Designing Global Governance for Agricultural Development and Food and Nutrition Security

Joachim von Braun and Regina Birner*

Abstract

We point to deficits in current global institutional arrangements in support of agricultural development and food and nutrition security. A framework for global institutional arrangements proposed here is the set of essential international public goods for a well-functioning world food system. These public goods include international natural resource management; trade and transboundary competition policy; research and innovation; handling large scale food emergencies; and transboundary food safety. Based on the framework, and institutional economics considerations, causes of current malfunctioning of global food governance are analyzed. It is proposed to redesign global food governance by establishing an international platform with policy clusters mapped along the set of global public goods. To support the platform with needed research-based evidence an International Panel on Food, Nutrition and Agriculture (IPFNA) is suggested, partly following the design of the Intergovernmental Panel on Climate Change (IPCC). Existing organizations and mechanisms would form building blocks of the strengthened and redesigned governance system. A gradual approach toward redesign is proposed. Some redesign in the suggested direction was triggered by the food crisis of 2008, as demonstrated by the reform of the Committee on Food Security (CFS) with its high level panel of experts, but more is needed.

1. Introduction

The world food and agricultural system and the governance of its international dimensions show signs of serious malfunctioning. The incoherent and inadequate response to the acute food price crisis in 2008 was just one indication. The preparedness has somewhat improved thereafter by establishing some new organizational mechanisms and coordination. Yet, the world remains ill prepared for managing the major challenges facing the global agricultural and food system, and the nutrition deficiencies in the 21st century (von Braun et al., 2014). Globalization of agriculture and its dynamics and complexities have outpaced the capabilities of the organizations that have evolved over time to deal with the global dimensions of agricultural and food systems change (Paarlberg, 2002). We just hint at the list of major challenges: (i) low agricultural productivity growth caused by insufficient investment in research and development (R&D); (ii) insufficient response to the risks of climate change for food security; (iii) loss in forest areas combined with loss of biodiversity; (iv) in global food markets appropriate international institutions that assure competition are lacking; (v) lack of agreement about trade leaves restrictions in place that fostered price volatility; (vi) a new driver of change around agriculture and food is the rise of a bioeconomy, i.e. the growing production and transformation of biologically based materials for many uses. A related insight is that agriculture and food policy cannot be managed in

*von Braun (Corresponding author): Department of Economic and Technological Change, Center for Development Research (ZEF), University of Bonn, Germany. E-mail: jvonbraun@uni-bonn.de. Birner: Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics, University of Hohenheim, Germany.

The copyright line for this article was changed on 09 February 2017 after original online publication.
isolation from water and energy, a nexus perspective is needed. The transboundary pandemic diseases linked to livestock production remain a global risk. Large scale food emergencies as a result of weather or wars are reacted to rather than prevented. A global nutrition policy is lacking despite global proportions of undernutrition and obesity. While it might be a stimulating intellectual exercise to try to identify a comprehensive new governance system for international policy action in agriculture and food security, it would also be naïve to expect any fast institutional and organizational change from within existing organizations in view of forces of resilience of inherited institutional arrangements.

The share of official development assistance (ODA, bilateral and multilateral) for agriculture, forestry and fisheries in total aid had declined from 19% in 1985/87 to 6% before the food price crisis in 2008 (Islam, 2011). The underlying cause was a lack of global attention to agriculture in the 1980s and 1990s, as the world had become complacent, following the Green Revolution that agricultural growth would just continue without the need of major public investments.

Besley and Ghatak (2003) noted already in 2003 a surprisingly low level of attention in the mainstream development economics literature to the provision of public goods and services for poverty reduction, and not much has changed since then (Birner and von Braun, 2015). The literature that deals with this question at the global level, focusing on the agricultural and food system, is even more limited. Some studies analyze individual global organizations in this field or the group of the food and agriculture related organizations (Lele, 2015). Most of the global organizations, such as the Food and Agriculture Organization (FAO), the Consultative Group for International Agricultural Research (CGIAR) and the International Fund for Agricultural Development (IFAD), have been subject to evaluations that have identified challenges in their internal governance (FAO, 2007; IFAD, 2005; CGIAR, 2008). These evaluations have been responded to by the organizations with reform initiatives but the processes of reform are slow. Most importantly, these individual reviews could not comprehensively address the question of how the entire global food system might work best as a whole.

