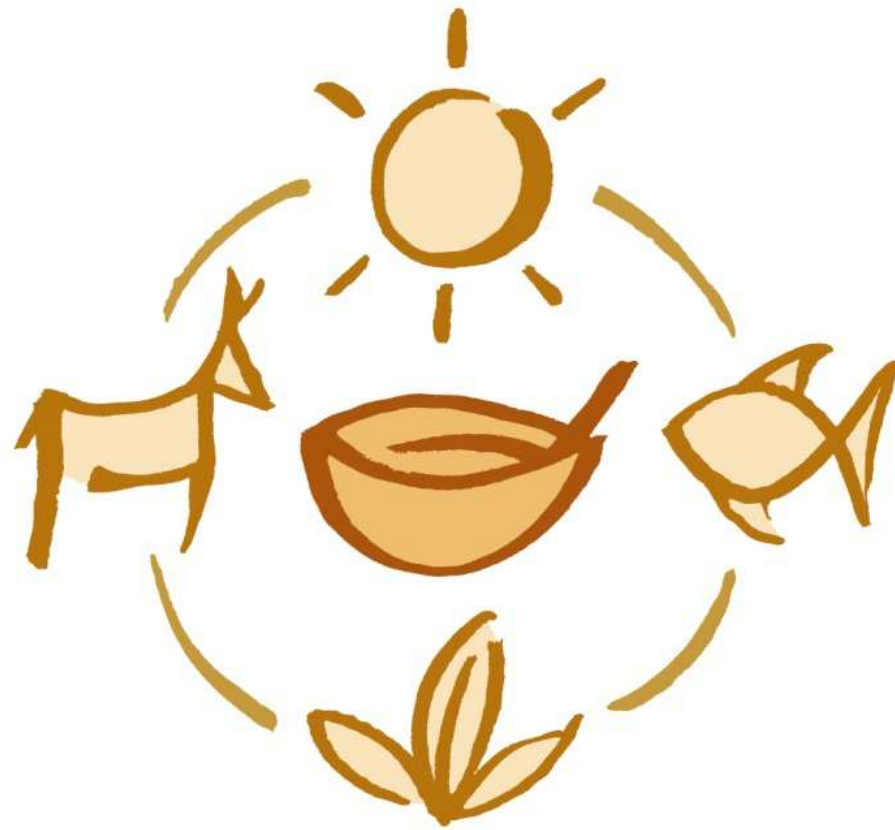
Soil - Land - Water - Biodiversity
Climate Change - Loss of Biodiversity - Land degradation - Water scarcity

Environmental Challenges

How to address users' needs in the agriculture sector

- 1. Major areas of work in the agriculture sector**
- 2. Climate information products and services required**
- 3. Frequency and accuracy required**
- 4. Mechanisms to be established between providers and users**

Major areas of work in agriculture, forestry and fisheries sectors



Main areas of work

- **Education**
- **Research**
- **Extension**
- **Agro-industries and processing**
- **Commodities and trade**
- **Infrastructure**
- **Transport**
- **Pharmaceutical**

The background of the slide features a large, light blue watermark of the Fiat Panis logo. It is a circular emblem with a stylized wheat stalk in the center. The word "FIAT" is written in a semi-circle on the left and "PANIS" on the right, both in a serif font.

