Better information to improve food security

The G20's leaders are making the problems of rising and volatile food prices a top priority for Cannes. Improved information and transparency will help to reduce panic in the markets and act as a prior warning of price surges

By Jacques Diouf, director general, Food and Agriculture Organization

The world today faces continuing concerns about high and volatile food prices and food security. The last year has been marked by a continuation of the extreme swings in food prices seen since 2006. A few months of calm came to an abrupt end in 2010 when from July onwards unfavourable weather hit crops in major producing countries. By year end, grain prices had soared back to their level at the peak of the 2008 food crisis.

The high prices of 2007-08 pushed an additional 80 million people into hunger, increasing the number of hungry and malnourished to one billion. That is around one-sixth of the world's population.

High and volatile food prices challenge the fundamental human right to adequate food. They not only increase but also deepen poverty and food insecurity. The impact falls most heavily on the poorest – especially the urban poor and the landless – who may spend as much as 75 per cent of their income on food. High food prices reduce their purchasing power and lead to irreversible harm. They reinforce poverty traps as physical and human capital is eroded and spending on education is cut.

Threat to investment

For poor food producers, price volatility increases uncertainty and deters the investments essential to increasing food production and reducing vulnerability. Without assistance to overcome supply-side constraints, they have neither the means nor the incentive to respond to higher prices. For governments of net food-importing countries, increasing and volatile costs threaten exchange reserves and disrupt development budgets and slow the pace of growth and development.

The resurgence of high food prices in 2010 prompted fears of a repeat of the 2007-08 food crisis, threatening increasing food insecurity, rampant food price inflation and civil unrest. Fortunately, the worst fears have not materialised generally. But high and volatile agricultural commodity prices are likely to persist and continue to challenge the ability of consumers, producers and governments to cope with the consequences. The issue of agricultural price volatility and how to deal with it is has thus been at the top of the G20 agenda.

In June this year, G20 agricultural ministers agreed on an action plan to combat volatility itself and its negative impacts on the food security of the most vulnerable. That action plan will be submitted to the G20 leaders in Cannes. The discussions were based on the *Interagency Report to the G20 on Food Price Volatility,* prepared by the Food and Agriculture Organization (FAO), the Organisation for Economic Co-operation and Development (OECD), the International Fund for Agricultural Development (IFAD), the International Monetary Fund (IMF), the United Nations Convention on Trade and Development, the World Food Programme (WFP), the World Bank, the World Trade Organization (WTO), the International Food Policy Research Institute (IFPRI) and the UN secretary general's High-Level Task Force on the Global Food Security Crisis. The efforts of these 10 international organisations were coordinated by FAO and the OECD. The report put forward a number of concrete policy options aimed at both reducing volatility and mitigating its negative effect on countries and the vulnerable.

> "High and volatile food prices challenge the human right to adequate food. They not only increase but also deepen poverty and food insecurity"

Many factors have contributed to price increases and volatility. Suggestions for policy responses are similarly broad. Greater regulation of speculation, the creation of buffer stocks and reform of biofuel policies, for example, all have their advocates as means to reduce food price volatility. But they remain controversial. What all are agreed upon is the need for better information and more transparency in international food markets.

The experience of the 2007-08 food price crisis and today's high and volatile prices have exposed weaknesses in information concerning world food supply and demand, a lack of reliable indicators of when crisis threatens and a lack of policy coordination to avoid individual country responses turning a bad situation into a crisis.

The G20 agriculture ministers adopted the recommendation to establish the Agricultural Market Information System (AMIS) to improve information and transparency and promote policy dialogue and coordination at the global level. Better information and

A toolkit for sustainable bioenergy

The debate over the sustainability of bioenergy, and of biofuels in particular, continues to rage. What is beyond doubt, however, is that they are here to stay: while efforts to develop a second generation of biofuels, which may be better able to manage the trade-off between food and fuel, also continue, these could be as much as 10 years away – and there is still no guarantee that they will address all the sustainability issues.

What is crucial in the meantime, therefore, is to have a framework under which both governments and investors can monitor and assess the impact of bioenergy projects. The Food and Agriculture Organisation of the United Nations (FAO) has spent more than three years working on this, in collaboration with a number of partners. The result is the **FAO Support Package for Decision-Making for Sustainable Bioenergy**.

The package includes four elements, which says Olivier Dubois, the leader of FAO's energy group: "will allow decision-makers and users to make the right choices and decisions about biofuel development".

The first element is a road map, the UN-Energy Decision Support Tool for Sustainable Bioenergy (**DST**), prepared jointly by FAO and the United Nations Environment Programme (UNEP), which gives investors and governments a list of the questions they should use to formulate a bioenergy strategy and appraise bioenergy projects, ranging from why they want bioenergy, through how it compares with alternatives, to the technologies and feedstocks that will be used and where to implement bioenergy initiatives.

The second tool, the **Bioenergy and Food Security project (BEFS)**, is designed to support countries that have been approached by investors interested in establishing bioenergy projects. The aim, says Dubois, is to provide a detailed analysis of the situation, risks and opportunities related to bioenergy development

This has already been tested in three countries – Peru, Thailand and Tanzania, all of which are at different stages of implementation of bioenergy policies and projects – and a further eight countries have requested information, underlining the growing interest in such tools.

The next instrument, the **Bioenergy and Food Security Criteria and Indicators project (BEFSCI)**, is a policy tool for both ex ante and ex post stages of project implementation, giving governments and investors both a list of good practice and related policy instruments, and ways to monitor impact and performance when the project is up and running.

The fourth element, developed by the **Global Bioenergy Partnership (GBEP)**, is a list of 24 sustainability indicators of bioenergy that provide a comprehensive yet practical means of evaluating the impacts of bioenergy production and use in a country, and thereby informing policy development. These indicators were agreed by 23 countries and 13 international organisations in May 2011, with the involvement of a further 22 countries and 10 international organisations as observers.

The four elements of the package are designed to be used separately or together, and they can be brought in at different stages of the decision-making and monitoring process. That means the analysis can be relatively quick – using the DST alone, for example, could take less than six months – or, if there is more time, the other elements can be combined to help devise a detailed policy and strategy; alternatively one can use the BEFSCI tool straight away to promote good practices and related policies, following the precautionary principle.

"The whole issue of bioenergy is very complex and controversial," says Dubois. "We are aware of the debate, but we must operate in a systematic and pragmatic way. It is too simplistic to say that there is no competition between food and energy: it depends on what you use, and how and where you use it.

By providing a menu of options – from detailed analysis of projects to guiding principles – we think we will help to advance the debate over the issue, and allow the implementation of sustainable bioenergy projects in an informed way."

BEFS
Bioenergy and Food Security Project

FAO
FIAT PANIS

BEFSCI
Bioenergy and Food Security Criteria and Indicators

GBEP
Global Bioenergy Partnership

enhanced transparency will reduce volatility and the incidence of panic-driven price surges, and permit better-informed policy decision-making. AMIS will provide the basis for global food market alerts to price surges, operating as an international early-warning system. The first meeting of AMIS took place in September this year.

AMIS is a platform shared by countries, international organisations and the private sector to strengthen synergies and collaboration in order to improve data reliability, timeliness and frequency, to build developing countries' capacity in market outlook analysis and to promote policy dialogue. It focuses on the global food market and includes major producing, consuming and exporting countries that together account for most of the world food market.

AMIS will involve a joint secretariat, housed in FAO, comprising nine international organisations with the capacity to collect, analyse and disseminate information regularly regarding the food situation and outlook, as well as food policies. These organisations will ensure that the information outputs of AMIS will be objective, benefiting all – a public good for the international community.

In addition to the secretariat, AMIS includes the Global Food Market Information Group and the Rapid Policy Response Forum. The Global Food Market Information Group will be made up of food market experts from the participating countries. They will be responsible for ensuring the provision to the secretariat of continuous, quality, reliable, accurate, timely and comparable information regarding national supply and demand and outlook and policy developments. The group will also promote the improvement of statistics and information and will guide capacity-building. The Rapid Policy Response Forum will enhance policy dialogue when the market situation and outlook indicate a high food security risk. It will consist of senior policy-makers from participating countries. Its objectives are to enhance policy coordination through promoting early exchange of key policy information and to assist in mobilising wide and rapid political support for appropriate policy response and actions.

Agricultural problems caused by adverse weather conditions put developing countries at risk of food shortages and dependence on international aid

Building resilience

International and national actions can mitigate food price volatility and its impacts on vulnerable people. However, what is also needed is to build long-term resilience. The background to the devastating impact of soaring and volatile food prices on the livelihood of the poor is 20 years of underinvestment in agriculture and neglect of the sector. Investing in agricultural productivity growth and resiliency is paramount to addressing food price volatility. For the majority of poor countries, a healthy agricultural sector is essential to reduce vulnerability to international price volatility, to overcome hunger and poverty, and to provide the platform for wider economic growth. In the longer term, the resulting increases in food production by developing countries can not only strengthen their resilience to high and volatile prices, but also assist in reducing that international volatility. ◆

Better-informed development policies, now

The number of developed and newly industrialised countries has been rapidly expanding. Several of them, once considered developing, have succeeded in becoming newly industrialised and helped establish the G20. This new coalition has made strong commitments to help the remaining developing countries move ahead. The Millennium Development Goals (MDGs) have established a number of critical economic, social, and environmental goals for developing countries to achieve. Unfortunately, as United Nations Secretary-General Ban Ki-Moon lamented four years ago, only a few countries will meet the MDGs by 2015. In addition, the current global economic crisis is further increasing the hurdles for the low-income countries everywhere.