Other studies focus on selected aspects of the global agricultural and food system governance. Shaw (2007) provides an account of global attempts to ensure global food security. McKeon (2015) analyzes the evolution of paradigms regarding food security and agriculture in the global debate and in an earlier book, McKeon (2009) discussed the role of civil society organizations in the global governance of food and agriculture. There are also books that critically examine the role of private companies in global food governance (e.g. Higgins and Lawrence, 2007; Oosterveer, 2007). Margulis (2013) applied the concept of “regime complexity” and identified diverging rules and norms as sources of conflict and fragmentation in ongoing efforts to strengthen the global governance of food security. The World Development Report 2008 provides an assessment of global agricultural governance, taking into account the different types of global organizations as well as the challenges of coordination among them (World Bank, 2007). Candel (2014, p. 592) conducted a review of the literature on food security governance and found that the literature on global food security governance is dominated by the critique “that there is no truly authoritative and encompassing body or institution with a mandate to address food security concerns across sectors and levels.” A step to address this problem can be seen in the reform of the Committee on Food Security in 2009 (CFS, 2009).

Against this background, the paper aims to (1) develop a conceptual framework to analyze global governance of the agricultural and food system, (2) to apply this
framework for the analysis of the current problems of the system, and (3) to identify and discuss options for reform. While this article is based on theory, survey of literature, including performance reviews of the international food system, and on insights from interactions with global organizations, our assessments are not free from personal judgements. We hope the article triggers more debate and analytical research into global food governance.

2. Conceptual Framework

Defining Global Governance of the Agricultural and Food System

The term “governance” is derived from the Latin word “gubernare”, which means to steer. In the national development context, the United Nations Development Programme (UNDP, 1997) defined the term as “the exercise of economic, political, and administrative authority to manage a country’s affairs at all levels”. In the global governance literature, the term has been defined as “governing, without sovereign authority, relationships that transcend national frontiers” (Finkelstein, 1995, p. 369). The concept of global governance has also been associated with a shift of focus from international actors and their relations to include global rules, norms and standards (Dingwerth and Pattberg, 2006). The term governance is linked to the concept of institutions, famously defined by North as “the rules of the game” (North, 1995). Various definitions of institutions and organizations pervade the development literature. Others blend this definition with a sociological perspective and thereby expanding institutions to not only include rules, regulations and norms, but also organizations as their operation is influenced by the former. In this paper organizations are understood, following North, as the actors that “operationalize” rules and regulations. The concept of governance is broader than that of institutions and organizations, as it also encompasses the patterns of behavior that result from the prevailing formal and informal institutions. For the purpose of this paper, we are specifically interested in patterns of organizational behavior, for example, whether organizations cooperate, and whether they act effectively and efficiently to address the challenges of the agricultural and food system outlined above. On this basis, global governance of the agricultural and food system is defined for the purpose of this paper “as the formal and informal institutions and organizations at the global level that aim to influence the agricultural and food system, together with the patterns of organizational behavior to which they give rise.”

Identifying the Global Agenda for Agricultural and Food Systems

One can distinguish two types of reason for taking action at the global level with regard to the agriculture and food system. The first reason is economic. It refers to the need to address market failures, that either cannot be addressed at the national level because of the transnational nature of the problems involved, e.g. greenhouse gas emissions or trade rules or food safety, or that are more efficiently addressed at the global level, e.g. owing to transnational economies of scale as in case of germplasm improvement of crops. The second type of rationale to act at the global level is based on welfare and ethical goals, which are subject to value judgements. Examples of this type of justification for global action include humanitarian principles, according to which the global community assists nation states, e.g. in case of a food crisis, if solving this crisis is beyond the capacity of a nation state.
The global community may also be motivated by principles of global justice and equity, for example, by taking responsibility for the negative consequences of past actions of industrialized countries on developing countries.

Table 1 further specifies the different types of problems in the agricultural and food system to be addressed at the global level. In the public debate, it is common to use the term “International Public Goods” (IPGs) to refer to activities that the global community should undertake. The term “public goods” can be traced back to Samuelson’s (1954, p. 387) theory of public expenditure. According to his theory, pure public goods differ from private goods by two criteria: They are non-rivalrous in consumption and at the same time non-excludable. A good example of a global public good, defined in this sense, is the eradication of a transboundary disease, such as Rinderpest.