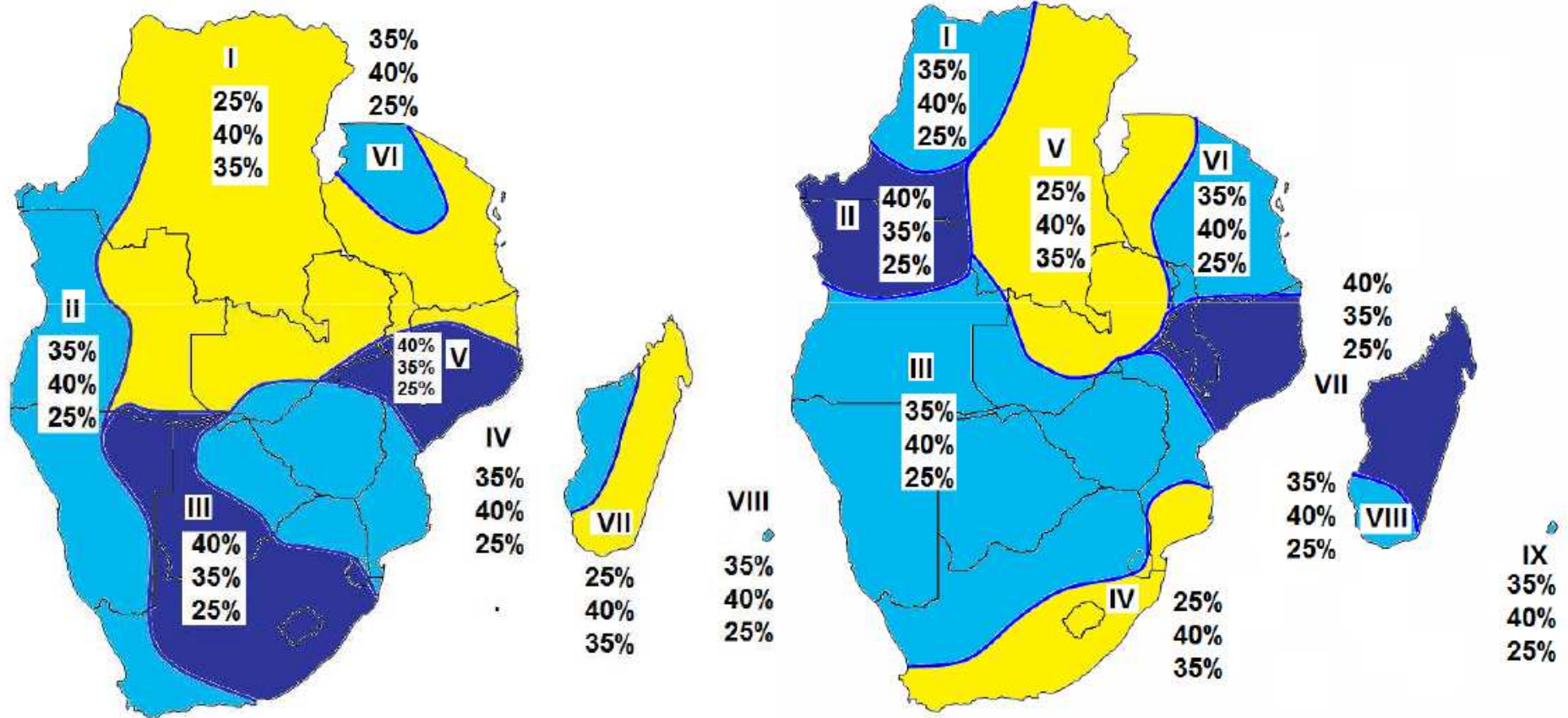
Climate information products and services required

