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Food Security and Health

Policy Brief by the Scientific Advisory Board of the UN Secretary-General

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POLICY BRIEF ON FOOD SECURITY AND HEALTH

UN Secretary-General's Scientific Advisory Board

Key messages and recommendations

1. It should be acknowledged that with climate change, rapid population growth, multiple nutritional threats, and emergence of fast spreading diseases, the future of humanity's food and nutrition security cannot be taken for granted.

2. The world needs to recognize the gravity of the new food and nutrition security problem and take action to invest in science, technology and innovation, as well as advance supportive policies today so that the global future food and nutritional needs are secured.

3. With greater awareness and recognition of the tight interrelationships between food, nutrition, and health, a new trans-disciplinary and more integrated 'food-system' approach should be advanced to ensure the many dimensions of our 21st century food security agenda.

4. Human and institutional capacity in many poor nations are in dire need of enhancement; they need to be greatly strengthened so that these nations can be part of the solutions as significant players in a new global food- system that could meet the growing global food & nutrition needs.

5. Strong public and private partnerships are critical to foster the development of successful and sustainable commercial 'food systems' to support economic growth, provide gainful employment, and meet the food and nutritional needs for greater health of the society.

6. Fair and equitable trade and businesses need to be developed within and across geographical boundaries to encourage entrepreneurial capacity on diverse food commodities to expand economic opportunities in support of the poor.

7. There is a need to tie global food security to stronger national and global policies that support climate-smart production systems with profitable enterprises and food systems that are also committed to the stewardship of the endowments of planet Earth.

The problem

Feeding humanity sustainably has emerged as a serious global agenda for society. In the short run, concerns about global food security are about hunger and poverty among the poor, most acute and urgent in developing countries, where some 800 million people hungry, and children are threatened with stunting. We have entered a new era with serious doubts about our ability to feed future generations, as a steadily growing world population is projected to rise to over 9 billion generating concomitant increases in food demand. The income of a growing sector of our global community is increasing requiring diet changes, with shifts from high

calories to more protein-based foods.

Global food security also encompasses higher-level issues, such as the utilization and conservation of our natural resources, more efficient food production practices and utilization patterns, as well as minimizing global food loss and waste. Global trends such as climate change, the fragility and disturbance of our ecosystems, concerns about land and land use, the fast diminishing global water supply, and the fast growing demand for energy use in a more accelerated growth in the global industrial economy, have made it clear that we live in a world of limited resources.

The threats arising from climate change on agriculture and society are immense. Climate changes puts at risk the productivity of farms, forests, and fisheries, reduces availability of precious resources such as fresh water, increased frequency of heat, drought, floods, and fire. We have grown increasingly cognizant of the huge losses of biodiversity and the degradation of our ecosystems, and the need for greater stewardship of our natural resources. The emergence of fast spreading plant and animal diseases is increased as evidenced by the emergence of new plant and animal diseases such as Ug99 in wheat and maize lethal necrosis, in Eastern Africa, and the more recent Ebola and Zika virus epidemics on humans in West Africa. The task is daunting considering that meeting these food security, health, environmental as well as climate change challenges would bring along additional challenges such as climate mitigation, related to reduction of CO_2 emissions from agriculture.

Nutritional concerns have arisen as significant food security agenda making clear that our global food system need to be closely linked with the growing health needs of humanity. These multiple nutritional threats include over-nutrition, with fast rises in diabetes associated with over consumption of high caloric foods in both poor and rich nations; under-nutrition, with low caloric intake among the poor in our society, and as well the so-called hidden-nutrition, with wide spread deficiencies among those with unbalanced diets. These suggest that the challenge of meeting current and future food and nutrition demands are infinitely more complex, requiring more integrative and trans-disciplinary approaches. New advances in science, technology, and innovation will be needed to support our food systems in both poor and rich nations. Support for the development of these scientific advances is badly needed. Our global challenge, therefore, is not only to drastically increase production of nutritionally rich foods with prudent use of essential inputs, with minimal impact on soil, water, and land resources, as well as biodiversity of plants, animals, and microbes, but also to put in place a global food system that integrates our agriculture, nutrition, and health as a radically different, functional, and sustainable global agenda for humanity.

The policy context

On 25 September 2015 the General Assembly of the United Nations adopted the outcome document of the United Nations summit for the adoption of the post-2015 development agenda called "Transforming our world: the 2030 Agenda for Sustainable Development".