In the debate on global governance, the term “international public good” is not used in this strict sense. It is rather applied as a more generic term to refer to all areas where public action at the global level is considered to be justified for the different economic and social reasons outlined in this chapter, as summarized in Table 1. The use of the term “International Public Goods” (IPGs) in this paper follows this practice. Goods that are non-excludable, but where rivalry in consumption occurs, are referred to as common-pool resources. Environmental problems such as climate change and the loss of biodiversity are problems of global common-pool resources, or global commons, according to this definition (Edenhofer, et al., 2013).

Table 1 lists two other economic justifications for international action: coordination failures and the opportunity to use economies of scale. Table 1 also

### Table 1. Rationale for Global Action

| Justification          | Problems to be addressed/Opportunities to be used                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------|
| **Market failure**     | **Global common pool resources** (non-excludability; rivalry)                                                        |
|                        | Greenhouse gas emissions                                                                                             |
|                        | Loss of biodiversity                                                                                                 |
|                        | • General (genetic, species and habitat)                                                                             |
|                        | • Agrobiodiversity (plant and animal genetic resources relevant for agriculture)                                     |
| **Global public goods**| (strictly defined—non-excludability; non-rivalry)                                                                     |
|                        | Lack of innovations that cannot be protected by intellectual property rights and have large spill-overs               |
|                        | Lack of incentives for global efforts to eradicate transboundary diseases                                             |
| **Coordination failure**| High transaction costs for global trade if common rules and standards are not developed                              |
|                        | Country-level actions to deal with food price volatility that aggravate the problem at the global level (e.g. export bans) |
| **Economies of scale** | Opportunity for cost reduction by pursuing agricultural research at international level                               |
| **Social goals**       | **Humanitarian principles**                                                                                          |
|                        | Responding to and preventing food and nutrition emergencies in countries with insufficient capacity                   |
|                        | **Global fairness and equity**                                                                                      |
|                        | Ensuring social and environmental standards and respect for human rights in agricultural investments and trade        |

*Source: Authors.*
lists areas of action that are justified by welfare and ethical goals, which are subject to value judgements.

One may compare these types of rationale for global action with decisions that nation states have to make regarding the scope of government activities (World Bank, 1997). Countries have to make political decisions on how active the government should be in the spectrum between a “lean government” on the one hand, which only concentrates on addressing market failures, and a “welfare state” on the other, where government plays an expansive role in reaching social and environmental goals. This decision on the scope of the state is ultimately a political decision, based on value judgements, rather than a pure economic rationale.

**Global Organizations and Mechanisms**

The second element of the conceptual framework developed here concerns the types of governance mechanisms that are available to engage in the types of global action outlined above and the types of organizations that can be created for this purpose.

**Global governance mechanisms** National governments can, in principle, use the following governance mechanisms to pursue the types of global action outlined in Table 1.

1. **Formulation of global goals**: An important instrument for reaching agreement on global action and for priority setting is the formulation of global goals, such as the sustainable development goals (SDGs).
2. **Binding agreements**: National governments can negotiate binding agreements, as in case for the Kyoto Protocol under the UN Framework Convention on Climate Change.
3. **Voluntary agreements**: National governments can make voluntary commitments, such as adopting the “Voluntary guidelines to support the progressive realization of the right to adequate food.” (FAO, 2005)
4. **Creation of global organizations**: An important governance instrument to undertake global action is the creation of global organizations, which receive funding from governments and/or other entities to undertake the global activities outlined in Table 1 on a permanent basis.
5. **Private commitments, standards and labels**: An important global governance mechanism that can be implemented by non-governmental organizations (NGOs) and private businesses are private standards and labels. Examples include the labels of the Rainforest Alliance or the Forest Stewardship Council (Forest Stewardship Council, 1996).