Compounding the old, these new problems and the growing risks from climate changes demand more effective planning tools to make sure that the G20's financial support (which may become limited as a result of the economic crisis) is used more efficiently to assure progress towards meeting the MDGs or similar national goals.

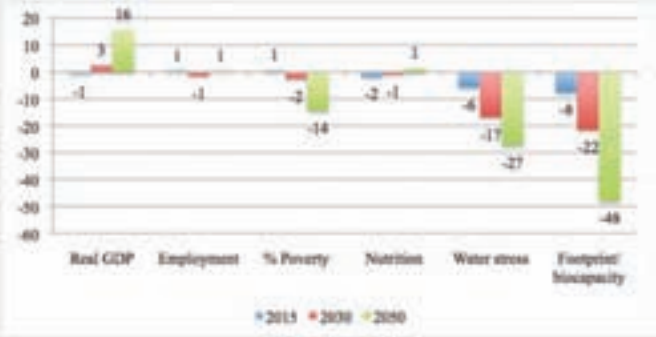
Fortunately, such tools are available. The Millennium Institute (MI), a non-profit development research and service organisation, has created a system dynamics-based model to help developing countries design, test, implement and evaluate their development strategies. Over the past two decades, MI has worked with partners in Africa, Asia, Latin America and the Caribbean to develop their capacity to build and use scenario-based models to prepare long-term national roadmaps for sustainable development and inform supportive policies that address the MDGs, economic growth, climate change and post-conflict peace-building, in a comprehensive, systemic and holistic manner.

The MI approach involves looking into alternative future scenarios from the business-as-usual scenario, to enable informed choices that optimise synergies and minimise or mitigate the unintended consequences of policy decisions. Within a single, integrated framework, the economic, the social and the environmental impacts of decisions can be visualised and examined. The model's capability, versatility and ease of use make it, among others, a great tool for implementing the Paris Declaration on Aid Effectiveness:

- Ownership: The model's analytical capability and MI's institutionalisation policy give countries the ability to develop comprehensive scenarios, thereby exerting leadership over and control of their development agenda. It fosters ownership through the participatory process of scenario development, which brings together different stakeholders to develop, articulate and eventually implement the common vision.
- Alignment and Coordination: Scenarios produced with T21 enhance donor effectiveness by clarifying a country's overall situation – particularly the cross-sector relationships – to show opportunities to pool resources and the optimum potential contribution best suited for each donor to create synergies.
- Results Management and Accountability: T21's capability to measure results versus initial commitments and goals permits factual results-based management and enforces mutual accountability through sound monitoring and evaluation.

The development of national and regional T21 and local scenario modelling capacity yields a very high return on investment (ROI). For example, in Ghana, the model helped identify savings of up to 15 per cent of the estimated MDG investments based on how the investments are structured across sectors. In an application with the UN Environment Programme, it showed that green investments of two per cent of global gross domestic product in certain key sectors could trigger more sustainable growth than business as usual while reducing greenhouse gas emissions and promoting ecosystem preservation (see chart). Such high ROI is witnessed in the over 40 national applications of the model so far.

Results of the GER2 scenario in 2014, 2030 and 2050, relative to BAU2 (%)*



** The UNEP Green Economy Report (2011) GER2 scenario assumes that 2% of the global GDP is invested in key sectors for a low-carbon, resource-efficient economy, while the BAU2 scenario allocates the same additional investment (2% of GDP) that continues the current unsustainable trends.*

Given the complexity of the tasks ahead for all the stakeholders, use of a highly intuitive and productive tool such as T21 is imperative to address the myriad challenges we face collectively in our increasingly interdependent world. If the G20 is to seriously address sustainable development, it must call for and support the adoption of an integrated framework (such as T21) by governments and the development cooperation community as a matter of urgency.

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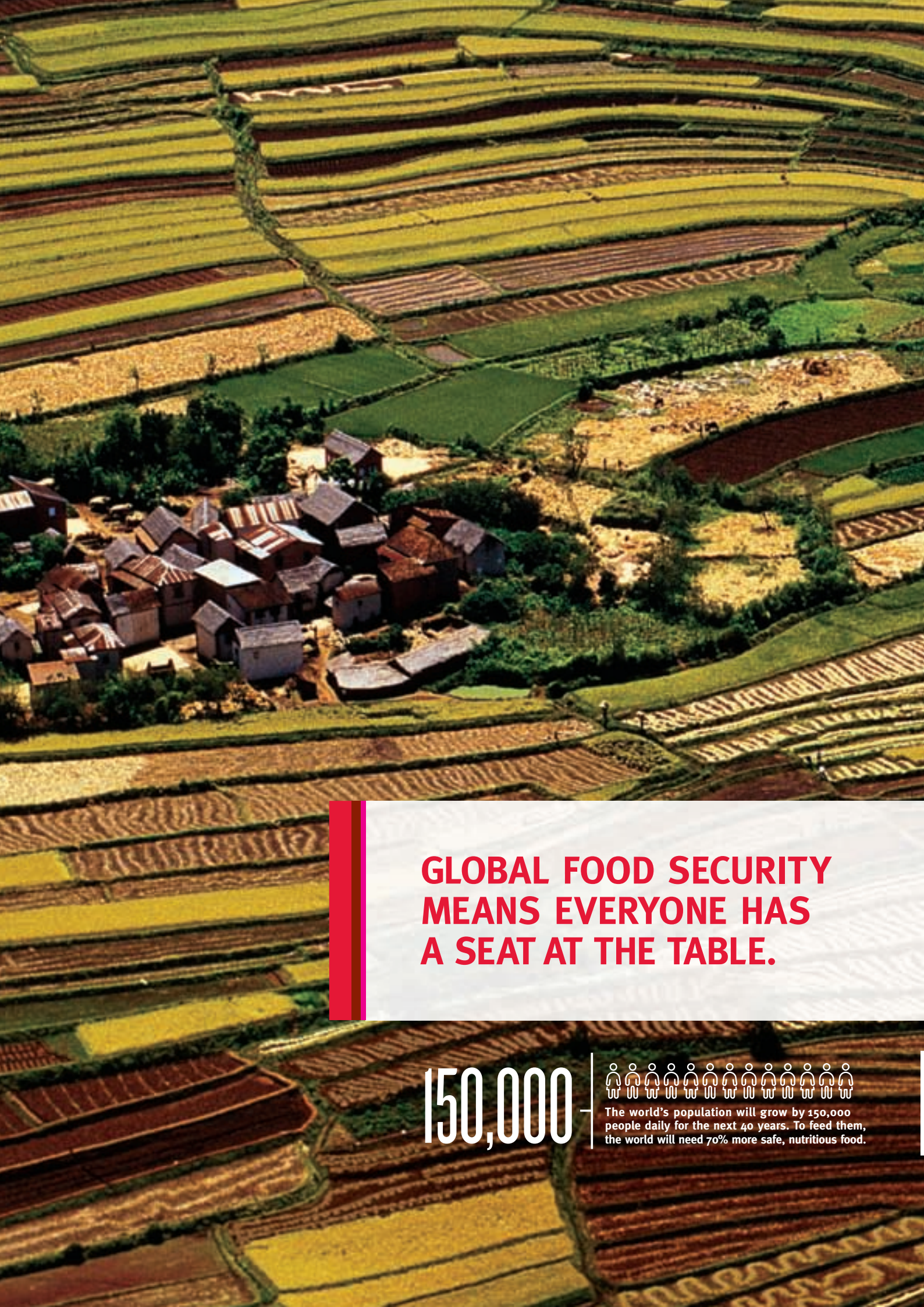

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Advancing agriculture for development

The issue of food and nutrition security has become increasingly urgent as famine threatens the Horn of Africa. It is essential that measures are introduced to ensure people in the developing world are less vulnerable to fluctuations in food supply

By Kanayo F Nwanze, President of the International Fund for Agricultural Development (IFAD)

"*Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life*" (World Food Summit Plan of Action, November 1996).

In the past year, the G20 has focused more on food and nutrition security than ever before, partly in response to the food price spikes and volatility of recent years. With the spectre of famine now casting a shadow over the Horn of Africa, these efforts have an added urgency.

There is no question that when disaster strikes, immediate emergency assistance is imperative. But to prevent the tragedy of hunger and starvation from recurring, it is necessary to introduce measures to safeguard the food and nutrition security of vulnerable people around the world. If no action is taken now to strengthen the resilience of people to crisis, whether natural or human-made, millions of people will suffer.

An Indian woman dries paddy grains in Agartala. Women make up a high proportion of the farmers and labourers in developing countries

The world's population is expected to grow from around seven billion today to about 9.2 billion in 2050. To meet demand, global food production will need to increase by 70 per cent in less than 40 years. Production in developing countries will need to almost double.

Establishing long-term food security, however, is not simply a matter of increasing the volume of food. People must be able to afford to buy food that meets their nutritional, cultural and taste requirements. And this food needs to be widely accessible in local markets all year round, even in remote rural areas.