In the Declaration section of the document, the Heads of State and Government and High Representatives recognized continuing development priorities such as poverty eradication, health, education and food security and nutrition, alongside

with a wide range of economic, social and environmental objectives. They resolved to end hunger and to achieve food security as a matter of priority and to end all forms of malnutrition. They decided to devote resources to developing rural areas and sustainable agriculture and fisheries, supporting smallholder farmers, especially women farmers, herders and fishers in developing countries, particularly least developed countries.

A dedicated Sustainable Development Goal – SDG 2 "End hunger, achieve food security and improved nutrition and promote sustainable agriculture" was agreed upon. The 17 SDGs are considered as integrated and indivisible in their balancing the economic, social and environmental dimensions of sustainable development. In this regard, SDG 2 cuts across SDGs 1 and 10 (end poverty and reduce inequalities, respectively) and 3 (ensure healthy lives), and also speaks to SDGs 6 (water- related), 7 (energy-related), 13, 14 and 15 (on climate change, marine issues and biodiversity, respectively), as well as 8 (employment related) and 16 (on peaceful societies), as there cannot possibly be peace and stability without food security.

Gaps in the current global science and policy agenda

The new sustainable development agenda provides a clear enabling policy framework for action in relation to food security and health. Yet, gaps may exist already in the agreed provisions related to SDG 2. For example, pastoralists, local farmers and mountain people play a key role in relation to indigenous and local knowledge and food security, and their role should be fully recognized. This would need to expanding the scope of Target 2.3 beyond doubling the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, by mainstreaming relevant indigenous and local knowledge into food security policies and action plans alongside with scientific knowledge. For example, achieving Target 2.5 i.e. to maintain the genetic diversity of plants and animals important for food and agriculture, requires the active maintenance of indigenous and local knowledge systems, including by promoting access to and fair and equitable sharing of benefits arising from the utilization of traditional knowledge. The important link between indigenous and local knowledge and diversity of food systems and food security and nutrition is exemplified by the critical role played by forest producers, agroforestry systems and small scale farmers, as well as the need for investment to advance research in this area.

Food security is central to humanity as a whole, and moves people from different backgrounds and interests. One third of the human population calls itself small producers. Africa feeds eight percent of the world population but suffers from food insecurity. Yet, inequalities in food security and nutrition are widespread and intense in many regions of the world. Increasing investment in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks, as called for by Target 2.a, requires to "walk the talk" inter alia by developing a global partnership on food security. Policy regulations such as those envisaged under Targets 2.b and 2.c (correcting and preventing trade restrictions and distortions in world agricultural markets, and adopting measures to ensure the proper functioning of food commodity markets and their derivatives and helping limit extreme food price volatility) require effective public-private partnerships at multiple scales for their realization. Such partnerships would also generate investments important for research and innovation in the area of food security and health, and to build human capacity in developing countries.

There is a need for an integrated discussion on food security, and to recognize agricultural productivity not only as a product of human efforts but also as a service and benefit provided by healthy ecosystems, both terrestrial and marine. Only by recognizing fully that sustainable food production systems depend on only on technology, infrastructure and energy but also on the conservation of biodiversity and the maintenance of related ecosystem services will we be able to ensure the capacity of ecosystems to adapt to climate change and to other disasters and to provide a basis and a buffer to ensure food security. Therefore, the current scope of Target 2.4 needs to be expanded so as to fully recognize the links between agricultural productivity and the maintenance of biodiversity and ecosystem services.

Recognizing the environmental dimension of production patterns is also important in light of between livestock practices and health.

Moreover, practical solutions ought to be developed beyond agriculture, such as to tackle threats from biofuels. The virtue of advancing practices for biofuel production in poor nations on lands that could be used to produce and distribute food badly needed to meet nutritional and health needs of the poor need be seriously contemplated. Adequate policies need to be crafted at multiple levels to minimize competition and maximize synergies between food and biofuel production.

The pathways towards a renewed global food security agenda for humanity

Science, technology, and innovation as levers for a transformative food security agenda

Science, technology, and innovation, suffused in the right policy environment, are indeed the basis of creating agricultural business enterprises that create employment, grow local economies, and offer a steady supply of food for consumers. These are the lessons we can take from areas of the world that have modernized their agriculture, such as North America, Europe and the Pacific, as well as, more recently, the emerging economies.