Main climate services

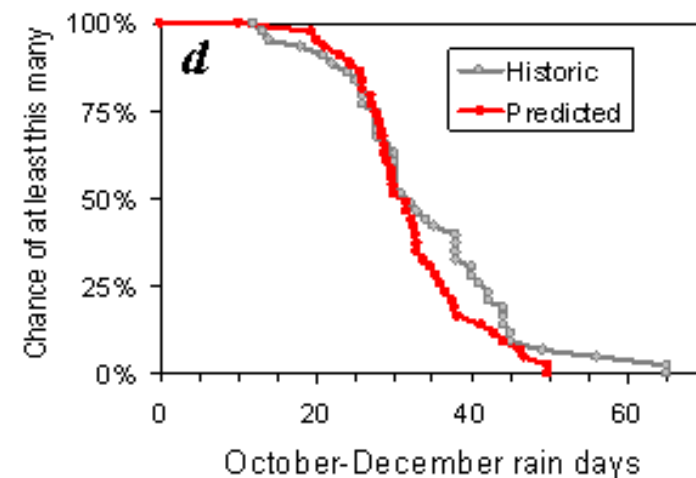
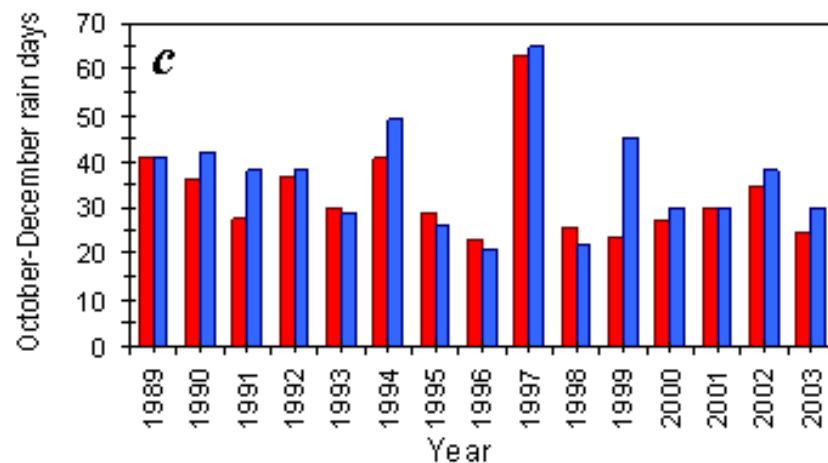
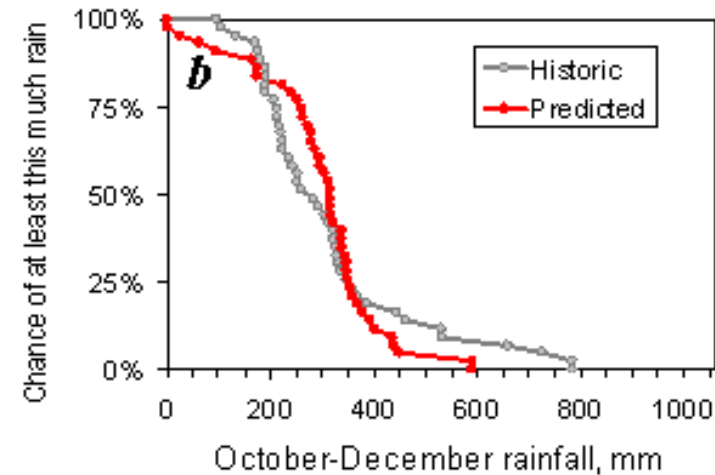
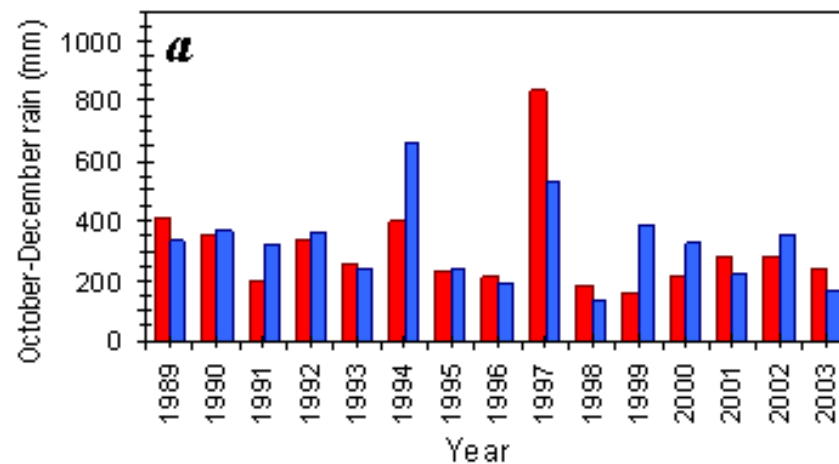
- ✓ **Statistical assessments of the future frequency of extreme weather and climate events:** to be used to provide warnings for suitable conditions for pests and diseases and to advise on proper measures, or to reduce the impacts and mitigating the consequences of weather and climate related natural disasters for agricultural production.
- ✓ **Seasonal climate forecasts:** to be used to provide forecasts of which variety to plant and when, when and where disease outbreaks are likely to occur, or whether to reduce livestock numbers if a drought is forecast.
- ✓ **Climate predictions:** to be used by farmers for decisions on when to plant crops, quantity of water needed for irrigation or when best timing for spraying.
- ✓ **Climate change projections:** to be used to indicate precipitation, temperature and crop yield patterns in the 30-to-50-year time frame. They can be used to guide major investment decisions relating to long-term agriculture planning and water management such as where to establish new investments and whether and where to build new reservoirs.

