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Policy brief:
Food security: Strengthening Resilience to Climate-Fragility Risks

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Executive Summary:

Global environmental changes endanger the progress that the international community has made in improving food security. Access to sufficient and healthy food is crucial to human security and welfare. It also has important repercussions for societal, state and international security. Whereas the exact role of food insecurity in driving unrest and conflict remain contested, the stunted development and risks of disaster and displacement - as well as the impacts of food insecurity on governments' legitimacy - constitute plausible security risks that a preventive foreign policy needs to address. Alleviating these risks requires intensified efforts to improve access to food and to shift towards managing the risks rather than the disasters.

Ensuring global food security means using less land to produce more food while increasing environmental sustainability. That challenge is compounded by the need to consider the geographic and social distribution of food security impacts. Foreign policy can play a role in helping to get the balance between inevitable trade-offs right – between location-specific needs and overall investment efficiency, mitigation and adaptation requirements for agriculture, and many more. It can do so by politically supporting the case for focusing climate policy and climate finance instruments on the strengthening of the resilience of the poor, by engaging vulnerable countries in political dialogues on appropriate adaptation strategies, and by strengthening regional and global cooperation for coordinated risk management.

Introduction

Huge productivity improvements in agriculture in recent decades suggest that our planet can feed everyone, even a global population of over 9 billion people (as is expected by 2050). The fact that the Millennium Development Goals' target to halve the proportion of hungry people was nearly achieved during the period of 2000-2015 underlines this positive trend. Yet progress has been unevenly distributed and almost 800 million people still suffer from chronic hunger.[1]

This policy brief focuses on (1) the risks related to climate change and how these may negatively affect (2) food availability and price volatility, resulting in (3) food insecurity, and the knock-on effects leading to (4) political fragility. This brief does not imply that other secular trends, both environmental and social, do not matter; nor does it imply that some effects of climate change may not also benefit food production. Rather, it maps out the risks that foreign policy-makers need to be aware of, with a focus on alleviating the risk vectors between climate change and food prices/availability (I: 1 → 2) and on to food insecurity (II: 2 → 3). Broadly speaking, strategies in category I focus on disaster risk reduction and increases in agricultural productivity whereas strategies in category II focus on livelihood improvements and more efficient and robust global cooperation.

Challenges for food security resulting from climate change

Climate change risks significantly disrupting the production of and access to food, resulting in a negative effect on global food security.[2] Yet most scenarios lead to the conclusion that global food supply can be adequate for the decades to come, and this holds true even under worrying emission scenarios.[3]

However, there is little room for complacency as predictions of continued progress are to a significant extent simply a function of the investments that need to be undertaken now to ensure greater resilience, productivity and sustainability. Moreover, adequate global supply is a necessary, but not a sufficient, condition for food security at local levels. Although the precise effects of climate change are subject to uncertainty, tropical latitudes appear most affected.[4] This implies that the worst effects are expected in regions that already suffer disproportionately from food insecurity, where a large share of the poor are concentrated, and where demographic pressures are strongest. This geographical distribution will likely be more problematic for human and international security than climate change's impact on net global food production.

Climate change is predicted to intensify the number and scale of extreme weather events. Increasing international linkages, notably food trade, have helped to build resilience against local and national shocks. Yet they also carry systemic risks. In 2007/08 and 2010/11, relatively small weather-related production shocks, coupled with low stocks and damaging export bans, led to food price spikes of more than 100%.[5] Thus, global food security is not only about increasing agricultural productivity and sustainability but also about reducing volatility and increasing resilience to shocks.

Global responses

Global efforts to improve food security fall into three broad categories that will structure our discussion:

(1) Humanitarian efforts to fight hunger, led globally by the World Food Programme (WFP). This category includes work to improve predictions of volatility in supply and prices.

(2) Efforts to improve access to food and nutrition. This comprises multiple levers at the local, national and international level (see below), with the Food and Agriculture Organization (FAO) serving as a facilitator.

