Theme 1 – Innovations for food security

Conference "Research & Policy: two peas in a pod? A dialogue for food security impact"

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Key statements

- Approaches for development of innovations that are not participatory, or take into consideration social differentiation and power relations, will fail to achieve uptake in the later stage.
- Innovations are the new holy grail in agro-development, yet reality shows many small-scale farmers lack the required entrepreneurial skills for uptake of innovation.
- Development and uptake of innovations are intrinsically connected: investment decisions that favour one or the other overlook realities of innovations in Low- and Middle-Income Countries (LMICs).

Rationale

The majority of smallholder farmers depends on rainfed agriculture to meet 80 percent of food demand worldwide. By 2050, the United Nations and Food and Agriculture Organization (FAO) project the global population will result in a doubling of demand for food. Feeding this expanded population nutritiously and sustainably in the face of climate change and vulnerabilities requires substantial improvements to the global and local food systems. These issues are critical because they are strongly connected to achieving at least nine of the UN Sustainable Development Goals (namely: SDGs 1, 2, 3, 8, 9, 12, 13, 15 and 17) to ensure an end to poverty, protect our planet, and guarantee prosperity for all, especially smallholder women and men. The problem of food security can be addressed through policies, market driven innovations, and multi-stakeholder approaches.

Without technology and innovation, the world will not be able to overcome these challenges. Current innovations around the integration of observation data from satellite imagery, drones, mobile phones, meteorological instruments, localized sensing such as "the Internet of things" (IoT) and citizen observatories are creating new opportunities for improved decision-making in planning, operation and monitoring of agricultural production in an environmentally sustainable manner. These innovations are much needed especially in developing regions. Such innovations can span soil, water, crops, livestock and atmosphere, supporting direct decision-making by governments, research, academia, private sector players and by farmers themselves.

Numerous Dutch funded Public-Private Partnerships (PPPs) projects support the development of innovations in programmes such as FDOV, SWFF, GRP, G4AW, 2Scale, Ghanaveg, or Hortimpact and ARF. Also other donors and charitable foundations are keen to fund innovations. There are various initiatives that support Information and Communication Technologies (ICT) for agricultural development, for example e-soko, I-cow, m-farm). However, these depend partially or entirely on charitable or public development funding. Many of these donor-funded innovation programmes assume leap-frogging, however, the uptake of technologies by farmers is not self-evident. Due to significant initial investments, it is debatable whether the technologies can be taken up by small-scale farmers.

Key lessons, good practices and experiences from ARF and GCP projects

A range of ARF and GCP research projects are working on approaches for development as well as uptake of innovations for food security and present the following issues and angles for debate with Dutch food security policy representatives and other stakeholders during the conference session. Some examples of ARF and GCP projects on innovation development are:

- ARF-1 project Water and weather monitoring services - cocoa farmers Ghana: Ensures accurate tropical weather alert to help farmers improve their farm practices. The project results demonstrate how applying new thinking to address challenges can present opportunities for stakeholders in the industry.
- ARF-1 project Rice-Greengram production Uganda: ICT has the potential to empower and disempower small-holder rural women farmers. The project results show the possible role of ICTs in building capacity, enhancing opportunities, widening scope of rural women's possibilities as well as

providing information, generating knowledge products and pathways that helps farmers to generate and improve on the incomes.
- ARF-2 project Apps for irrigation Bangladesh: This project shows that bundling of knowledge, skills and solutions (ICT-enabled) can significantly contribute farmer's livelihood as well as manage farms more efficiently. This project integrates smart solutions like ICT-based extension and practices to manage irrigation better.

Some examples of ARF and GCP projects on the process of uptake and up-scaling of innovations are:
- ARF-2 project Enhancing local parboiled rice value-chain competitiveness in Benin (PARCR): Many innovation extensions and upscaling fail due to approaches that are not participatory enough. In this project a co-creation approach with Innovations Platforms turned out to be an effective approach to develop and extent innovations.
- ARF-2 project Tomato production without pests and diseases Kenya: The major challenge to upscaling is the perceived high cost and technical difficulty in new technologies by smallholder farmers. This challenge can be overcome by most smallholder farmers transforming from subsistence production to agribusiness. With this transformation these farmers will be willing to embrace new technologies to increase their production.
- ARF-2 project Farmer led Irrigation Development, Mozambique: Smallholder led innovation processes in irrigation and agriculture are until now poorly understood even though their contribution to rural and economic development, food security and poverty alleviation in developing countries is substantial. In this project, Mozambicans farmers developed with little support an estimated 100.000 ha of irrigation compared to 20.000 ha by formal irrigation development projects.
- GCP-1 project Local pork production Brazil: This project develops alternative pig feed for (small-scale) farmers. However, in the Brazilian context it had been found that before this will be uptaken, big farmers need to embrace the innovation and this is a challenge.

Purpose of the session

The objective of this thematic session, "Innovations for food security", is to examine two critical questions related to promoting innovations for food and nutrition security: What types of policy or development interventions can effectively (i) foster relevant innovations in a manner that catalyzes, and is additional to, indigenous innovative capacity of farmers and agribusiness, and ii) ensure uptake of these innovations by policy, private sector and farmers, also referred to as the last-mile problem. Both issues are interrelated: choices made within the (technical) innovation development cycle, such as opportunity identification, technical design as well as selection of stakeholders (e.g. government officers) as enabler, are crucial for the potential for uptake of the innovation.

Outcomes of the session

- Increased understanding of what factors enable contributions of innovations to food security in LMICs, and how this could inform choices made in resource allocation within Dutch foreign and economic policy.
- Evidence-based and impact-driven proposals to better facilitate inclusive development and uptake of innovations in food systems and improve the livelihoods of larger scale as well as small-scale farmers and other low-income food system players.
- Insights on the possibilities and limitations of Dutch public and private sector involvement in the development and uptake of innovations for food and nutrition security.
- Policy brief elaborating on how to approach key issues on development and adoption of innovations to promote food security based on the learnings of ARF & GCP projects