Brussels Policy Briefing no. 30

Agricultural Resilience in the Face of Crises and Shocks[1]

4 March 2013, European Economic and Social Committee (EESC),
Rue Belliard 99-101, 1040 Brussels, room JDE 62
http://brusselsbriefings.net

1. Background

Vulnerable populations are minimally resilient to shocks, whether caused by humans or natural disasters. Emerging threats and new trends—such as climate change, population growth, aging societies, urbanization, infectious as well as non communicable diseases, and environmental degradation—are bound to aggravate the consequences of shocks on already vulnerable populations by triggering damage, loss, and displacement. Such threats pose an additional hurdle to the stated policy objective of the international community to eradicate hunger and malnutrition. The costs of shocks extend beyond short-term impacts. As malnutrition affects people's physical health, it can directly reduce their capacity to work and to engage in more productive and innovative income-generating activities.[2]
The resilience to global risks is becoming more and more critical in the context of climate change, a rapidly growing urban population and decreasing availability of resources[3], and threats to agricultural growth have been multiplying in frequency and scale.[4] Recorded disasters alone from 2001 to 2010 affected, 232 million people, killed more than 106 000 others, and caused US$108 billion in economic damages. In addition, countless small-scale, unreported disasters put a cumulative strain on health, lives and livelihoods.[5] Local risk landscapes are rapidly changing, with frequent and intense weather events, and societal and environmental stresses that are becoming increasingly uncertain and unpredictable. Climate change is pushing at-risk populations beyond their capacity to cope and adapt to the changes they have traditionally dealt with, as well as making more people vulnerable due to their increased sensitivity and exposure to climate change impacts.[6] Following disasters of unprecedented scale in recent years, "resilience" has become a popular buzzword across many disciplines and different working definitions have evolved.[7]

The concept of resilience

The concept of resilience is rooted in material sciences and ecology, but has also been applied in various social disciplines and psychology. In concrete terms, it is the ability of critical physical infrastructure to absorb shocks. From a psychological point of view, it is the process of adaptation and a set of skills, capacities, behaviours and actions when dealing with adversity.[8] The World Economic Forum defines resilience as (i) the adaptability to changing contexts, (ii) the capability to withstand sudden shocks, and (iii) the ability to recover to a desired equilibrium, either to the previous one or a new one, while

[1] This Briefing builds upon former work done by CTA and partners, on Humanitarian assistance, Food price volatility, Nutrition security, and Climate-smart agriculture. Readers: http://brusselsbriefings.net/about/readers-summary-of-key-issues/
[2] IFRC-IFPRI. May 2012. Reducing the Risk of Food and Nutrition Insecurity among Vulnerable Populations. http://www.ifpri.org/sites/default/files/publications/ifrcpaper.pdf
[3] Ibid..
[4] The Montpellier Panel. 2012. Growth with Resilience: Opportunities in African Agriculture. https://workspace.imperial.ac.uk/africanagriculturaldevelopment/Public/Montpellier%20Panel%20Report%202012.pdf
[5] Turnbull M., Sterrett C.L., Hilleboe A. 2013. Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation. ECB project. http://www.ecbproject.org/downloads/ECB-toward-resilience-Disaster-risk-reduction-Climate-Change-Adaptation-guide-english.pdf and "Disaster Data: a balanced perspective". Cred Crunch. USAID, Issue n. 27. February 2012. http://www.cred.be/sites/default/files/CredCrunch27.pdf
[6] Ibid.
[7] World Economic Forum. 2013. Special Report: Building National Resilience to Global Risks. http://reports.weforum.org/global-risks-2013/view/section-three/special-report-building-national-resilience-to-global-risks/
[8] IFRC. June 2012. The Road to Resilience: Bridging Relief and Development for a more Sustainable Future. http://www.ifrc.org/PageFiles/96178/1224500-Road%20to%20resilience-EN-LowRes%20%282%29.pdf