(3) Efforts to improve agricultural productivity while conserving the natural environment and improving social well-being. Many international research efforts are clustered around CGIAR, a consortium of (currently) 15 International Agricultural Research Centres that have helped improve crop genetics and spread good practices. In addition to the FAO,

[1] Fan, S. 2016. 'Food Policy in 2015-2016: Reshaping the Global Food System for Sustainable Development', in: *Global Food Policy Report 2016*, Washington, DC, International Food Policy Research Institute (IFPRI).

[2] Krishnamurthy, P.K., et al. 2014. Climate impacts on food security and nutrition. A review of existing knowledge, Devon, Met Office and World Food Programme.

[3] Nelson, G.C. et al. 2014. 'Climate change effects on agriculture: economic responses to biophysical shocks', Proceedings of the National Academy of Sciences of the United States of America 111 (9), 3274–3279.

[4] Krishnamurthy et al., op. cit.

[5] Bailey, R., et al. 2015. *Extreme Weather and the Resilience of the Global Food System. Synthesis Report from the UK-US Taskforce on Extreme Weather and the Resilience of the Global Food System*, UK, The Global Food Security programme.

many international financial institutions (IFIs) support programmes that straddle efforts to improve agricultural productivity, market infrastructure and access to food, with the International Fund for Agricultural Development (IFAD) specifically dedicated to fighting rural poverty.

The rise in food prices in the early 2000s and the food price shocks of 2008 and 2010 greatly increased the salience of global food security. The G20 and the G7/8 both started significant new initiatives. The G20's 2011 'Action Plan on Food Price Volatility and Agriculture' comprises a large set of initiatives, both in terms of improving monitoring and reacting to food insecurity, e.g. by setting up the Agricultural Market Information System (AMIS) to strengthen transparency and coordination in international food markets. The G8's 2009 'L'Aquila Food Security Initiative' mobilized more than $22 billion for food security investments over a three-year period. Both the G7/8 and the G20 reinforced the role of existing international food (security) institutions such as the FAO, the WFP and the Committee on World Food Security (CFS). Food security also plays an important role across many of the 17 Sustainable Development Goals. All major food policy organizations have sought to emphasize the need for mainstreaming climate change into food security policies.

Despite progress, the international community continues to face severe challenges across all three food policy areas that will be analysed below.

Humanitarian Response: Famine and immediate crises

Full famines are nowadays largely limited to conflict areas, as currently evident, for example, in parts of the Horn of Africa, Yemen, Syria and Northern Nigeria. The humanitarian system is creaking under the strains it is presently experiencing: with some 60 million people forcibly displaced, serious underfunding is leaving large numbers of displaced people underserved.[6] Although early-warning systems on impending humanitarian disasters have improved, they have not consistently led to fast and decisive action. As a recent report on the (non-)response to the 2011 famine in Somalia argued, risk reduction and early response efforts do not keep pace with improvements in warning.[7] This is all the more troubling given that we can expect that climate change will lead to more frequent shocks threatening regional food security.

Climate change will not only increase natural hazards. Through its impacts on competition over natural resources and governmental legitimacy, it also threatens to contribute to a greater number and intensity of conflicts.[8] Given our difficulties in coping with the current level of crisis, and our knowledge that climate change effects will intensify in the foreseeable future, this means that prevention and disaster risk reduction need to strengthen to ease the pressure on relief capacities. Yet as the report of the High-Level Panel on Humanitarian Financing notes, 'investment in risk reduction and preparedness is far too low', noting that '12 out of a group of 23 low-income countries received less than $10 million for DRR over 20 years while receiving $5.6 billion in disaster response'.[9] The gaping difference displays a bias towards short-term action that foreign policy needs to counter.

Food availability and access

Most hunger is a function of persistent poverty. Climate change will add pressure on agricultural livelihoods, in particular through its expected impacts on regions already trapped in poverty as well as environmentally induced food price shocks that cause additional hunger and poverty.

Access to food is primarily about the distribution of resources, and about institutions that enable the efficient distribution of food, from infrastructure to trade and functioning markets. Depending on a household's or community's specific context (including whether it is a net food buyer or seller), improving food access and nutrition often requires mixing demand-side measures (especially social protection safety nets, food for work and employment programs) to raise

[6] UNHCR. 2015. Global Trends. Forced Displacement in 2014, http://www.unhcr.org/statistics/country/556725e69/unhcr-global-trends-2014.html (accessed November 2016); The International Crisis Group. 2016. https://www.crisisgroup.org/global/global-refugee-crisis-statement-board-trustees-international-crisis-group (accessed November 2016).