Seasonal forecast

SADC Consensus Outlook (OND 2010 and JFM 2011)



Constraint to seasonal forecast use and benefits by farmers	Reference
Information content	
Coarse spatial scale lacks local information	Patt and Gwata, 2002
Lack of information about timing of rainfall	Klopper <i>et al.</i> , 2006; Mwinamo, 2001
Lack of information about season onset or length	Klopper <i>et al.</i> , 2006; Archer, 2003; Mwinamo, 2001
Ambiguity about forecast categories	Klopper <i>et al.</i> , 2006; O'Brien <i>et al.</i> , 2000
Forecasts not in local language	Vogel, 2000; Mwinamo, 2001
Accuracy not sufficient	UNDP/WMO, 2000
Access	
Inequitable access	Phillips, 2003; Archer, 2003; Vogel, 2000; O'Brien <i>et al.</i> , 2000; UNDP/WMO, 2000; Roncoli <i>et al.</i> , 2009
Forecasts available too late	O'Brien <i>et al.</i> , 2000; UNDP/WMO, 2000; Patt and Gwata, 2002
Neglected communication of favorable forecasts, bias toward adverse conditions	Phillips <i>et al.</i> , 2002; Ziervogel and Downing, 2004
Resource constraints	
Access to draft power	Phillips <i>et al.</i> , 2001; O'Brien <i>et al.</i> , 2000
Access to seed of desired cultivars	Ngugi, 2002; O'Brien <i>et al.</i> , 2000
Access to financing	Ngugi, 2002; Ingram <i>et al.</i> , 2002; Vogel, 2000; Klopper <i>et al.</i> , 2006; O'Brien <i>et al.</i> , 2000
Access to land	Ingram <i>et al.</i> , 2002; Vogel, 2000; Klopper <i>et al.</i> , 2006
Access to labor	Ingram <i>et al.</i> , 2002
Input or marketing costs	O'Brien <i>et al.</i> , 2000