preserving the continuity of its operations.[9] The Asian Development Bank and the International Food Policy Research Institute (IFPRI) define resilience as the 'magnitude of disturbance that a system can withstand without crossing a threshold into a new structure or dynamic. In human systems, resilience refers to the ability of communities to withstand and recover from stress, such as environmental change or social, economic or political upheaval, while for natural systems, it is a measure of how much disturbance (storms, fire and pollutants) an ecosystem can handle without shifting into a qualitatively different state.[10] Indeed, resilience can be applied to different entities, ranging from local communities to countries and regions, but they must not be seen in isolation, rather as interlinking structures.[11]
Resilience, in the context of this Briefing, is the capacity of agriculture to withstand or recover from stresses and shocks and thus bounce back to the previous level of growth.

2. Resilience in Agriculture

Agriculture is challenged by a number of threats such as food price spikes, land and water scarcity, rising energy and fertilizer prices and the impact of climate change on food production. Feeding more than 9 billion people by 2050 will require doubling food production on a sustainable basis. Therefore, agriculture should be resilient — able to withstand or recover from stresses and shocks.
Developing resilient agriculture will require technologies and practices that build on agro-ecological knowledge and enable smallholder farmers to counter environmental degradation and climate change in ways that maintain sustainable agricultural growth. Examples include various forms of mixed cropping that enable more efficient use and cycling of soil nutrients, conservation farming, microdosing of fertilisers and herbicides, and integrated pest management.[12]
According to the International Federation of Red Cross and Red Crescent Societies (IFRC), a resilient community is characterised by its ability to assess, manage and monitor its risks, and be able to learn new skills and build on past experiences. It will have the capacity to identify problems, establish priorities and react in situations of crisis. It will also be engaged in the development of local policy for reducing risks, and in establishing and maintaining relationships with external actors who are able to provide support, goods and services when necessary. Furthermore, a resilient community will have the ability to maintain, repair and renovate any damage caused to the system, and to continue managing its natural assets.[13]
Resilience can be strengthened in many different ways and at different levels: through political, economic, sociological and technological interventions.[14] Improving resilience will have many impacts on the agriculture sector, including: increased adaptation of crops and livestock to climate stress; enhanced access and utilisation of technology and information; improved income generation; increased use of resource-conserving technologies; open and transparent trade regimes; improved risk sharing.[15]

Building resilience through more effective interventions

Agriculture is a form of natural resource management for the production of food, fuel and fiber; and depends on the resilience of the interlinked social and ecological systems. In social systems, resilience relies heavily on the assets and knowledge that farmers can mobilise and the services that governments and institutions provide. For agricultural ecosystems, resilience depends on changing variables, including climate, land use, nutrient availability and the size of the farming system. Thus, implementing measures to develop and increase agricultural resilience requires an understanding of strategies seeking to reduce vulnerabilities while at the same time generating income and reducing poverty. A lack of resilience may

[9] World Economic Forum. 2013. Special Report: Building National Resilience to Global Risks. http://reports.weforum.org/global-risks-2013/view/section-three/special-report-building-national-resilience-to-global-risks/
[10] ADB and IFPRI. 2009. Building Climate Resilience in the Agriculture Sector in Asia and the Pacific. http://www.adb.org/sites/default/files/pub/2009/Building-Climate-Resilience-Agriculture-Sector.pdf
[11] World Economic Forum. 2013. Special Report: Building National Resilience to Global Risks.
[12] The Montpellier Panel. 2012. Growth with Resilience: Opportunities in African Agriculture. London: Agriculture for Impact. https://workspace.imperial.ac.uk/africanagriculturaldevelopment/Public/Montpellier%20Panel%20Report%202012.pdf
[13] IFRC. June 2012. The Road to Resilience: Bridging Relief and Development for a more Sustainable Future. http://www.ifrc.org/PageFiles/96178/1224500-Road%20to%20resilience-EN-LowRes%20%282%29.pdf
[14] Turnbull M., Sterrett C.L., Hilleboe A. 2013. Toward Resilience: A Guide to Disaster Risk Reduction and Climate Change Adaptation. ECB project.
[15] ADB and IFPRI. 2009. Building Climate Resilience in the Agriculture Sector in Asia and the Pacific.