[7] Bailey, R., et al. 2013. Managing Famine Risk. Linking Early Warning to Early Action, London, Chatham House.

[8] Rüttinger, L. et al. 2015. *A New Climate for Peace. Taking Action on Climate and Fragility Risks*, Berlin/London/Washington,DC/Paris: adelphi, International Alert, Woodrow Wilson Center for Scholars, European Institute for Security Studies.

[9] The High-Level Panel on Humanitarian Financing. 2016. 'Too important to fail – addressing the humanitarian financing gap', http://www.un.org/news/WEB-1521765-E-OCHA-Report-on-Humanitarian-Financing.pdf (accessed November 2016), p. 6.

incomes and supply-side measures (increasing agricultural productivity through better seeds and production methods as well as access to natural resources). Beyond agricultural production, entry points include improvements in food chains and access to markets. Better physical (transport, storage) and regulatory (secure tenure rights, functioning cross-border markets) infrastructure can help to reduce the level and volatility of food prices.

Ensuring access to food and nutrition is a policy realm where national governments have a primary role. However, the international community can provide crucial support by facilitating learning, providing financial support for the necessary investments, and seeking to strengthen coordination on crisis management. The crisis of 2007/2008 had triggered numerous export bans by major crop producers, increasing global price volatility and in effect passing the burden of adjustment on major importing countries. Although the precise impact of food insecurity on the 'Arab spring' remains contested, these events and their consequences underline the risks of food insecurity for global stability.[10] Such risks call for better global coordination, e.g. through developing contingency plans with pre-agreed response protocols, coordinated management of reserves and rules to limit export bans or similarly damaging interventions.[11] Livelihood improvements thus need to be complemented by a supportive governance structure that facilitates risk management through international markets and transfers and a coordinated response to significant shortages.

Agricultural productivity

The challenge of improving agricultural productivity is two-pronged: the first consists in closing the 'yield gap' between what is already feasible and what many farmers, particularly in developing countries, actually produce. The FAO emphasizes spreading good practices such as better crop varieties and soil management and regrets the policy barriers that prevent their widespread adoption: from regressive input subsidies to limited access to information, finance and safety nets.[12] The second challenge concerns innovation for extending the productivity frontier in terms of increasing yields and decreasing harvest volatility. Both challenges necessitate investments, and setting the right incentives for farmers to adopt innovation.

Considerable synergies exist between adaptation through agricultural intensification (increasing output per land) and climate change mitigation.[13] Lobell et al. estimate that a cumulative investment of USD 225 billion to 2050 in agricultural research and development would not only offset the negative impacts of climate change (i.e. allow adaptation), but also reduce greenhouse gas emissions at USD 15 / tCO_2e, making investment into agricultural R&D a potentially very cost-effective climate mitigation and adaptation measure.[14] While there are great uncertainties, this estimate establishes agricultural research and development as a plausible entry point for considerable synergies between climate change mitigation and adaptation that would simultaneously increase food security. Policy-makers will still need to weigh difficult trade-offs because the greatest mitigation potentials do not coincide with the greatest adaptation and food security benefits, but climate mitigation co-benefits constitute an additional argument for strengthening food security through sustainable agricultural intensification.

Conclusion & points for discussion

The expected consequences of climate change, especially increases in temperature and changes in the hydrological cycle, are likely to have significant impacts on agricultural and fishery potential and risk undermining food security through their impacts on livelihoods, infrastructure and, ultimately, political stability. The global food policy architecture is evolving to reflect the interrelated challenges of short- and long-term access to food under the conditions of environmental change that exacerbates existing vulnerabilities. However, it needs to do better. The enhanced political capital that results from greater awareness of the challenges and their repercussions for international security could improve the pace of mitigation and adaptation.