■ what would have been forecast ■ what actually happened

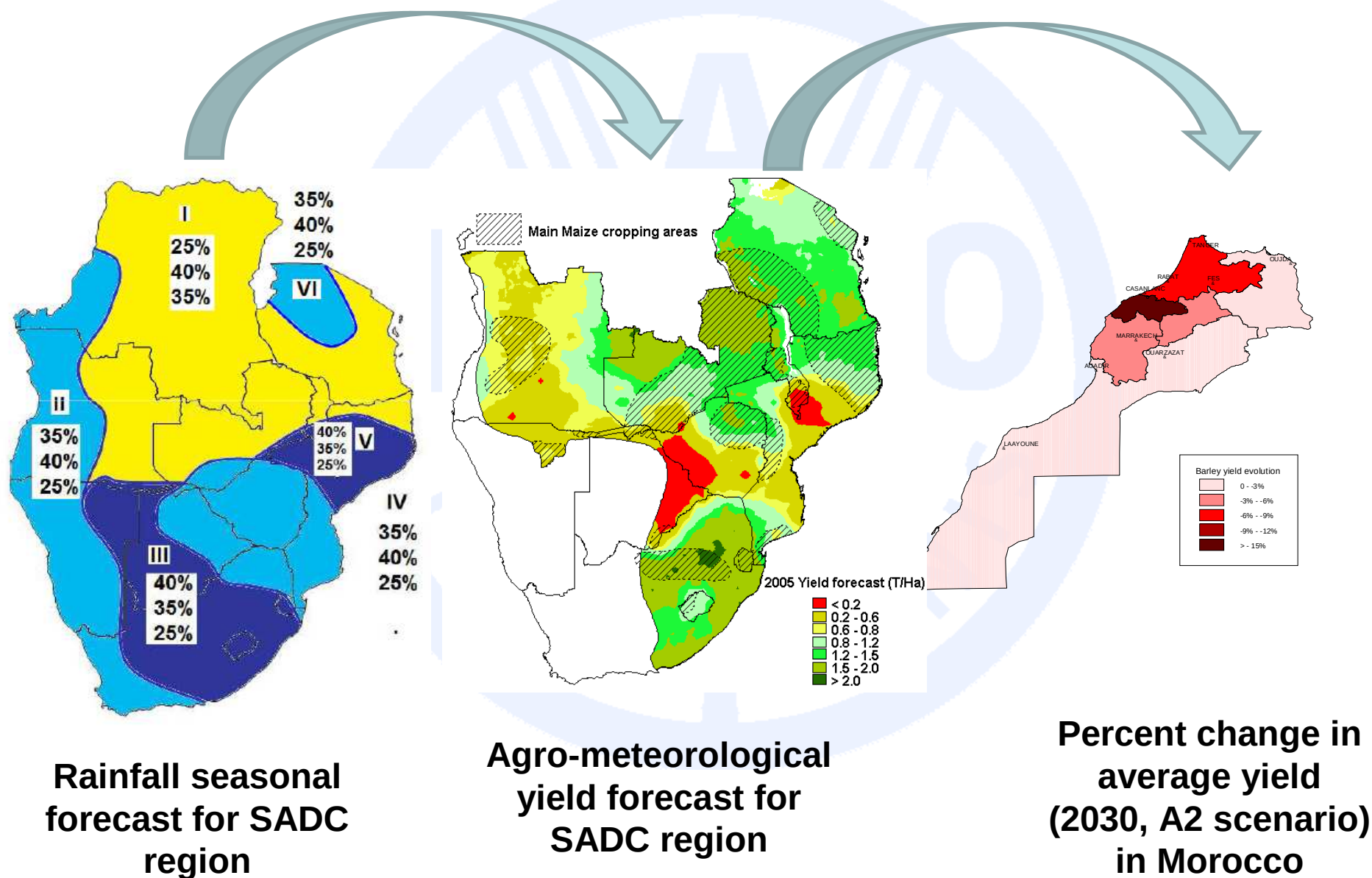
Minimum set of locally downscaled forecast information should include:

- (a) forecast probability distribution of seasonal rainfall total plotted against the climatological distribution;**
- (b) time series of historic climate observations and hindcasts;**
- (c) the same information for number of rain days**

Climate services and products should address:

- seasonal (**tactical**) forecasting
- short-term (**operational**) forecasting
- long-term (**strategic**) forecasting

From seasonal forecasts, to crop forecasts, to crop scenarios



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Frequency and accuracy required

How information must be structured for a better use by users (e.g. farmers)

- **It must be downscaled and interpreted locally.**
- **It must include information about growing season weather beyond the seasonal average.**
- **It must express accuracy in transparent, probabilistic terms.**
- **It must be interpreted in terms of agricultural impacts and management implications.**

Key prerequisites for a public information service to influence action

Cash *et al.* (2003)

❑ **Credibility**: perceived technical quality and authority of the information.

❑ **Salience**: perceived relevance to the needs of decision makers.

❑ **Legitimacy**: perception that the information service seeks the users' interests.