Raising production of smallholders

When agricultural development is designed to boost the output and income of smallholders, it can have a profound impact on food and nutrition security in developing countries, while also reducing poverty. There are around 500 million small farms in the developing world, providing up to 80 per cent of the food consumed in Asia and sub-Saharan Africa. Most of the two billion people who depend on these small farms are poor. Indeed, about half of the chronically undernourished in the world are poor rural people for whom agriculture is an essential source of food, income and employment. Raising the incomes and productive capacity of poor farmers and labourers, many of whom are women, makes it possible for more people to buy food, while at the same time increasing the supply of suitable foods to local markets.

Traditionally, small producers have operated in poorly organised markets, with weak infrastructure and services. But today, agricultural and food markets throughout the world are becoming better organised. Quality standards are rising, and supply chains are becoming more integrated. Demand is growing, not only for higher volumes of food, but also for higher value food, particularly in urban markets.

How can poor smallholders benefit from these developments? For smallholders, new markets and increased demand offer new opportunities. But there are also greater risks of exclusion, particularly if farmers are unable to reduce their transaction costs or cannot meet higher standards. With a more enabling environment, supportive policies and investments, these farmers can produce more and better-quality food, and achieve higher and more stable incomes. Strengthening the ability of small farmers to engage with markets, while at the same time improving the functioning of these markets, are essential steps in creating food systems that can eliminate poverty and hunger.

Increasing poor farmers' resilience and ability to manage risk is another essential element of agricultural development. Poor farmers in developing countries are contending with higher rates of land degradation, water scarcity and growing competition for dwindling natural resources. They also face a more difficult and unpredictable climate, in which extreme weather events are expected to become more frequent and more violent. Achieving food and nutrition security requires making agriculture – and the livelihoods of small farmers – more resilient to such phenomena. It also requires good governance; without it, droughts and other natural disasters can too easily translate into famine.

The International Fund for Agricultural Development (IFAD) is both a United Nations specialised agency and

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All factory waste is recycled into the plantation or used to generate steam and electricity

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A Sudanese farmer tends his land on the banks of River Nile in Khartoum. Smallholders need assistance to access markets and to meet rising demand

an international financial institution. For more than 30 years, IFAD has pursued a mandate focused on rural and agricultural development to combat poverty and hunger, which today places it at the frontline of efforts to improve food and nutrition security.

The projects that IFAD supports are designed to give poor rural people the tools to seize new opportunities and build resilience. IFAD views smallholder agriculture as a business, and recognises farmers as small entrepreneurs who need better incentives and an enabling environment to invest more effectively and sustainably in their farms and non-farm enterprises. It also believes that more productive, sustainable, resilient and better market-integrated smallholder agriculture is critical for food and nutrition security in the developing world.

Strengthening supply chains

Experience shows that market-oriented agriculture has tremendous power to generate incomes, sustainable economic growth and food security. But for this to happen, all sections of agricultural supply chains need to be strengthened, from production to processing and marketing.

Supportive public policies and investments are essential, as is stimulating private investment in agriculture (including by farmers), to reduce risks and costs and to ensure that growth in agriculture actually contributes to food and nutrition security.

The G20 can help developing countries put in place the necessary public policies and investments. It can facilitate the production and dissemination of research and technology to make smallholder agriculture more sustainable and resilient.

The G20 has an important role to play in promoting the sharing of experience by countries, such as Brazil and China, that have made progress in food and nutrition security through boosting agriculture. The G20 can also help promote policy coordination between countries, which is essential as for dealing with sensitive issues in trade, biofuels and responsible investment in agriculture.

> “The projects that IFAD supports are designed to give poor rural people the tools to seize new opportunities and build resilience”

Finally, the G20 has made some headway in engaging with the private sector in areas such as food price volatility. Private-sector involvement, ranging from large companies to small farmers and their organisations, is critical to generate broad-based strategies that enable agriculture to contribute most effectively to food and nutrition security.

With the number of hungry people likely to surpass one billion this year, efforts to improve food and nutrition security must accelerate. By working together towards long-term solutions, the conditions can be created so that when the next natural or human-made disaster hits, everyone is prepared and vulnerable people do not starve. Anything less is unacceptable. ◆

A global action plan for tackling hunger

The combined effects of recent natural disasters, conflict and volatile food prices have placed the greatest burden on those least able to cope. Eradicating such vulnerability requires coordination and commitment from the developed world

By Josette Sheeran, executive director, United Nations World Food Programme

The challenge of ensuring access to nutritious food for the most vulnerable is now compounded by a convergence of global crises. An increasing number of natural disasters on all continents, escalating insecurity associated with ongoing conflicts, and volatility in the price of agricultural commodities now seem to be the norm. The tragedy is that the individuals exposed to the highest levels of risk from floods or drought, conflict or war are those with the poorest means to cope with such shocks.

This has played out dramatically in the drought-induced hunger crisis in the Horn of Africa, as conflict, political instability and weak institutions plunged more than 12 million people into desperate hunger. As the World Bank's *World Development Report 2011* notes, people in conflict-affected states are more than twice as likely to be undernourished as those in other developing countries.

Climatic changes have also increased both the frequency and intensity of natural disasters. Floods and droughts that were periodic have now become epic and repetitive. The 2011 drought in the Horn has been declared the most severe for 60 years, while last year's monsoon floods experienced by Pakistan were the worst in the country's recorded history.

New challenges require new, system-wide approaches. No one country, region or organisation can address these challenges alone. The burden of managing rising risk and uncertainty must not fall on the estimated 80 per cent of the world's population with no access to safety nets. To address these issues, the World Food Programme (WFP) has proposed a five-point action plan that calls for the development of emergency food-reserve systems, the scaling up of social protection safety nets, support to smallholder and women farmers, the exemption of humanitarian food from export bans and the creation of a multilateral mechanism to improve analysis of food prices, production and stocks.

> "If honoured, existing commitments would allow food to be shipped rapidly to wherever it is needed in an emergency"

The G20 has clearly recognised the need for a common approach to tackling the hunger challenge over the past few years. Food security has been a central theme on the G20 agenda since the 2009 London Summit. The summits in Toronto and Seoul in 2010 saw world leaders recommit to addressing fundamental food security issues. Under strong French leadership, food security has emerged as one of the key pillars of this year's G20 process.

Proposals for an emergency reserve

In response to G20 requests, WFP and other international organisations prepared a proposal for an emergency humanitarian food reserve as part of a broader array of policy responses to price volatility in food and agricultural markets. That proposal calls for a pilot programme for a small, regional emergency food-reserve system to be submitted for consideration before the end of the year.

The aim is to enable the poorest countries to ensure rapid access to food for the most vulnerable people through targeted food assistance programmes in the event of supply shocks, while building capacity to develop, deploy and manage food stocks and safety nets.

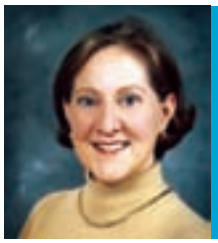
The world must also come together to support previously agreed-upon systemic solutions, such as allowing humanitarian food to be exempted from export bans. Countries have agreed to make humanitarian exemptions, first at the G8 summit in L'Aquila in July 2009, and then at the World Summit on Food Security in Rome in November 2009. If honoured, these commitments would allow food to be shipped rapidly to wherever it is needed in an emergency.

Some countries that imposed export restrictions in 2008 and 2010 made exemptions for purchases of humanitarian food, including those by the WFP. However, others have not done so, forcing humanitarian agencies to purchase food from more distant sources. And most exemptions, if made, are on a case-by-case basis after concern has been raised and the exemption requested. Valuable emergency-response time and resources are lost, as procurement teams have to spend time negotiating or finding alternative suppliers from other regions.

As the world's largest humanitarian organisation with the mission to protect lives and livelihoods, WFP plays a major role in helping the world's poorest to build resiliency. This is why recent times have seen one of the most profound reforms in the organisation's history as it moves from a food aid agency to one that provides food and nutrition assistance, helping individuals,

Food security – a hot potato

Food security in the 21st century demands significantly increased and sustained investment in agricultural research-for-development. We urgently need immediate research investment to boost food availability and access. Sustained investment is critical for longer-term research to drive a deeper, contextualised understanding of our production and consumption systems. Only then can we transform our current vulnerabilities into a resilient global food system



Pamela K Anderson, director general, International Potato Center, Lima, Peru

Urgency

Global food security is fragile. Climate change, economic crises, high grain prices, and rapid population growth are combining to create a perfect storm.

In the mid 20th century, investment in agricultural research resulted in availability and access to safe and relatively inexpensive food, and saved millions of people from hunger and starvation.

Agricultural research became the victim of its own success. The past four decades have seen a steady decline in investments for agricultural research. However, even by conservative standards, the rates of return on investment in research-for-development are more than two-fold – with recent studies showing as much as $9 of benefit for each $1 invested in agricultural research.

Within our reach

Climate-smart agriculture that can ensure food security, improve lives, and protect our earth's fragile resources is possible. But it demands new investments and an increased knowledge base that incorporates scientific advances in agriculture with development strategies that will result in sustainable impact.

Food security exists when all people at all times are free from hunger. The concept of food security includes: food availability, access, utilisation and vulnerability. Food availability is the supply of food. Access is a household's ability to obtain that food. Utilisation is a person's ability to select, take in and absorb nutrients in food. And vulnerability is the physical, environmental, economic, social and health risks that may affect availability, access and use. Looking at the example of how one crop – potato – fits into a more robust global food system can help illustrate these different dimensions of food security.

