

UN Commission on Science and Technology for Development

The role of science, technology and innovation in ensuring food security by 2030



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Tuesday, 9 May 2017
CSTD Twentieth Session

Challenge of Food Security

HUNGER WORLDWIDE



The number of people going hungry worldwide is

795 million

approx. **10.9 %**
of the world's population



One person in 9
does not have the minimum required quantity of food available to them



Acute hunger

Severe undernourishment over a definable period

Chronic hunger

Constant and/or regular undernourishment



Infographic available at www.welthungerhilfe.de
Source: FAO 2015 / Number of people who suffer from chronic calorie deficiency

Developing Countries

Of 795 million hungry people, 780 Million live in developing countries.



Smallholder Farmers

More than 80% of the food in Asia and Sub-Saharan Africa is produced by smallholders.

Technologies for Food Security

Scientific and technical applications across the food system

Genetic Modification

Conventional cross-breeding and transgenic approaches for improving crop productivity



Post-Harvest and Agro-Processing Tech

Storage, handling, refrigeration, transport, and agro-processing

Biofortification

Breeding of critical micronutrients and vitamins into staple crops

Climate-Smart Solutions

Precision agriculture, early warning systems, soil carbon sequestration



Irrigation Technologies

Water storage, micro-irrigation tech, groundwater detection sensors, renewable energy powered pumps

Science for Soil Fertility

Synthetic and organic fertilizers, biogas digesters, nitrogen fixation, zero/conservation tillage

Technologies for Food Security

Potential profound impacts on the future of food



Synthetic Biology

CRISPR/Cas9



Big Data and IoT

Precision Agriculture



Artificial Intelligence

'Robot' farmers



Tissue Engineering

Lab-grown livestock



3D Printing

3D printed food



Drones

Hyperspectral imaging

Key Policy Issues



01. Building Innovative Food Systems

Creating and strengthening a multi-sectoral ecosystem of actors and institutions for pro-poor agricultural innovation



02. Making Innovative Investments

Promoting research and development, building human capacity, and investing in infrastructure



03. Supporting Gender Inclusion

Supporting access to agricultural science and technology and developing gender-sensitive agricultural innovation policy



04. Promoting Regional and International Cooperation

Promoting "knowledge aid" for agricultural STI support, facilitating regional cooperation, and conducting technology assessment

Building Innovative Food Systems



Agricultural Innovation System

Useful tool to analyse the ecosystem, supporting mechanisms, and infrastructure that facilitate agricultural innovation.



Multi-Sectoral

Participatory

Collaboration across ministries and sectors

Engagement of smallholder farmers

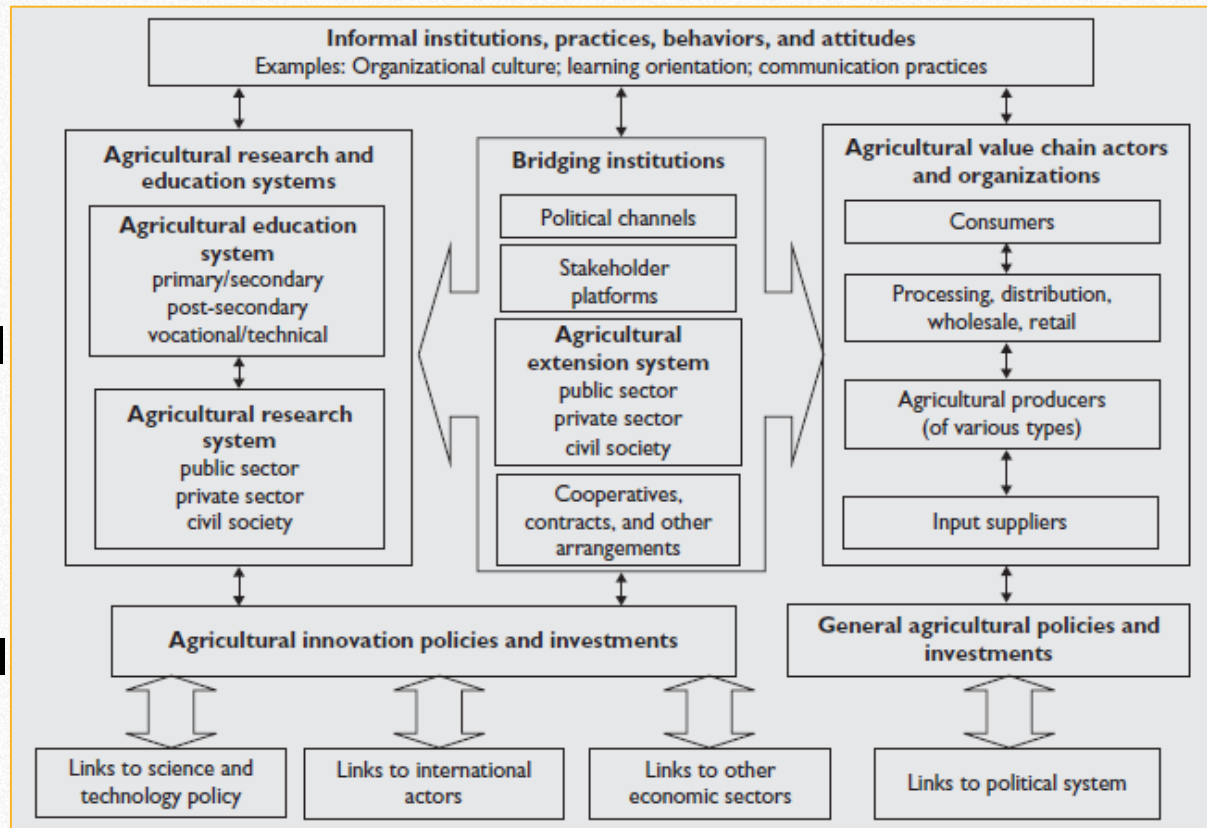


Knowledge Flows

Pro-poor/inclusive

Recognition of local and traditional knowledge and strong farmer-scientist links

Support for pro-poor innovations and link to economic development and livelihoods



Source: Larsen et al., 2009

Innovative Investments

Key investments needed for food insecurity



Promoting Research and Development

Addressing both productivity growth and production quality along with concern for climate change and biodiversity

Building Human Capacity

Talent-building efforts that strengthen agricultural capacities while creating STEM capabilities in emerging technologies

Investing in Infrastructure

Enabling innovative food systems and fostering multi-sectoral development planning and capacity to innovate



Gender Inclusion

Agricultural Labor Force Participation

Women account for 43% of agricultural labor in developing countries and 50% in LDCs

Limited Access to Resources

Women often have limited access to technology, training, education, information, credit, and land

Gender-Sensitive Innovation Policy

Need to integrate a gender-sensitive lens into agricultural innovation policy.

Regional and International Cooperation





Thank you

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