Transforming scientific results to products and technologies that would impact production, processing, and utilization of food would require partnerships, and those need be nurtured. Historically, advances of successful agricultural enterprises through the application of science and technology work that streamed out of their many universities and research institutions have been made in developed countries, and the innovations that continue to emanate out of their agricultural and food business communities constitute the legacy of such efforts. Today, agricultural science and technology is emerging strongly from other nations, such as China, Brazil, and India, and several developing nations with transformative results.

Furthering human and institutional capacity building efforts in support of food security

Assisting in building the scientific capacity of these nations is key to bringing developing countries into modern agriculture and to achieve food security. Partnerships involving educators and researchers at institutions of developing and developed countries would assist in forging a new generation of scientists and leaders in agricultural research.

Equally important is the assistance that can be provides in strengthening home institutions of young professionals so as to ensure adequate facilities for teaching and research.

Promoting the power of fair and equitable markets, trade, and businesses

Again, drawing from the role agriculture played in the early days of the economic growth of developed nations, farming became a profitable undertaking breakthroughs in the science of agriculture dramatically

transformed production practices, increased income, and enhanced farming efficiency. It drew great investments from both rural and urban businesses; farm yield levels reached great heights, incomes grew, and food prices remained low.

For example, in the United States early in the 20th century, crop yields were dramatically increased through research in genetics, crop and animal husbandry, weed, pest, and disease control through chemical inputs and integrated pest management approaches. Coupled with emergence of modern farm machinery, development of post-harvest technologies, and value-added farm products, farm income grew several fold and the economies of many rural communities were totally transformed.

Markets were catalytic in generating incentives for technology adoption and in creating opportunities for local businesses in these early developments, as they are today for those in developing nations. Local and regional markets such as the ones currently emerging under the New Partnership for Africa's Development (NEPAD) provide the 'vision and policy framework' that enhance technology adoption, advance better farming practices, and with careful attention, wisdom, and policy, they encourage integration of interdependent communities, thereby contributing to the greater social, economic, and environmental sustainability goals.

The importance of public-private partnerships

The creation of a practicable and mutually beneficial partnership between the public sector and the private sector plays a crucial role in the development of rural economies. The public sector would typically provide early investments in higher education and in agricultural research allowing the development of breakthroughs in science and technology. Public service investments assist in disseminating the applications of new scientific results and technological products to rural communities through rural extension, seed systems, and several support services. Private sector investments allow the deployment of services to rural communities in making valuable good quality products such as seeds, fertilizers, and pesticides readily and conveniently available to farmers, creating markets and a win-win that became the key essential for success. Layers of public services in the essential areas of financing and risk management make it possible for both farmers and the emerging businesses to function and grow with mutual benefits. Advocacy for public-private partnership is one contribution that can be made to advance the cause of global food security.

Good governance and policy-making in support of food security

With due respect for the need for science to remain independent, scientists need to pay adequate attention to proper governance and policy-making, and to find appropriate avenues to engage with policymakers. This will require an iterative dialogue between scientists and policy makers, so that science can inform policy making to benefit society.

In return, scientists could benefit from a better understanding of the democratic process of decision making, so we know the potential avenues for proper and timely intervention, including ways to encourage advocacy for science and the scientific process. Related to policy-making in relation to the food security agenda, much can be done to encourage international funding for research and development programmes directed to developing countries, whether this is through government programmes or non-governmental agencies and foundations.

Concluding remarks

Because the emerging social, environmental, and natural resource based grand challenges of society are so complex, they require new foundational investment and commitment to advance the scientific, technological, and innovational architecture of the global economy. A stronger and more focused scientific capacity is needed to support economic growth and address the global food security agenda. Investments are needed in purpose-driven science that not only advances knowledge, but also creates products and technologies that can be deployed effectively to support innovative practices that spur economic growth, create jobs and ensure improved livelihoods. In a society with wisdom and foresight, science has the additional challenge of generating knowledge and tools for greater public good including the creation of stable livelihoods, as well as sustainability of the natural, biological and physical environments.

Through investments in science, we can create an opportunity to slow down and reverse harmful events and trends by decisions that we make today. We have learned from the past that investments in agricultural sciences in the 20th century have averted disasters and paid great dividends. It is not impossible that we can produce enough food on this single planet to feed nine billion in an environmentally sustainable way through creative science and innovation. Agricultural science is scalable. All farming practices, including small holder farms of the tropics, as well as large industrial temperate farms, or the growing local food farms can be made more efficient, productive, economical, and environment friendly, through the application of appropriate scientific practices, though some of those practices may have to be generated anew.