Investing in food security: food availability and diversification

The number of people going hungry every day is hovering around one billion. Part of the solution is to increase production. While growth rates of the major grains are stagnating, current potato yields in the developing world are often only one-half to one-quarter of their yield potential. Immediate investment in seed systems, improved crop varieties, pest and disease management and post-harvest losses, which close the yield gaps and realize the yield potential of potatoes, offer high rates of return to governments and other investors.

Increased production will also come from improving systems productivity. Across southern Asia, where arable land for crop expansion is scarce, there are at least 30 million hectares that could be modified to rice-potato-rice rotations. Research evidence indicates that in these systems potato yields are doubled and rice yields are also increased.

But, ultimately, the challenge of food scarcities will require a more robust and diverse world food system. Crop diversification can mitigate risks of crop failures and buffer against global grain price fluctuations. The vital role of commodities that complement the major grains must be recognised and supported.

The power of investing in a diversified commodity portfolio can be seen in the case of China. The Chinese government projects that its population will continue to grow and stabilise at 1.5 billion people over the next two decades. It has targeted 95 per cent food self-sufficiency. This will require increasing food supplies from the current 500 million tons to 600 million tons by 2030. The government has decided that at least half the new food production will come from potato. Under the recently approved five-year plan, China, known as a land of rice, will increase potato production from its current 99 million to 150 million tons/year.

In its recent reform, the Consultative Group on International Agricultural Research (CGIAR) constructed a research priority on Global Food Security in order to reposition key under-invested, but critical, commodities. Potatoes are featured along with sweet potatoes, cassava, and bananas in the CGIAR Research Program on Roots, Tubers, and Bananas. Other under-invested commodities that feature in the new CGIAR portfolio include: sorghum, barley, millets, triticale, dry beans, chickpeas, groundnut, lentils, soybeans, fish, and livestock.

Farmers in Peru. Smallholders in several countries are reaping greater income from their potatoes

Food access

Even when food is available, it may not be accessible. In poor countries, 50 to 70 per cent of household income is spent on food. Improving access involves at least two dimensions: i) maintaining low prices for staple foods and ii) increasing the incomes of poor households.

Diversifying into commodities that are not internationally traded offers a buffer to the price volatility of the major grains. In the case of potato, a 2008 FAO study showed that in 70 countries across the developing world, potato prices remained low and stable, while grain prices were spiking.

Staple crops also have an important role to play in increasing the incomes of poor households, particularly if they can be linked to market chains that increase demand and value. Smallholder producers in countries from Peru to Ethiopia and Indonesia are reaping greater income from their potatoes, thanks to higher market demand and higher-value processed potato products.

Value chain research by the International Potato Center (CIP) and partners over the past 15 years has demonstrated the tremendous potential for income generation (and improvements in non-monetary assets) through the creation of non-conventional partnerships among small farmers and the private sector.

Food utilisation

With growing scarcity of arable land, pressures on water and land resources, and awareness of the need to preserve our precious treasure of biodiversity the research focus must shift. We must address questions such as: What are the critical micronutrients for a population? How much nutrition can be produced per unit area? How can we use local biodiversity to enrich diets?

Potatoes produce more edible energy per unit land area and time than any other major food crop. A standard 100-gram potato contains half the vitamin C required per day and is rich in other micronutrients such as iron, zinc, phenolics, and fibre. CIP is screening its World Potato Collection for nutritional quality and undertaking conventional breeding to push the nutritional value of potatoes to even higher, clinically significant, levels.

Vulnerability

Sustained, long-term investment in systems research is needed to address food vulnerability. We must understand complex food portfolios of smallholder systems across the developing world. Our understanding must translate into climate-smart, intensified, and sustainable production systems that bring benefits to both the producers and consumers. There is no blueprint for sustainable intensification in the face of continued population growth, growing scarcity of land and water, and intensifying climate change. We must generate that understanding.

The deep challenges that we face today in food security, human health, and climate change can all be characterised as challenges in dynamic complexity. These are systems that are biophysically, ecologically, socio-economically and culturally diverse and complex. And they are constantly changing. We need to develop and apply tools and methodologies that will allow us to understand and intervene in these systems at different scales.

Without the appropriate immediate and longer-term investments in agricultural research, we will not transform the current vulnerabilities into a resilient global food system.

CGIAR

CENTRO INTERNACIONAL DE LA PAPA
CIP

A flood victim carries flour to his village from a distribution point in Pakistan. Much of the local population remains dependent on food aid, months after disaster struck

communities and countries build food security. In this way its response is smarter, more targeted and context-specific. It is able to build resiliency to food insecurity even at a very early stage in its humanitarian response.

Such resiliency is vital in order to save lives and protect livelihoods before crisis strikes. Indeed, there are hopeful signs that today's drought need not result in the tens of thousands of deaths seen in earlier decades. Other than the tragic situation in south Somalia, where those in control have blocked humanitarian assistance, the drought's impact has been blunted by preparation and resiliency programmes.

Through a community adaptation program called MERET, WFP has been supporting the Ethiopian government in sustainable land management and rain catchment, which has vastly increased food production and mitigated the impact of the drought. In the dry Karamoja region of northern Uganda, local communities are showing more resiliency than during the droughts of 2007-09, thanks to a new system of communal food stocks that are replenished at harvest time. In Karamoja, WFP has also put in place a comprehensive child hunger safety net to provide predictable, entitlement-based nutritional support to children throughout their life cycle in order both to stabilise acute malnutrition and to prevent chronic malnutrition during a crisis.

Albert Einstein famously noted that the definition of insanity is to do the same thing over and over again and expect a different result. With images of starving children from the Horn of Africa still fresh in their minds, world leaders will come to Cannes in November ready to do things differently. The G20 can play an important role in putting in place and supporting innovative system solutions that are critical to addressing the urgent food security needs of the most susceptible at a time of growing risk and vulnerability. ◆

Performance with Purpose

The Promise of PepsiCo

At PepsiCo, we rely on the earth's natural resources to run our businesses. We are committed to minimizing the impact that our business has on the environment with practices that are socially responsible, scientifically based and economically sound. Agriculture is one of the largest elements of PepsiCo's environmental footprint, so we work hard to continually improve our agriculture processes. Part of this approach is the *Promise of PepsiCo*, a series of goals related to reducing our environmental impact, diversifying our product portfolio and investing in our associates, all while continuing to deliver strong financial performance. Among these goals, we strive to apply proven sustainable agriculture practices on our farmed land, and to provide funding, technical support and training to local farmers. Through these investments and innovation in farming practices we endeavor to improve the welfare of our growers and the communities that are part of our agriculture supply chain.

An example is our participation in the World Economic Forum's recently convened CEO Task Force. It is comprised of seven Working Groups, including one on Food Security made up of 12 CEOs including PepsiCo's Indra Nooyi. A result of this high-level meeting were some recommendations from the working group:

Improve the functioning of agricultural markets to ensure a sustainable global food system

PepsiCo, along with the Inter-American Development Bank, launched an agriculture initiative in Mexico to create a sustainable market for sunflowers while providing loans and a source of income for some 850 Mexican farmers and their families.

A 50% increase of investments in food value chains is needed by 2015

PepsiCo China installed infrastructure, water-conserving pivot irrigators and sand dune stabilizing crops to protect soil from erosion in areas subject to sand storms.

Environmental sustainability must be integrated as a core objective into all agricultural activity

PepsiCo adheres to a global Sustainable Agriculture Policy grounded upon a set of principles developed to encourage our growers to operate in a way that protects their land and communities.

Technology innovation and distribution should be accelerated through partnerships and policy reforms

In India, a region that faces severe water shortages, PepsiCo developed an agriculture technology called direct seeding of rice to help growers use less water compared to traditional methods.

A major shift to improve nutrition must be undertaken

PepsiCo is beginning work with the World Food Programme and USAID on an initiative related to nutritious products made from local crops for low-income consumers in Africa.

PEPSICO

www.pepsico.com

Mobilising business for food, nutrition and health security

In the past, governments and aid organisations have been wary of private-sector involvement in addressing shortages in food and healthcare. Collaboration with business to alleviate these problems is growing, but needs to spread further

By Laurette Dubé and Janet Beauvais, McGill World Platform on Health and Economic Convergence

Food, nutrition and health security are topics of interest within many global governance settings. The G8 has highlighted maternal and child health and nutrition, and the G20 has chosen food and nutrition security as priorities that leaders will support through dedicated global funds. Food, nutrition and health security are also at the core of the management of both infectious pandemics and non-infectious diseases. Chronic diseases were in the spotlight at the United Nations High-Level Meeting on Non-Communicable Diseases in September, illustrating the urgency of addressing issues globally at the interface of food, nutrition and health security.

Recently, such policies have called for whole-of-government and whole-of-society approaches. Whole of government relates to placing health, healthcare and other social issues on the same policy and political agenda as agriculture, development and other economic issues. Whole of society expands this concept to all of society, from individuals to communities, the private sector and civil society at local, national and global levels.

The motivation is twofold: healthcare costs consume more than 10 per cent of gross domestic product in the majority of countries, with a minimal proportion going to prevention, and most of the levers for prevention – be they policy or action – lie outside the formal health system. However, these novel policy approaches are far from achieving their full potential.

At the core of both approaches is a need to mobilise business as an actor. However, many stakeholders, governments and non-governmental organisations alike have been wary of collaboration with business, fearful of the possible influence of the market-based interests of business on global health.