**Global organizations** In classifying organizations at the national level, it has become widely accepted to distinguish between three sectors: the public sector (government, comprising the legislative, executive and judiciary), the private sector (for-profit organizations competing in the market) and the third sector, comprising organizations involving collective action, such as citizen associations, community-based organizations and non-governmental organizations that pursue public interests on a non-profit basis. A similar classification can be applied for global organizations (see Table 2 below). Intergovernmental organizations are formed by national governments and have an international legal personality according to international law.
Table 2. Global Organizations and Mechanisms with Relevance for Agriculture, Food and Nutrition

| Sector/Specialization | Intergovernmental organizations and mechanisms | D: Global networks of different types of organizations |
|------------------------|-----------------------------------------------|-------------------------------------------------------|
| Specialized organizations in the agricultural and food sector | Food and Agriculture Organization (FAO) | N: Global networks of farmers’ organizations (e.g. World Farmers Organization, La Via Campesina) |
|                        | Committee on World Food Security (CFS)        | O: Consultative Group on International Agricultural Research (CGIAR) |
|                        | Codex Alimentarius                             | P: Organizations of multinational agribusiness enterprises (e.g. New Vision for Agriculture; Global Harvest Initiative) |
|                        | International Fund for Agricultural Development (IFAD) | D: Scaling Up Nutrition (SUN) |
|                        | World Organization for Animal Health (OIE)     | D: Roundtable on Sustainable Palm Oil (RSPO) |
|                        | World Food Program (WFP)                      | F: Private foundations (e.g. Rockefeller; Bill and Melinda Gates Foundation) |
|                        | Global Donor Platform on Rural Development     | N: NGOs with some focus on food and agriculture (for example, Oxfam, CARE, Welthungerhilfe, Concern) |
| Development organizations and international financial organizations with agricultural programs | World Bank Group | N: Global networks of non-profit networks (e.g. World Farmers Organization, La Via Campesina) |
|                        | United Nations Development Programme            | O: Global organizations receiving public funds |
|                        | Organization for Economic Development and Cooperation (OECD) | P: Global private sector organizations networks of for-profit organizations |
|                        | Regional Development Banks                     |                                      |
| Specialized organizations focusing on other sectors with relevance for food and agriculture | United Nations Environment Programme (UNEP) | N: Environmental NGOs (for example, World Wide Fund for Nature, Greenpeace) |
|                        | Intergovernmental Panel on Climate Change (IPCC) | D: International Union for the Conservation of Nature (IUCN) |
|                        | International Labor Organization (ILO)          | N: NGOs with watchdog functions for global organizations (for example, Global Policy Forum) |
|                        | Global Environmental Facility (GEF)            |                                      |
|                        | World Health Organization (WHO)                |                                      |
|                        | United Nations Children’s Fund (UNICEF)        |                                      |
|                        | World Trade Organization (WTO)                 |                                      |
|                        | United Nations Development Fund for Women (UNIFEM) |                                      |
| Sector/Specialization | Intergovernmental organizations and mechanisms |
|-----------------------|-----------------------------------------------|
| Governance bodies in charge of UN Conventions with relevance for agriculture and food | United Nations Framework Convention on Climate Change (UNFCCC) |
|                       | Green Climate Fund                             |
|                       | Convention on Biological Diversity (CBD)       |
|                       | United Nations Convention to Combat Desertification (UNCCD) |
|                       | International Treaty on Plant Genetic Resources for Food and Agriculture |
| General global governance bodies with coordination functions | United Nations Secretariat, Assembly and Security Council, UN Economic and Social Council (ECOSOC), G7, G20 |

Source: Authors, partly adapted from World Bank (2007, p. 261).
Global coordination mechanisms  Global organizations play an important role in achieving coordination across countries in specific subject areas. One can distinguish the following governance mechanisms for coordination and action:

- **Coordination committees within the UN system:** The UN System has several coordination mechanisms, such as the Economic and Social Council (ECOSOC), which has the mandate to coordinate the specialized agencies of the UN, including the FAO. The Committee on World Food Security (CFS) is a particularly important coordination mechanism, as further discussed below.
- **Informal coordination mechanisms among governments:** there is the coordination mechanism created by the G7 and the G20. These groupings have come to play an important role in global governance. Agriculture and food have occupied an important place on the G7/G8 and G20 agenda.
- **Global coordination mechanisms of private and non-governmental organizations:** Non-governmental organizations and private business enterprises in the food and agricultural sector have also set up global coordination mechanisms to reach global goals. A critically assessed example is the Roundtable on Sustainable Palm Oil (Roundtable on Sustainable Palm Oil, 2007).

**Challenges of global governance** To better understand why the existing global governance mechanisms and organization have not been more effective in addressing the challenges identified in the introduction, it is important to consider the challenges inherent in international governance.

