

**Questions for Global Assessment Component of the  
International Assessment of Agricultural Science and Technology for Development  
(IAASTD)**

The fundamental question framing the assessment is:

“How can we reduce hunger and poverty, improve rural livelihoods, and facilitate equitable, environmentally, socially and economically sustainable development through the generation, access to, and use of agricultural knowledge, science and technology?”

This suggests four broad questions regarding agricultural knowledge, science and technology (KST):

- What are the challenges that can be addressed through agricultural KST?
- What are the likely positive and negative consequences of agricultural KST?
- What are the enabling conditions required to optimize the uptake and diffusion of agricultural KST? and
- What investments will help realize the potential of agricultural KST?

Understanding the answers to these broad questions will provide invaluable information required to achieve a number of the Millennium Development Goals and the longer-term goals of development. Below are listed some of the questions indicative of those that the Assessment will answer.

**Section I: Historical Perspectives**

***How have local, national, regional and international policies and institutions, including economic and trade policies, facilitated or inhibited the use of agricultural knowledge, science and technology (KST) to reduce hunger and poverty, improve rural livelihoods, and facilitate equitable, environmentally, socially and economically sustainable development?***

- What has enabled/constrained the access of poor peoples to improved agricultural KST?
- How have agricultural production systems been developed, transferred and adopted by farmers and other producers (successes and failures)?
- Are today's institutional arrangements for agricultural KST, international and national, adequate to embrace different innovation systems?
- How do current intellectual property rights (IPR) and biosafety regimes affect the access of small-scale farmers to new technologies?
- What has been the impact of the shift from public to private financing on agricultural policies, research, extension, technology transfer and adoption, and development? and
- What factors/policies have proven advantageous to women in generating, accessing and using agricultural KST?

***What are considered the advances in agricultural knowledge, science and technology that, once applied, have generated significant beneficial or adverse changes in hunger alleviation (food and nutritional security, food safety, etc.), poverty alleviation, rural livelihoods, and in the environment?***

- How have different agricultural technologies, including indigenous technologies, affected health, livelihoods, and the environment and contributed to dietary diversity? and
- What have been the general and specific lessons learnt from the green revolution?

**Section II: Plausible scenarios**

***What are the key drivers, how do they interact, and how might they plausibly change over the next 50 years, that will affect the development and adoption of agricultural KST to meet future food demands, while addressing rural livelihoods, human health, equity and environmental issues:***

- *Demographic (e.g., population size, urbanization, family size, gender status, and age structure);*

- *Economic context (e.g., GDP, purchasing power parity, globalization, privatization, industrialization of the agricultural sector, trade, subsidies, structural adjustment policies, indebtedness, investment in the agriculture sector (infrastructure and markets);*
- *Socio-political (e.g., multilateralism, regionalization, security, balance of power, and migration)*
- *Technology (public and private sector funding, research priorities, technological advances, and technology transfer and adoption);*
- *Environmental and natural resources conditions (e.g., water quantity and quality, arable land, soil fertility, climate variability and change, air quality and biodiversity);*
- *Institutional capacity; and*
- *Individual choices (e.g., diet).*

**For a set of plausible changes in the key drivers, what are the projected national, regional and global changes in: (i) consumer demand; (ii) production; (iii) food prices; (iv) livelihoods; and (v) environmental conditions (climate and natural resources)?**

- How can we improve learning between public/private agricultural KST domains?
- What are the implications in a society where: (i) gender equality exists in agriculture and all sectors of society, i.e., women have access and control over economic resources, credit, finance, information and agricultural KST; and (ii) gender inequality continues unabated or intensifies?
- What resource and policy constraints will affect the development and implementation of different agricultural systems and the utilization of agricultural KST in ways that will reduce hunger and poverty, improve rural health and livelihoods, and promote rural development and environmental sustainability?
- How might agriculture develop in light of global food demands in the next 25-50 years and what are the relative consequences of:
  - Intensive systems? and
  - Extensive systems?
- How will the major shifts in demographics impact the need for public and private research?
- Will S&T be one of the key drivers of agricultural demand and supply in the next 25-50 years and, if so, which forms and which particular applications of S&T?
- How would a shift from production subsidies to support of environmental measures affect food production? and
- How will shifts in energy costs and availability influence agricultural markets?