The private sector has engaged in some health-promoting initiatives jointly with global institutions, such as the Business 20 (B20), on the margins of the G20, and the Creating Shared Value global business leaders' and Inclusive Business conferences on the margins of the UN Private Sector Forums in 2009 and 2010. Moreover, as a result of the success of the 2008 UN Private Sector Forum on the Millennium Development Goals and Food Sustainability, the UN secretary general decided to hold the forum annually so that the private sector can contribute to the key intergovernmental negotiations.

More frequently, business has acted on its own to address global health challenges through creating policies and programmes and innovating novel models of research, product creation and implementation to partner and collaborate with global health organisations and governments. However, the number of businesses involved and the breadth of the industries have not fully represented the number and scope of actors that are critical to addressing food, nutrition and health security issues.

If global institutions such as the Organisation for Economic Co-operation and Development or the G20 at the Cannes Summit are to move from vision to action to scale up their efforts and address issues of food, nutrition and health security effectively, through collaboration with business, several key questions must be asked: Which businesses should be mobilised? Under what mode of engagement? Made possible by what institutional changes?

Which businesses should be mobilised?

If sustainable and significant change is to be made at the level of international policy-making, the current focus on a handful of large global corporations has to be replaced by a consideration of the full range of business that can contribute to food, nutrition and health security. These businesses also encompass micro, small and medium entrepreneurs, as well as small, medium and large national corporations.

Their activities include those that shape livelihoods and lifestyles, such as agriculture, food and beverage, leisure, media, transportation, communication, rural/urban planning and development, engineering and other socioeconomic infrastructure sectors. They also contribute to detection, diagnostics and control, as in the case of firms involved in biotechnology, pharmaceuticals, point-of-care technology, medical informatics, heathcare and health systems. Moreover, all businesses can have an impact through the workplace conditions they offer to their employees.

Under what mode of engagement?

Not only is the type of business engaged important, but the mode of engagement is also critical. The most powerful mode that business of any sector could undertake is to position food, nutrition and health security as a driver of its own research and development, innovation and operation. Business engagement calls further for novel collaborative mechanisms and relevant sectoral and

Workers unload rice reserves in Jakarta, Indonesia. The country has invested heavily in agriculture to reduce the need to import food

cross-sectoral health and economic convergence metrics, to support a common decision-making process among potentially conflicting or synergistic policy and investment domains, such as agriculture, development, education, health and trade.

There is a need to identify and capitalise on the respective differential capabilities of each actor, as well as the appropriate mix that fosters the most convergence. To harness these capabilities there must be synergy among corporate, public and global governance frameworks. Novel, accountable and transparent modes of engagement are needed, with concrete, time-bound and achievable projects.

A network approach that involves non-hierarchical webs of connection among equals – one that is held together not by force, obligation, material incentive or social contact, but instead by shared values – could be one solution. Such engagement based on convergent governance and action capitalises on one initiative at a time and shifts the prevailing mindset from trade-off, zero-sum games and competition to one of synergy, non-zero-sum games and cooperation.

Made possible by what institutional changes?

At a more formal level, leading international institutions in the field of health are making strides in creating and promoting permanent collaborative mechanisms and structures to encourage partnership and discussion with non-governmental actors. The World Health Organization (WHO) is considering creating new platforms for multi-stakeholder governance, such as a world health assembly that is open to both civil society as well as industry. The Pan American Health Organization (PAHO) Partners Forum on Chronic Disease in the Americas is also a novel approach to implementing multi-sector engagement.

> “The focus on large global corporations has to be replaced by a consideration of the full range of business that can contribute to food, nutrition and health security”

Global institutions need to examine new approaches to harness the power of the complete range of business players and the whole-of-society initiatives taken by consumers and a rich diversity of stakeholders from community, civil society and the private sector, with each investing resources and competencies into the strategy. For these global institutions and the national governments that form them, convergence requires fully embracing the diversity of its roles and policy levers to guide society in ensuring that, in each of its choices, the largest share of societal and economic value is achieved by those organisations or partnerships that are best positioned to achieve it for the least cost. ◆

Agricultural technologies to feed future generations: reasons to revitalise

Meeting the rising global demand for food will require more land devoted to agriculture and an emphasis on research and development, which has seen little increase in funding in recent decades among the majority of major economies

By Philip G Pardey, Department of Applied Economics, University of Minnesota; director, International Science and Technology Practice and Policy (InSTePP) Center

Recent spikes in global food prices have garnered much attention, as they did in the early 1970s. But much less policy attention has been placed on longer-running trends in commodity prices. Will food prices revert to a downward trend as they did in the 1970s, or is the era of ever-cheaper food a thing of the past? The food security of poor people the world over – and the standard of living of G20 consumers – rests on the answer to this fundamental question.

The future path of food prices and the capacity of the world to feed future populations affordably hinges heavily on the agricultural productivity of the G20 members. These countries employ two-thirds of the world's agricultural labour force, account for 58 per cent of the global land devoted to agriculture, and in 2008 produced 69 per cent of the world's agricultural output by value. They produce 75 per cent of the world's food and feed staples (wheat, rice, maize and soybeans), 65 per cent of its milk and 71 per cent of the world's beef, sheep and poultry. The G20 members also account for a substantial share of the international trade in agricultural commodities, which helps to shore up country shortfalls in production due to weather and other factors and dampen fluctuations in global commodity prices.

Eliminating hunger and meeting an ever-growing global demand for food, feed and biofuels is a basic demand-and-supply problem. If global agricultural production fails to keep pace with the world's appetite, agricultural commodity prices will rise. Estimates put the world's population at seven billion by 2012; nine billion by 2050. And as global per capita incomes grow, each person is likely to consume more food. Analysts anticipate a 70 per cent increase in demand for food by 2040, compared with 2000.

How do we meet rising demand?

There are two ways to meet this growth in food demand. One is to plough more land into agriculture. The other is to increase crop yields and agricultural productivity.

Both will be necessary. But increasing agricultural productivity will be crucial to sustainably securing food supplies in the decades ahead, as most prime agricultural land is already in production. Among the majority of G20 members, the challenge will be preserving the land already in production from urban and infrastructure encroachment and environmental degradation.

How have the G20 members been faring, and what are the prospects for productivity growth? Unfortunately, for many countries, recent and prospective productivity performances are wanting. The rate of growth in global crop yields has slowed in the past 30 years as a whole. Similar patterns are evident for other measures, such as agricultural labour productivity in most G20 members. The rate of multi-factor productivity (MFP) growth (indicating the rate of growth of aggregate output relative to the rate of growth of all measureable inputs, including land, labour, capital, energy and fertiliser) has also slowed dramatically in the higher-income G20 members for which reliable measures are available. In the United States, MFP grew at almost two per cent per year from 1950 to 1990, but since then has grown at barely half that rate.

> “For many countries, recent and prospective productivity performances are wanting. The rate of growth in global crop yields has slowed in the past 30 years as a whole”

By contrast, for some other important agricultural producers such as China and the former Soviet Union, growth in crop yields and other productivity measures has either been sustained or has recovered of late. However, it is hard to tell the difference between sustained growth and that which is really episodic in nature – spurred, for example, by massive institutional reforms.

Why has agricultural productivity growth slowed? It is complicated, but one factor stands out: for decades almost all the higher-income G20 members have been reducing

De-risking agriculture finance for sustainable development and capacity building

pwc

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their growth in public investments in agricultural research. The United States increased its inflation-adjusted public expenditures in agricultural research and development (R&D) by 3.5 per cent per year during the 1950s and 1960s; since 2000 it has grown by just 1.4 per cent per year. Australia, France and the United Kingdom have followed suit. Many countries have also expanded the scope of agricultural research to address new policy issues (eg food nutrition, obesity, biosecurity and environmental matters) at the expense of research on farm productivity. Moreover, as climate change continues and plant pests evolve with new crop varieties, a significant share spent on research is required just to maintain past productivity gains.

What measures are needed?

Turning around lacklustre productivity trends requires revitalising spending on farm-productivity research. The pervasive slowdown in productivity growth over the past two decades was preceded by many years of slowing public spending. It takes decades to develop and diffuse new agricultural technologies, meaning that long lags between changes in research spending and changes in productivity growth are to be expected. China, as a rare positive example, has continued to increase spending on agricultural research and stands out among G20 members in sustaining growth in agricultural productivity.

Some suggest that the scaling back in public support will be countered by an upsurge in private funding. However, while the private share of agricultural R&D has crept up over the decades, more recently such growth has slowed in tandem with public spending.

Certainly, corn yields have sustained their growth over recent years, and this crop has notably received substantial amounts of private R&D attention. But it is an exceptional crop in many technical and intellectual property respects, and does not address the general prospects for private R&D. It is hard to imagine firms anticipating sufficient returns on farm-oriented R&D to justify substantially ramping up their investments, at least in the near term – especially in developing countries where market and regulatory conditions limit the commercialisation prospects for privately produced farm technologies.

Moreover, in the higher-income G20 members, more than 60 per cent of private agricultural R&D focuses

Lettuce plants grow under artificial lights and in a liquid solution in China. Such innovations are the product of the country's increased spending on agricultural research

> The slowdown in productivity growth over the past two decades was preceded by many years of slowing public spending. It takes decades to develop new technologies

on food processing, where the market and intellectual property realties are more conducive to profits that drive private investments in innovation. As in the health sciences, all forms of private food and agricultural R&D stand firmly on the shoulders of basic discoveries made with publicly funded research by universities and government agencies. Taken together, these pervasive commercialisation problems mean that private markets will tend to underinvest.