Frequency

- **Weather forecasts:** daily, 3 days, weekly
- **Intra-seasonal and seasonal forecasts:** monthly and seasonal
- **Climate change projections:** 10-year medium term, 20-30 years scenarios

Resolution

- **Local:** local decisions on agronomic, livestock and fishery management practices
- **Sub-national:** food availability, monitoring, storage and input supply, marketing, procurement, credit, etc.
- **National:** policies, planning, action plans etc.
- **International/regional:** Food security, trans-boundary pest and diseases, river water monitoring, monitoring extreme events (drought, river floods et.)

A large, light blue watermark of the Fiat Panisi logo is centered in the background. The logo is circular, featuring a stylized 'A' at the top, a 'V' in the middle, and a 'P' at the bottom, all within a circular border. The words 'FIAT' and 'PANISI' are written in a circular path around the central emblem.

**Mechanisms to be established
between
providers and users**

Key elements of climate services for agriculture

- **Monitoring, data, tools and methods**
- **Managing risks of climate variability and climate change**
- **Managing food systems and its resources**
- **Advancing payment for environment services and risk transfer mechanisms**
- **Contributing to food security information and emergency response**

Key priority areas

- ❖ **Engaging user communities**
- ❖ **Building communication gap**
- ❖ **Building institutional and technical capacity**
- ❖ **Decentralized climate services**
- ❖ **Advocacy and policy integration**

Mechanisms to strengthening institutional and technical capacities to promote user interface

❑ **National Hydro-Meteorological Services (NHMS)**

- Understanding the needs of agriculture support services and farmers
- Development of weather and climate information products

❑ **Agronomic and Agro-meteorological research**

- Consider the temporal and spatial dimensions of climate impacts
- Development of contingency plans incorporating new technologies
- Improving impact data collection, monitoring and analysis (including climate change)

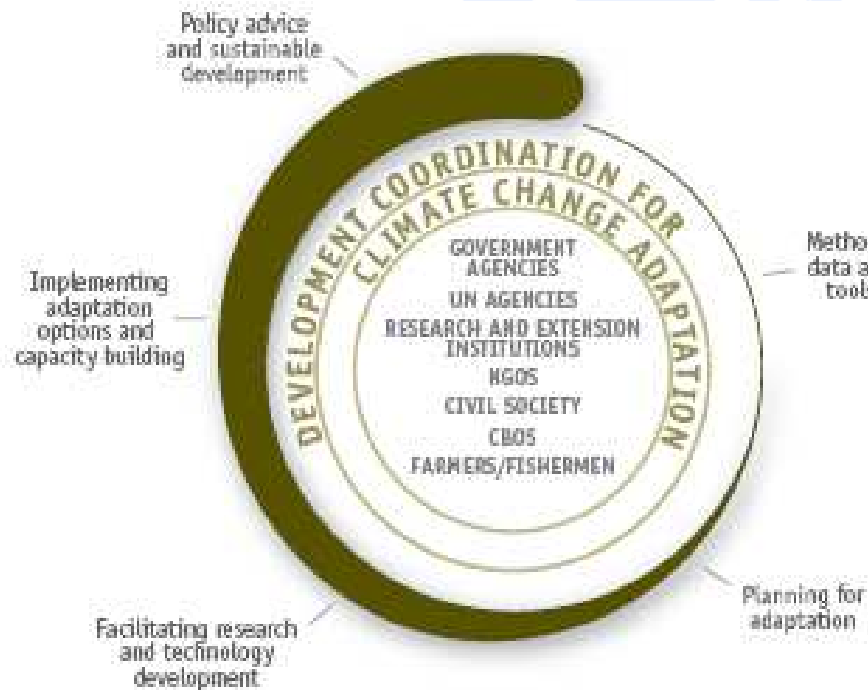
❑ **Agriculture extension and community based organizations (CBOs)**

- Developing impact outlooks and management alternatives considering local needs
- Communication of information and receiving feedback