### **Section III: Policy and Institutional Issues**

***What national, regional and global policies and institutional arrangements will optimize the uptake and adoption of advances in agricultural KST***

- How will national, regional and global policies impact agriculture under various plausible futures (developed in Section 2), and which policies will effectively address hunger, poverty, rural livelihoods, and environmental sustainability?
- What policies and investments will alleviate the constraints to the diffusion, adoption and adaptation of technologies at the local and global levels?
- How can agricultural KST be made more accessible to local producers?
- How does agricultural KST move from source to end-users?
- What is the role of capacity building (individual and institutional) in the local adaptation of agricultural KST?
- How will different forms of governance, institutions and social capital affect agricultural systems, food security, environmental sustainability and livelihoods?
- What are the effects of incentive systems on innovations in, and dissemination of agricultural KST?
- How can local, national and global markets facilitate equitable access to food for urban and rural poor people?
- How can innovations from communities be effectively combined with institutional agricultural KST to increase production, post-harvest processing and marketing?

- What kind of policies can facilitate the engagement of the private sector in sustainable agricultural development? and
- What impact will retail/market concentration have on agriculture and in particular on small producers?

***What will the contribution of agricultural KST (biotechnology, conventional breeding, agro-ecological and low-input management) be on future agricultural production, food security, livelihoods and environmental sustainability?***

***(i) Hunger, poverty and human health***

- What are potential future public and private sector strategies (globally and regionally disaggregated) for using agricultural KST to address hunger and poverty?
- Which technologies strengthen the links between agriculture and the non-farm rural sector, increase employment and increase the incomes of the poor?
- What traditional and emerging agricultural technologies can be adapted locally to increase agricultural production, processing and marketing?
- How can agricultural KST respond to the need for households to have access to multiple options for incomes and livelihoods, while maintaining household food and nutritional security and aggregate food production?
- What are the potential contributions of biotechnology and conventional breeding techniques to increasing productivity and nutritional enhancement, and what are the environmental and human health implications of these technologies?
- What is the potential of agricultural KST to contribute to the nutritional status of people in developing countries, primarily through commonly available and consumed local foods?
- What role do safe food and water play in the alleviation of malnutrition?
- How will the transition from hunger to unbalanced diets affect the prevalence of non-communicable diseases?
- What are the potential risks to human health from zoonoses (livestock and wild animals); how can these risks be minimized and what are the conditions likely to result in epidemics?
- What is the risk of food system contamination, what are the costs of food safety risks, and what are the public health costs of food-borne diseases? and
- What agricultural technologies are most appropriate for AIDS-affected areas?

***(ii) Environment***

- How can agricultural KST ensure food production and nutritional security for a global population that is expected to peak in the middle of the century without degrading the environment that agriculture depends upon?
- Do we have the scientific knowledge/technologies to manage and reverse the impact of changes in the environment (drought, increased climate variability, etc.) and the natural resource base (loss of biodiversity, land degradation, etc.) on agricultural production?
- How can agricultural KST contribute to agricultural and environmental sustainability, and add value to environmental assets and what are the trade-offs (environment, hunger and poverty reduction)?
- How can agricultural KST contribute to monitoring, mitigating and adapting to global environmental change and its impact on future agricultural practices and policies, and what are the implications for hunger and poverty?
- How can agricultural KST assist the multilateral environment agreements reach their goals?
- What are the environmental implications of continued expansion of livestock and aquaculture?
- How can agricultural KST affect livelihoods in marginal areas, especially arid and semi-arid areas?
- Do we have the scientific knowledge/technologies to build energy efficient agricultural futures? and
- What impact would a transition from fossil fuels to biofuels have on agriculture, the livelihoods of rural poor and the environment?

***What are the appropriate investments in, and what are the optimum institutional arrangements for agricultural research and development to reduce hunger and poverty, improve rural livelihoods, and facilitate equitable, environmentally, socially and economically sustainable development?***

- How do institutional arrangements and decision-making mechanisms affect prioritizing investments in research?
- What is the impact of the globalization of science on investment priorities in research?
- How can national and local agricultural science and technology research capacities be revitalized?
- Is enough being invested to develop technologies for sustainable intensification of different farming systems?
- How can public-private partnerships that promote agricultural KST be strengthened?
- What mechanisms can help make private research serve public goals?
- What tradeoffs exist among social, economic and environmental objectives of investments in agricultural innovation, and what strategies can optimally blend these goals?
- What research is needed to develop crops that will remain productive under changing environmental conditions, e.g., higher temperatures, increased pest outbreaks?
- Does investing in technologies, including biotechnology, for orphan crops and marginal areas pay off in terms of sustainability and poverty reduction vis-à-vis investments in technologies geared towards high potential areas?
- What policies stimulate increased investment into agricultural research and development?
- and
- How will investments in roads, communications, health and nutrition, education and access to clean water affect agricultural production, food security, environmental sustainability and livelihoods?