Since it is hard to imagine that present productivity trends can be revived without increased spending on agricultural R&D, it boils down to public policy decisions: Will G20 members play their part in sustainably ending global hunger in the decades to come, while also promoting continued prosperity in their own agricultural sectors?

Reinvigorating public spending on R&D to ensure a sustained stream of new technologies and know-how is one critical step; getting these technologies into the hands of farmers is another. Regulatory reforms that lower the costs of managing and mitigating risks associated with the new technologies that spur farm productivity growth will also play their part. ◆

PotashCorp: Feeding the Future

The focus on food security

Enhancing global food security is a complex matter with no single or simple solution.

From our early days as a Saskatchewan potash producer to our global footprint as the world's largest fertilizer enterprise by capacity, the history of PotashCorp has given us a unique perspective on this critical challenge.

The world's population is projected to exceed 9 billion by 2050, with most of the population increase occurring in the developing world. The growth will occur in urban areas, while rural populations decline. As people move off the land and into cities, diets also change. A shift from grain-based to protein-based diets adds even greater stresses on finite land that also supports livestock feed.

The Food and Agriculture Organization (FAO) estimates that 90 percent of the additional food to feed the world's growing population will be produced on current crop land.

Increasing crop yield is essential

By 2050, agricultural production will need to increase by 70 percent. To match supply with demand, the world's farms will need to become much more productive.

Increasing crop yield is an essential part of the solution. With responsibility for 40 to 60 percent of the world's food production, soil nutrients are helping play a unique role in feeding emerging populations.

The use of potash in Latin America and Asia, for example, has increased over the past decade by nearly 70 percent and crop productivity has risen significantly.

We all have a role to play

We know from firsthand experience that, once farmers learn more about crop yields and the value of proper nutrient application, their ability to feed their families and communities increases dramatically.

At our model farm in Trinidad, local farmers and students are learning these lessons and succeeding.

An old proverb holds that if you give a man a fish you feed him for a day, if you teach him to fish you feed him for a lifetime.

Governments, the private sector and NGOs all have an obligation to ensure that farmers the world over are taught how to get the most from their land.

Our progress as human beings is rooted in agriculture. The first crops harvested by our ancient ancestors provided a reliable source of nutritious food and set the world on a different path. A well-fed people don't fight or fear for their survival, they dream and build a better life for their families.

Each and every day, thousands of PotashCorp employees produce nutrients that significantly increase the productivity of finite land, helping to feed an ever-increasing global population.

William J. Doyle
President and Chief Executive Officer
PotashCorp

Education initiatives like our model farm in Trinidad help teach students, farmers and the public how balanced fertilizer application can boost crop yields to help meet the food supply needs of our growing global population.

PotashCorp
Helping Nature Provide

Investment in research is crucial in the quest to ensure food security

The successful drive to produce ever greater crop yields in the latter half of the 20th century led to a sense of complacency. A resumption in research spending can insure against future production shortfalls as global demand continues to rise

By Carlisle Ford Runge, Distinguished McKnight University Professor of Applied Economics and Law, University of Minnesota; and Carlisle Piehl Runge, Davenport College, Yale University

In a recent article in *Nature*, a distinguished panel of scientists argued that the hourglass is running on the critical battle against global hunger and malnutrition. The crisis has been intensifying thanks to three related – and ominous – trends. First, the rate of increases in crop yields appears to be slowing. Second, agricultural research expenditures have diminished since the 1980s, especially in Africa. Third, global food supplies have not kept pace with demand and prices remain very high.

These problems are exacerbated by the increasing use in rich countries of grain not only as food and feed but also for biofuel. In the United States, nearly 40 per cent of the corn crop is now being used to make ethanol.

In early 2010, in an article in *Foreign Affairs*, we warned against complacency in the face of the tight relationship between global food supplies and total demand. The famine in Somalia is but the leading edge of a desperate – and global – Malthusian struggle between growing populations and incomes that prefigure ever increasing demands for calories, requiring increases in the fundamental capacity to produce the food that people need and want. In cornucopias of food production such as the US and the European Union, this precarious balance may seem far away and of little consequence now. But it should not be lost on leaders in the industrialised, food-surplus world that political instability in the Middle East, North Africa and elsewhere is driven in significant part by a young populace not only hungry for political freedom but also simply hungry, due to food prices that have risen precipitously in the past five years.

After the dramatic increases of 2008, in which the index of food prices published by the Food and Agriculture Organization (FAO) averaged 200 points, many interpreted its decline in 2009-10 as evidence that 2008 was an aberration. This reprieve, however, was

simply a reflection of the global economic slowdown, which slackened demand as global production continued apace. The screen has since darkened: stresses on crops in the grain belt of the US Midwest and elsewhere are being met by unrelenting demand from developing countries.

In the latest FAO report, published in July, the food price index stood at 234 points, up one point from May and only slightly below its all-time record high of 238 in February. The July index was 39 per cent above the June 2010 reading. Throughout the year, the index has remained above even the highest readings of 2008. Whatever may happen in the next crop season, the G20 faces the challenge of a decades-long endeavour that even the most formidable policy advocates may find daunting.

Since the Second World War, gains in agricultural productivity around the world have been defined by greater output per hectare of land and hour of labour. These gains have resulted primarily from substantial increases in the use of agrochemicals, fertilisers, large farm equipment, water and, in developing countries, labour. But all these inputs, many of them derived from petrochemicals, have come at a cost. As greater yields were coaxed from the land, other costs rose as well, in part in the form of rising land prices that excluded young entrants from entering agriculture.

Environmental impact

A second kind of cost was to the environment. Over-irrigation and the excessive use of fertilisers and agrochemicals polluted and depleted water supplies and sapped the soil's fertility. In the US, huge releases of nitrogen and fertiliser into the Gulf of Mexico, much of it originating from farm fields in the Upper Midwest, created the worst conditions in the hypoxic "Dead Zone" in more than 25 years. This will be aggravated further by the flooding this year in the Mississippi Basin.

In northern India, the level of groundwater in aquifers has fallen by about 10 centimetres per year since 2002, due to increasingly intensive crop irrigation – about the same total volume of water as melted from Alaska's glaciers over the same period. Today, the aquifers cannot replenish fast enough to sustain current yields over time.

In short, the impressive gains in average agricultural yields over the last half of the 20th century created the illusion that the Malthusian spectre had been vanquished.

> "In the current atmosphere of austerity and fiscal discipline, the G20 leaders must find a way to make an exception for agricultural research"

The deeper reality is that, as water and soil quality has fallen, petrochemical inputs have taken up the slack, but biophysical systems have been pushed to their limits. Although yields have continued to increase, they have been doing so at diminishing rates. The juggernaut of yield-increasing technology began slowing in the 1990s. This was due both to biological limits and cutbacks in agricultural research – a result of the complacency that arose from ever-increasing yields. Improvements brought by investments in research come with a lag: peaking after about 25 years, but with effects that persist for another 25 years. Hence, the consequences of decisions taken in the 1970s and 1980s to limit the growth in investing in agricultural research have only recently become apparent.

One way to think about these investments is as a long-term insurance policy against famine. Paying the premiums for this insurance year after year may seem like a low-payoff strategy, but when crisis strikes, they pay off hugely in the form of technological weapons against shortfalls in production. In the current atmosphere of austerity and fiscal discipline, the G20 leaders must find a way to make an exception for agricultural research – to recognise that the "seed corn" requires investments to save everyone in the end. The actual requirements are relatively modest – on the order of $50 billion globally – but the returns from an economic and political stability perspective are incalculable. ◆

In the United States, greater yields drive up land prices, while taking their toll on soil

Financing food security: a private-sector agenda

As the world's largest development institution focused exclusively on the private sector, IFC has collaborated with the G20 to extend the reach of international investment to benefit food producers and consumers in emerging markets

By Lars H Thunell, executive vice-president and CEO, International Finance Corporation (IFC)

Almost a billion people suffer from hunger. World food production must rise by 70 per cent as population rises by two billion over the next 40 years

Food security is one of today's essential issues, ranking high on the G20 agenda and due to feature prominently in the Cannes Summit's discussions.

Global leaders are acting collectively, improving policy coordination and building new support for the developing world's agriculture and emergency food relief programmes. They are working together urgently at a critical time, as rising food prices are taking a harsh toll on the poor, and the tragedy of famine has returned to the Horn of Africa.

This united government action is especially welcome after years of relative neglect, in which agriculture's share of total aid flows fell from 19 per cent in 1980 to just three per cent in 2006. But to enhance it even further, other steps must be taken to increase the private sector's role.The global financial markets' impact on food security must also be strengthened.

This is one key aspect of the work at the International Finance Corporation (IFC), a member of the World Bank Group and the world's largest development institution focused exclusively on the private sector. As part of its larger efforts to strengthen food supply in developing countries, it extends the reach of leading financial institutions in ways that will benefit consumers and producers alike, working with JP Morgan and others to help address price volatility and increase production.

No one solution can be sufficient at a time when almost a billion people suffer from hunger. World food production must rise by 70 per cent as population rises by two billion over the next 40 years. But there is much to be gained by making commodity-price hedging, against price volatility and other proven short-term financial products, more widely available, in conjunction with a broader package of longer-term initiatives to build the private sector's impact on hunger.