Two-way approach

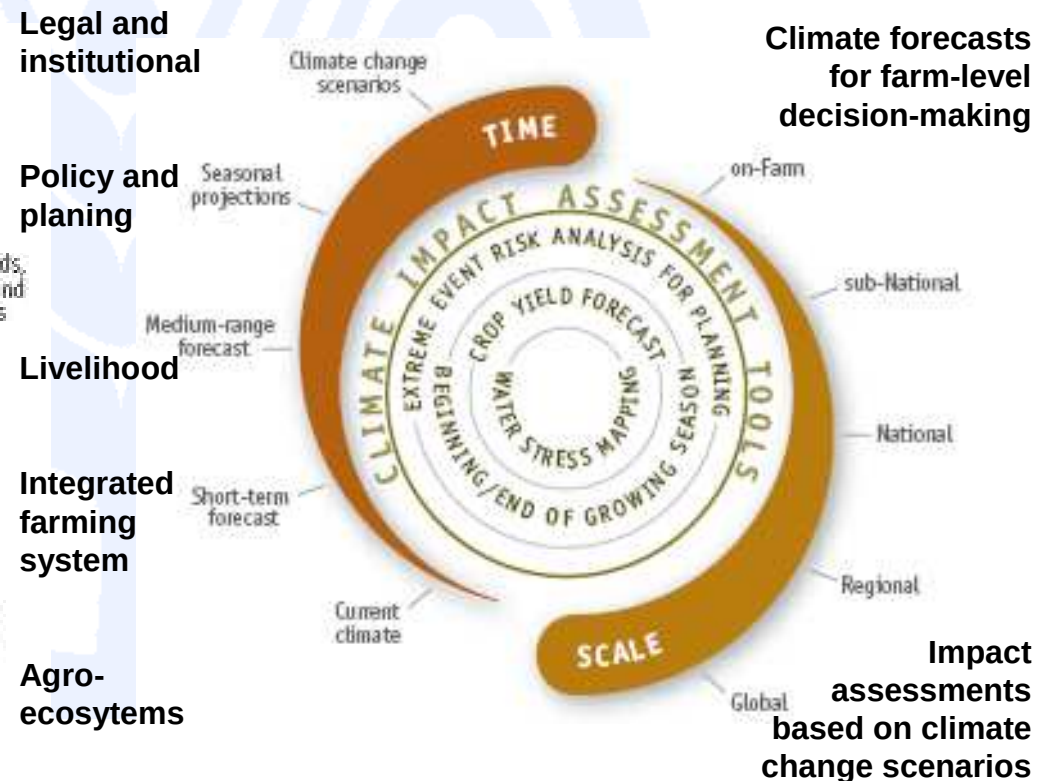
Top-down approach

Multi-stakeholder processes



Bottom-up approach

Linking tools at various scales



How to promote better interactions between agriculture sector's users and providers of climate services

✓ **Meteorological and climate data collection and use**

- Monitoring and data collection network in rural areas, systematic data archival and management
- Ensure to make use of modern information products, forecasts from regional and international centres are implemented at the national level

✓ **Increasing farm level productivity to bridge yield gaps and reduce risks**

- Farmers should be at the centre of the analysis of the climate impacts and response strategies
- Deliver reliable, timely, locally understandable climate information with response options to the farmers considering inputs, credit, market and financial aspects

How to promote better interactions between agriculture sector's users and providers of climate services

✓ **Strengthen climate and agriculture service**

- Integrate climate information into insurance, credit provision, crop monitoring and yield forecasting and humanitarian response
- Establish reliable communication mechanisms to provide need based information and feedback to NMHS, agronomic research and extension services

✓ **Strengthening farmers and institutional capacity to better respond to price shocks**

- Building social capital and awareness raising are the key to enhance trust at the community level
- Number of cross-cutting elements such as capacity building, awareness, collaboration are prerequisite



<http://www.fao.org/climatechange/en/>