be indicated by a gradual decline of agricultural productivity, but at the same time, collapse may come suddenly and without warning.[16]
The concept of resilience has evolved in response to the need to manage interactions between human systems and ecosystems in a sustainable manner. In their 2012 report on growth and resilience, the Montpellier Panel – a panel of international experts from the fields of agriculture, sustainable development, trade, policy and global development – made suggestions for building resilience, placing an emphasis on political leadership to achieve resilient markets, agriculture and people, as shown in the table below.[17]

RESILIENT MARKETS	RESILIENT AGRICULTURE	RESILIENT PEOPLE
✓ Reduction of food price volatility ✓ Facilitation of private investments ✓ Building better enabling environments	✓ Enabling resilient and sustainable intensification ✓ Combating land and water degradation ✓ Building climate smart agriculture	✓ Scaling up nutrition ✓ Focusing on rural women and youth ✓ Building diverse livelihoods

Many institutions and governments are participating in initiatives to build resilience, recognizing the urgent need to build systems that can withhold both predictable and unpredictable stresses and shocks. Some of these initiatives include the World Economic Forum's 'New Vision for Agriculture', which seeks to strengthen strategies, broaden and deepen stakeholder engagement, reinforce global support, build coordination capacity and monitor, evaluate and share outcomes.[18]
In the European Commission's Communication on resilience[19], released in October 2012, emphasis is put on closer cooperation between humanitarian and development teams for the inclusion of resilience into the European Union's disaster response efforts.[20]

3. The way forward

Most decision makers agree that the integration of disaster preparedness, mitigation and prevention measures into policy development is key to reducing the vulnerability of human populations to natural hazards. Interventions must build on local institutions and livelihood adaptation strategies to achieve more sustainable solutions. The current aid architecture needs to be more flexible and support longer term interventions and development approaches, even during acute crisis situations.[21] The definition of resilience implies that social systems have the ability to anticipate and plan according to perceived and real chances. Thus, institutions and individuals have the capacity to take action, in order to avoid potential damage and take advantage of opportunities in building resilience.[22]
While short-term interventions in the aftermath of a crisis are crucial to maintain food and nutrition security, there is also a clear need for development and scale-up investments to help poor and vulnerable groups build capacity, manage shocks, and develop resilience to future shocks. Other avenues to serve the long-term needs of vulnerable groups include creating the legal and administrative infrastructures that facilitate the expansion of social safety nets, which also help build resilience to economic crises. Depending on the context, programs like cash transfers, food stamps, in-kind transfers of food, work-for-

[16] The Montpellier Panel. 2012. Growth with Resilience: Opportunities in African Agriculture. London: Agriculture for Impact.
[17] Ibid.
[18] World Economic Forum. 2013. Achieving the New Vision for Agriculture: New Models for Action. http://www3.weforum.org/docs/IP/2013/NVA/WEF_IP_NVA_New_Models_for_Action_report.pdf
[19] European Commission. October 2012. Communication from the Commission to the European Parliament and the Council. The EU Approach to Resilience: Learning from Food Security Crises. http://ec.europa.eu/europeaid/what/food-security/documents/20121003-comm_en.pdf
[20] European Commission. 2012. A More Effective Partnership for a More Resilient World. European Development Days. http://eudevdays.eu/en/event/hlp/more-effective-partnership-more-resilient-world
[21] Alinovi L., Hemrich G., Russo L. 2008. Beyond Relief: Food Security in Protracted Crisis. FAO and Practical Action Publishing. http://brusselsbriefings.files.wordpress.com/2011/03/reader_humanitarian_aid.pdf
[22] ADB and IFPRI. 2009. Building Climate Resilience in the Agriculture Sector in Asia and the Pacific. http://www.adb.org/sites/default/files/pub/2009/Building-Climate-Resilience-Agriculture-Sector.pdf