Need for collective action

The G20 emphasises that food security is a comprehensive challenge, requiring collective action from all players involved to increase the production of food at affordable prices through sustainable agriculture practices. Since 2008, it has been building the Global Partnership for Agriculture, Food Security and Nutrition with three broad objectives:

- governance, to ensure the coherence of policies affecting food security;
- knowledge, to mobilise expertise and research on behalf of food security; and
- finance, to reverse the downward trend in financing for food security.

Within the context of making more financing available, new ways must also be found to offset today's price volatility, which hurts producers and consumers alike. In the second half of 2010 alone, the World Bank estimates, 44 million people fell below the poverty line because of high and volatile food prices. International agriculture prices then spiked in 2011 for the second time in three years. The United Nations and the Organisation for Economic Co-operation and Development estimate that food prices will continue to remain higher, and continue to show excessive swings, for the next decade.

This volatility not only limits the access of the poor to food, but also restricts producers' access to animal feed and other inputs, as well as financing for their business activities, hampering investment and holding back output. Left unattended, it poses serious threats to progress in other areas of the global food security agenda.

IFC's response

In response to volatility, IFC has worked in close coordination with the G20 presidency to develop the new Agriculture Price Risk Management (APRM) product. Cited at the June 2011 G20 agriculture ministers' meeting in Paris, it is initially being rolled out with JP Morgan, enabling price hedges worth many times its $400 million facility amount on behalf of emerging-market agricultural producers and buyers. Since the exposure associated with risk-management operations is typically smaller than the principal amount of hedges made available to clients, these combined credit exposures should enable up to $4 billion in price protection to be arranged by JP Morgan for emerging-markets' agricultural producers and buyers.

The APRM product will enable financial intermediaries to help importers of cereal grains obtain protection from sudden price increases that could take a heavy toll on the poor, who often spend up to 80 per cent of their household budgets on food. The effort with JP Morgan will have especially strong regional coverage in Latin America, creating a model that will be extended with other banking partners to sub-Saharan Africa, Asia and the Middle East and North Africa. The model is one that could then be replicated by other multilateral institutions for wider impact.

To complement these efforts, IFC is also supporting the development of new commercial insurance products that will help African farmers increase their output, protecting them for the first time against risks of drought and other forms of severe weather that can damage their crops. More than 19,000 small-scale Kenyan farmers now hold affordably priced weather insurance, provided through an IFC-backed initiative of the Syngenta Foundation

for Sustainable Agriculture and two local partners, UAP Insurance and mobile telecoms operator Safaricom. Similar efforts are also under way to help other commercial players introduce weather insurance to 24,000 farmers in Rwanda. These innovative African projects are funded through IFC's Global Index Insurance Facility – a partnership with the European Commission, the ACP Secretariat, Japan and the Netherlands – that is also expected to expand access to index insurance in other African markets, and then to be replicated in Asia and Latin America.

It is also important to remember that in many low-income regions, inadequate storage and distribution systems result in up to half of the food that is produced being destroyed before it reaches consumers. Warehouse and storage facilities can be improved with new private capital and management, but are just one part of local agricultural supply chains, all of whose components need to receive more private financing to keep up with rising demand for food.

Leading financial institutions in the developing world – such as ICICI Bank and HDFC Bank in India, Banco Galicia in Argentina, Banco Itaú in Brazil, and Standard Bank of South Africa – have all found ways to tap these markets, successfully building large local agribusiness portfolios. The challenge now will be to extend this trend more deeply into Africa, where less than one per cent of commercial lending currently goes to agriculture.

IFC currently invests more than $2 billion per year in the agricultural sector. It will be working alongside its partners to help clients attract more private financing for inventories, seeds, fertilisers and chemicals, infrastructure, distribution and other key needs for increased food production.

Our overarching goals are to enhance food security, through increased investment and enhanced productivity; enhance development and inclusiveness, by focusing on smallholders, women and risk management; and enhance environmental and social sustainability as a business driver, through resource management.

Global coordination

These initiatives complement the Global Agriculture and Food Security Program launched at the September 2009 G20 Pittsburgh Summit. Pooling new donor resources to help support country-led agricultural investment plans, this new vehicle is housed at the World Bank Group. It includes a private-sector window, managed by IFC, that focuses on launching and scaling up high-impact products for small-scale farmers. Working alongside donor partners Canada, the United States and other potential collaborators, IFC will use these funds to extend the private sector's reach, using the grant funds to build up key areas in the food supply chain that are not yet fully commercial.

IFC welcomes new partners in this historic effort. Together, we can open up the new private-financing channels that are essential in addressing food security, reducing poverty and feeding a hungry world. ◆

IFC supports new private-sector approaches that help to increase food production in Africa and other regions

Feeding the Soil to Feed the Planet

OCP is proud to play an important role in feeding a growing global population, by providing essential elements for soil fertility and plant growth. As a leader in the phosphate rock and derivatives market, with 90 years of experience, OCP provides a broad range of well-adapted fertilizer products to enhance the soil, increase agricultural yields, and feed a hungry world sustainably and affordably.

Headquartered in Casablanca, Morocco, OCP works in close partnership with over 130 customers on 5 continents.

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The essential component of social justice is adequate food for all

Tackling the challenge of food security in Africa requires a shift from focusing on increasing yields to a new emphasis on nutrition. Well-nourished children have the best chance of completing their education and realising their potential

By Jay Naidoo, chair, Global Alliance for Improved Nutrition

The Green Revolution remains one of the most successful drivers of economic development in the 20th century, enabling food production to keep pace with a doubling of global population from three billion in the 1960s to seven billion in 2011. Increases in staple food crop yields tripled during that period, reducing the percentage of malnourished people from 41 per cent in 1960 to 16 per cent in 2000 in Asia alone. Although the Green Revolution is credited with keeping food prices historically low, the global food system is failing today in two major ways: it is unsustainable and consumes resources faster than can be naturally replenished, and it contributes to extreme poverty, suffering and disease. 'Adequate food for all' must thus include the ability of the food system to nourish and fuel humanity equitably and sustainably. The future of humanity rests on being able to do more with less.

Nearly half the world's population suffers from the effects of a food system that, in an effort to feed a growing

population and meet some societies' demands for a 'richer diet', is shifting global supply towards higher-end markets. This results in an unprecedented new global paradigm. At one end of the spectrum, food insecurity is growing among the most vulnerable, in both low- and middle-income countries, resulting in one billion hungry people. At the other end, one billion people are over-consuming, creating a new public health epidemic in chronic conditions such as type-2 diabetes and cardiovascular disease. Caught in the middle are more than two billion people who face the silent killer of 'hidden hunger' – malnutrition – from not getting enough critical micronutrients to support optimal health and productivity.

Altogether, hunger, malnutrition and over-consumption exact an enormous toll. Malnutrition alone is responsible for 11 per cent of the global disease burden, a third of all childhood deaths and losses of up to three per cent of a country's gross domestic product (GDP) per year. Over-consumption and poor nutrition are an underlying cause of and a risk factor in non-communicable diseases (NCDs), which cause about two-thirds of the world's deaths, with 80 per cent of them in low- and middle-income countries. Economic losses from NCDs are estimated to amount to $35 trillion between 2005 and 2030. Achieving food security thus requires looking at the broader impact of the food system and pivoting the focus to improving nutritional outcomes to avert this tremendous public health and economic burden.

A continent seeking self-sufficiency

This need is most pressing in Africa. It is the only continent that does not grow enough food to nourish itself. Since the Green Revolution, Africa remains the only region where average yields are stagnant and food production per capita has seen a steady decline. Much of this can be explained by changes in rainfall patterns, soil mismanagement, and insufficient investments in infrastructure and water management. Public investment in agricultural water development in sub-Saharan Africa has actually declined over the past two decades. The lack of political will and inadequate investment in natural-resource management is inhibiting Africa from not only becoming self-sufficient, but also burgeoning into the last remaining breadbasket of the world.

Addressing Africa's food security challenge requires a paradigm shift from a narrow focus on increasing yields towards a more comprehensive global food system where the metrics of success are nutritional outcomes. The focus should be on nutrition per acre or nutrition per unit of water (or any other variable that controls food production), rather than on tonnes per hectare or tonnes per litre of water. The goal must be to produce more affordable food of better nutritional quality while using less water per unit of nutrition. Linking the drivers of sustainable agriculture directly to the critical goal of nutrition allows more comprehensive approaches to the big challenges. While improvements in yield contribute to this goal, higher nutritional content of food, a more balanced diet and reductions in waste and spoilage are all additional, often lower-cost, mechanisms to improve the outcome for the same unit of land or water.

Applying this metric to the food system will not only shape Africa's response to food security, but could also address the looming health crisis caused by over- and under-nutrition, climate change and natural-resource management. In addition, by 2020, worsening water security could trigger another global food crisis, causing a shortfall of up to 30 per cent in cereal production. Today, more than a third of the world's population is affected by water scarcity. Climate change is expected to worsen this by increasing the frequency and severity of floods and droughts.