This brief suggests four priority fields of action. These are to be amended based on our workshop discussion, where we also hope to receive feedback on particular levers that can be used to help put them into practice:

(1) **From disaster management to disaster risk preparedness:** The

[10] See Hendrix, C. 2016. *When Hunger Strikes: How Food Security Abroad Matters for National Security at Home*, Chicago, The Chicago Council on Global Affairs.
[11] Bailey et al. 2015, op. cit.
[12] FAO. 2016. *The State of Food and Agriculture. Climate Change, Agriculture and Food Security*, Rome, Food and Agriculture Organization.
[13] Lobell, D., et al. 2013. 'Climate mitigation as adaptation: the case of agricultural investments', *Environmental Research Letters* 8.
[14] Ibid.

response to acute hunger needs to improve, shifting from insufficient donor assistance addressing the short-term consequences of conflict and disasters to a more forward-looking system that saves money and lives by strengthening disaster risk preparedness. This includes the need to strengthen appropriate early action in response to warnings of impending food insecurity.

Questions for discussion:

a. How can political and bureaucratic incentives be altered to strengthen risk management and an early response to crises?
b. How can funding mechanisms be improved to ensure full financing of humanitarian needs and simultaneously enable more long-term thinking and planning?

(2) **Resilience of livelihoods and food availability:** Structurally improving access to food is ultimately a question of improving and diversifying livelihoods. Global governance can support that process by seeking to ensure that policies on trade, investments, development and climate change strengthen the resilience of smallholders and the urban poor. Ensuring that climate policy instruments support their livelihoods is not just a question of climate justice, but an investment into global stability.

Questions for discussion:

c. In view of urbanization pressures, what strategies could help strengthen rural development? What needs to happen for rural areas to become better integrated into value chains?
d. What is the role for climate finance in supporting livelihoods and food security?

(3) **Improving global coordination and governance:** A combination of sufficient global food availability but increased local and regional volatility in supply and prices implies that food security under climate change will be much more difficult to achieve under conditions of national self-sufficiency. Strengthened regional and global cooperation could serve as a form of re-insurance against the destabilizing effects of climate change risks and should include efforts to better predict and manage supply and price volatility, improve the resilience of import-dependent developing countries, and develop contingency plans for coordinated global risk management.

Questions for discussion:

e. What role can and should global trade play in ensuring national food security?
f. What types of global risk management tools do we need?

(4) **Strengthening agricultural productivity:** Agriculture has long suffered from underinvestment, particularly in the regions that are food-insecure today. Closing the yield gap is a key challenge, but doing so must avoid or at least compensate for undermining livelihoods as well as negative impacts on ecosystems and natural resources and needs to harness synergies with and between climate change adaptation and mitigation. Trade-offs will be inevitable, but the international community can and should facilitate progress by supporting risk insurance instruments and vulnerability assessments, by helping finance the necessary investments into research and innovation, as well as by supporting better policy and institutional frameworks that facilitate the widespread adoption of innovation and good practices.

Questions for discussion:

g. How could the private sector be leveraged to contribute to enhancing agricultural productivity? Can agri-business help to strengthen smallholder livelihoods, and how?
h. What financing mechanisms are necessary to ensure that productivity gains do not come at the expense of diversity and hence resilience?
i. What are the (global) priorities and 'low-hanging

fruits' for innovation and innovation uptake?

The above draft policy brief seeks to provide an overview of the challenges that our working group hopes to address and to facilitate a structured discussion. We very much appreciate all feedback, especially regarding the relative priority of various fields of action, where participants see opportunities for helpful (foreign policy) engagement, and regarding particular levers to substantiate the recommendations at a lower level of abstraction. Given the envisaged length of the policy brief (< 3.000 words), we could also decide to focus on one or two of the recommendations – or suggest such sub-topics for future PSI workshops & policy briefs. Against this backdrop, we are looking forward to discussion on the following questions:

(1) What should be the international community's priorities for strengthening resilience to the food insecurity-conflict nexus? How would you prioritize or amend the analysis and recommendations of the draft policy brief?

(2) Where are crucial gaps in global governance, and what are priorities for a global food and nutrition security governance agenda? What are the weakest links? What are promising concrete levers for change?

(3) Where are key knowledge or governance gaps, what needs to change, who needs to lead? Where do we need political and foreign policy engagement? What specific recommendations would you give to foreign policy-makers? What should they focus on in seeking to improve global food security?