food, and nutrition education campaigns can help raise household income and consumption. Social safety nets need to be incorporated into national social protection agendas and risk-management strategies.[23]
Smallholder families account for a large share of vulnerable and food insecure populations. To help poor farmers reduce and manage the risks that come with farming, a range of measures are currently being evaluated. Measures that have already been shown effective can be used to build resilience against agricultural shocks, provided that smallholder access to the necessary related products and services is facilitated. Such measures include investments in technologies and practices that reduce yield variability; access to financial services and insurance schemes; and policies that help mitigate and adapt to climate change. For instance, investments in the development and dissemination of disease-resistant crop varieties have helped reduce the vulnerability of smallholders to devastating crop losses and have accordingly improved food and nutrition security.[24]
According to the Montpellier Panel, the necessary steps to build resilience include: (i) anticipating the likelihood and location of stresses and shocks through surveys and agro-climatic monitoring – one of the most important steps in designing preventative or tolerant responses and decreasing the likelihood of damage and cost; (ii) promoting prevention measures such as building dams or sea walls to allow the continuation of agricultural growth; (iii) endorsing the reduction of damage to allow rapid recovery, which can involve trade-offs that balance agricultural productivity against the reduction of risk exposure; (iv) encouraging recovery and restoration where damage is inevitable; (v) learning from past experience and identifying outcomes, benefits and further options[25]
National or regional early warning systems capable of predicting imminent disasters need to be strengthened or developed where they do not exist, and better linked to decision making and response organizations. Linking weather data with nutritional information, crops and animal disease outbreaks and market prices, the systems need to draw their data from all levels, including community-level. To mitigate volatility, the stock-to-use ratio of food products needs to be improved by creating conditions for production increases and for adequate stock. Moreover, export restrictions of basic food products should be discouraged. This will include responding through market transparency (information on production, reserves, prices, etc.), promoting storage, and local/national food reserves where appropriate and feasible. The impacts of price volatility can be mitigated by using a range of measures, including the establishment of scalable safety nets, food security information systems, use of (weather, index) insurance, and an enhanced capacity to use price risk management instruments.[26]

Objectives of the Briefing
To improve information sharing and promote networking, CTA, the DG DEVCO from the European Commission, the ACP Secretariat, Concord organize bimonthly briefings on key issues and challenges for rural development in the context of ACP-EU cooperation. The Briefing on 4th March 2013 will be organized in collaboration with the International Food Policy Research Institute (IFPRI). It will address issues related to agricultural resilience and in particular, it will: (i) raise awareness on the key challenges posed to strengthen resilience in agriculture; (ii) increase exchange of information and expertise on proven successes on resilience; and (iii) facilitate networking among development partners.

Target group
Around 150 ACP-EU policy-makers and representatives of EU Member States, civil society groups, research networks and development practitioners, and international organizations based in Brussels.

Available material
Input and comments before, during and after the meetings will be included in the Briefings blog: http://brusselsbriefings.net. A short report and a Reader in printed and electronic format will be produced shortly after the meeting.

[23] IFRC-IFPRI. May 2012. Reducing the Risk of Food and Nutrition Insecurity among Vulnerable Populations. http://www.ifpri.org/sites/default/files/publications/ifrcpaper.pdf
[24] IFPRI. 2009. Millions Fed: Proven Successes in Agricultural Development http://dx.doi.org/10.2499/9780896296619BK; and IFPRI. 2009. Innovations in Insuring the Poor http://dx.doi.org/10.2499/0896296652
[25] The Montpellier Panel. 2012. Growth with Resilience: Opportunities in African Agriculture. London: Agriculture for Impact.
[26] IFPRI. 2010. Micro-level practices to adapt to climate change for African small-scale farmers. http://www.ifpri.org/sites/default/files/publications/ifpridp00953.pdf