The interdependencies among water, agriculture and health are well understood, but poorly integrated into comprehensive multi-sector approaches. Water scarcity is one of the biggest limiting factors in the world's ability to feed and sustain its growing population. In Africa, more than 80 per cent of freshwater withdrawals go to agriculture, of which as much as 40 per cent is wasted due to inefficient agricultural practices. It takes approximately one litre of water to produce one calorie of food energy. The basic diet of the poor, predominantly consisting of plant-based staple crops, would require approximately at least 2,000 litres a day. However, diverse diets that include the regular consumption of meat could require as much as 5,000 or more litres per day since, on average, meat requires 10 times the water required per calorie from plants.

The importance of water security

Factoring water security into the nutrition-food security paradigm creates a mechanism to redefine goals and metrics to measure sustainable progress towards establishing a food system capable of adequately nourishing a population of nine billion by 2030. Integrating the sectoral goals of health, agriculture and sustainability will promote approaches that preserve that which is most scarce – water – and that which is of greatest public value – the ability of the food system to nourish, fuel and sustain society. In a similar way that

> All solutions for Africa rest on the ability to ensure that today's children have a chance to reach their potential

the carbon credit system drives market mechanisms and commercial processes in the direction of low emissions, so the agriculture, health and sustainability communities can converge to design a credit system to encourage governments, industry, farmers and consumers to adopt new technologies that maximise yields of nutritional crops per unit of water and measure their success in the amount of nutrition delivered to those who need it. This is a surefire way to ensure quality in the food system and to align investments from both the public and private sectors to maximise and preserve nutrient density, reduce food spoilage and waste, and improve the supply chain.

Over the next 1,000 days, 75 million African children will face the most critical development period of their life – from the womb to age two. Science has proven that a well-nourished child is more likely to complete her or his education, possess a higher IQ and earn up to 46 per cent more over his or her lifetime. In fact, a child's attained height for age at two years is the single best predictor of human capital.

All solutions for Africa rest on the ability to ensure that today's children have a chance to reach their full economic potential. Investing in the future of youth by ensuring they are adequately nourished will not only help break the cycle of poverty, but will also empower them with the potential to raise the continent of Africa.

As Nelson Mandela said: "Overcoming poverty is not a task of charity; it is an act of justice. Like slavery and apartheid, poverty is not natural. It is man-made and it can be overcome and eradicated by the actions of human beings. Sometimes it falls on a generation to be great. You can be that great generation. Let your greatness blossom... There can be no keener revelation of a society's soul than the way in which it treats its children." ◆

The Blue Nile falls, near Bahir Dar in Ethiopia, where a government water collection and irrigation programme has doubled local agricultural yields

Global issues – corporate impact

Food security and climate change, economic growth and resource scarcity are issues high on the global agenda – issues that cannot be resolved by any single player. Public-private partnership, innovation and investments: concerted approaches must be part of the answer

Jørgen Ole Haslestad, president and CEO, Yara, since 2008

Yara is a global company committed to making an impact. Supplying the world's farming community with vital crop nutrients, contributing to the attainability of global food security, we are engaged in major global issues.

- **Food security and climate change are closely interrelated**
- **Agriculture is part of the solution**
- **Yara International ASA is a dedicated partner in projects that address these issues**

Food and climate

The defining global issues of food security and climate change are closely interrelated. As the world's leading mineral fertiliser company, we strongly advocate the need to put agriculture on the climate change agenda, and to include farming in major global processes.

Agriculture is a key to food security, poverty alleviation and resolving the climate change issue.

In the face of a growing gap between increased consumption and limited resources, Yara's approach is that of increased food production through improved agricultural productivity achieved in a balanced and responsible way.

Feeding the future without unduly compromising the environment requires investments in innovation and technology transfer – and optimising resource efficiency in a balanced manner.

Common future

Two decades after the Rio conference, the global challenges remain daunting. By 2050, the world's farmers will have to feed up to nine billion people, without cultivating significantly more land, employing relatively less water, and having to cope with more erratic weather and often less favourable growing conditions due to global warming.

Sustainability is commonly agreed upon as a global necessity. Although considerable progress has been made, there are alarming deficiencies to be observed. Examples are the serious depletion of soil nutrients in large parts of Africa, persistent deforestation and increasing freshwater scarcity – all with agriculture as a common denominator.

Through the G20 Cannes Summit, the COP 17 Durban conference and the RIO+20 event next year, the global community has the opportunity to engage collectively in finding sustainable solutions for our common future: fostering genuine public-private partnerships, driving policy processes at all levels that address both short- and long-term needs, inspiring innovation and inviting sustainable and responsible investments.

Commitment

The G20 is composed of countries accounting for two-thirds of the world's farmland, producing three-fifths of global grain production. Through the French presidency, the G20 has reinforced its longstanding focus on food security. The 2011 G20 summit will draw a line from the Pittsburgh commitments through the Toronto declaration and the Seoul Summit – drawing attention to the need to close existing agricultural productivity gaps; inviting the private sector to play a critical role.

Yara is a committed, long-term partner in large-scale partnership development, contributing to value creation for our shareholders, our customers and society at large. From the African Green Revolution conferences, the World Summit on Food Security and the World Economic Forum's New Vision for Agriculture to the G20 collaboration – Yara has catalysed dialogue, initiating private-public partnerships as a key intervention.

Agricultural productivity

The G20, as well as the broader public-private partnerships, have identified a common cause – advocating improved agricultural productivity on a sustainable basis. This is vital to produce enough food – and to help prevent the conversion of forests into farmland. Such conversion leads to massive greenhouse gas greeemissions. Yara's main contribution consists of crop nutrition, knowledge sharing and technology transfer. Working actively with a range of partners, Yara creates platforms for balanced and responsible agricultural growth.

Resource efficiency
The G20 commitment to improving resource efficiency resonates deeply with Yara. To utilise scarce natural resources sustainably is at the heart of our strategy. Key resources include land suitable for farming and access to water for irrigation. Yara's knowledge greatly reduces greenhouse gas emissions in fertiliser manufacturing; our crop knowledge enhances input efficiency – increasing yields and reducing emissions, while also playing a key role in water conservation in agriculture.

Private sector
Yara shares the G20 position on the need to include the private sector, invite public-private partnerships and attract investments. To promote productivity growth, especially in developing countries, investments must be made throughout the entire value chain, not least in infrastructure.

Creating impact
Yara is determined to create an impact, especially with respect to increasing food security and reducing climate change. In addition to being part of influencing the global agenda towards linking food security and climate change, we have engaged in several major endeavours, including:

Agricultural growth corridors
We catalysed the establishment of agricultural growth corridors in Mozambique and Tanzania. Based on a multi-sector public-private partnership approach, we are collaborating with a range of stakeholders across the entire value chain to bring sustainable and transformative change to the agricultural sector in those countries. This includes helping to share lessons learnt at a much wider level through events such as the African Green Revolution Forum.

African Agricultural Growth and Investment Task Force
Launched at the African Union Heads of State meeting in July 2011, this task force is a multi-sector effort of which Yara is a founding member. The goal is to accelerate sustainable growth in agriculture, by way of establishing a coordinating platform that helps African governments increase private-sector investment, partnership and collaboration.

Greening Sahara
Yara has committed to support the Sahara Forest Project, aiming for restorative growth through the profitable conversion of sunlight, CO_2, deserts and seawater into food, water, electricity and biomass, offering immense potential.

Carbon footprint guarantee
Yara has launched the world's first carbon footprint certificate for mineral fertilisers. Our contribution to climate-smart agriculture helps the farming sector minimise its greenhouse gas emissions, making an impact on global warming while ensuring high yields.

N2O catalyst
Yara has developed and implemented an innovative catalyst technology. Our solution can reduce emissions of N2O from nitric acid production by up to 90 per cent, making a significant impact on greenhouse gas emissions.

YARA

www.yara.co.uk Knowledge grows

Over the past four years, increased food demand, climate and sanitary hazards and financial speculation have all led to volatility and price fluctuations for agricultural products, which have been devastating for producers and consumers alike. That is to say nothing of hunger or of the extreme poverty suffered by farmers.

As the current holder of the G20 Presidency, France placed the issue of agricultural commodity price volatility on the agenda for the summit in Cannes. Together with farmers from all over the world, we are pleased to see this situation finally being taken into account. This is what we called for at the G120 on 16th and 17th June in Paris. 240 people representing 120 agricultural organisations from 75 countries called on the G20 leaders to remember that agriculture's primary purpose is to feed populations and that the 21st century's food challenge requires increases in production quality and quantity. These representatives also called on leaders to: highlight the need for transparency and information on global markets and stocks; to encourage the international organisations involved to set market and position-taking rules for agricultural commodities with the aim of reducing excessive speculation; to foster the creation and development of regional, national and local agricultural policies together with representatives from agricultural organisations; to limit the disappearance of land used for farming as well as cross-border appropriation of productive land and to ensure that farmers' access to land is maintained.

A few days later, the Ministers for Agriculture of the G20, who met in Paris, issued an "Action Plan on Food Price Volatility and Agriculture" which will be put to the G20 leaders at their summit in November. It called for more regulation, greater transparency, improved international political coordination, increased productivity, commitments for maximum food security, the right to safe, sufficient and nutritious food, the development of risk management tools, improvements to the functioning of derivatives markets for commodities, promotion of innovation, etc.

Professional agricultural organisations will strive to ensure these commitments are implemented in a way that benefits both farmers and consumers

These commitments are promises and conditions that ensure that it remains possible to farm in all parts of the world and professional agricultural organisations will strive to assure that they are implemented in a way that benefits both farmers and consumers.

We want to believe in this.

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