**Free-rider problem of collective action** In the absence of a global government, all global action in support of the agricultural and food system depends on the voluntary commitment of national actors to engage in collective action. It has been recognized since long that such collective action is subject to the free-rider problem, especially if those who do not contribute to resolve a problem still benefit from its solution (Olson, 1971). While the conditions required to overcome the free-rider problem at the local level are increasingly well understood (Ostrom, 1990), the understanding of how to address the free-rider problems at the global level is still emerging.

**Bureaucratic inefficiencies and “mission creep”** Public sector institutions are inherently plagued by problems like political capture, nepotism, red tape, and corruption. Bureaucracies at the international level are confronted with the same challenges, some of which may be even more difficult to resolve at international than at national level. As Niskanen (2007) has shown, bureaucracies have an inherent tendency to constantly expand their area of influence. This tendency is also prevalent at the international level. It leads to the phenomenon of “mission creep,” which results in an increasing overlap of mandates.

**Design principles** Even though the literature on global governance in the area of agriculture and food is still in an early stage, it is possible to derive some design principles for global governance, based on the insights from the literature on public sector governance, fiscal and environmental federalism and the New Institutional Economics.

**Matching scope with capacity** The World Development Report 1997, “The State in a Changing World” (World Bank, 1997), promoted the principle of matching the
scope of state activities with the capacity of government organizations to actually implement those activities. This principle can be equally applied at the global level. If the capacity of global organizations to implement is limited, priority setting to limit the scope of global action is essential.

**People and rights focus** Ultimately the investment of political and financial capital in the provision of international public goods for agricultural development and food security needs to serve protection and improvement of human wellbeing (FAO, IFAD and WFP, 2015). Affected people frequently live on marginal lands, where agricultural productivity is low and they have little access to technology, healthcare, education, safe drinking water, and often live in countries with a weak rule of law and limited political rights. An important part of relevant international public goods is the very protection and advancement of the human right to food (FAO, 2005). It should be seen as a wider, more encompassing and distinct objective in itself as part of the broader human rights agenda (Mechlem, 2004).

**Subsidiarity** The principle of subsidiarity holds that activities should be assigned to the lowest level of government where they can be executed (Marshall, 2008). Another notion of the principle is that the government should only become active if the private or third sector cannot solve the problem under consideration. This principle can also be applied to the global level. The principle implies that intergovernmental organizations should concentrate on activities that national governments, private sector and non-governmental organizations cannot or are not willing to resolve.

**Changing scope for action at national and international level** The basic principles that justify action at the international level have been identified in Table 1. However, one cannot conclude that all activities to which the rationales for international action do not apply should be carried out at the national level. Actual organizational capabilities of countries at certain stages of development do need consideration as well and this is where aid comes into play. Furthermore, optimal public goods provision can involve coordination by diverse players, including the private sector and civil society organizations. Moreover, the set of the international public goods portfolio also needs to adapt to change and new risks and uncertainties, and this requires adaptable organizational arrangements, not a set of fixed global organizations with fixed “mandates.”

**Specialization vs integration** Another important design question for global governance is whether it is preferable to have a larger number of specialized organizations, or a smaller number of organizations that address a broader range of topics. One may assume that integration of different tasks within the same organization may facilitate coordination, but this is not necessarily the case, since large organizations face their own problems in overcoming silo cultures (FAO, 2007). Still, in view of the overhead costs involved in each global organization and the challenge to coordinate them, there should be limits on the proliferation of specialized organizations, especially if they are to perform tasks that could well be integrated into existing organizations.

**Independence from political decision making** At the national level, independent agencies, such as independent central banks, are created to shield organizations...
from political interest capture. Where the challenge of political interest capture is less relevant, tasks are allocated to government organizations, such as ministries, that are under direct political control. This has the advantage of avoiding “legitimacy drift” and “delegatee drift,” i.e. the problem that an independent organization (the delegatee) pursues goals that are outside the mandate of the government or are not considered legitimate (Voigt and Salzberger, 2002). The same principles can be applied to the international level.

**Providing evidence base for decision making** Providing sound evidence is essential for the provision of IPGs. Evidence is equally relevant for setting global goals and for selecting the appropriate policy instruments to achieve them. Global organizations may use internal mechanisms, such as research departments, to create the necessary evidence base. An alternative and more comprehensive mechanism is the creation of an independent scientific advisory council, as in the case of the Intergovernmental Panel on Climate Change (IPCC).

**Principles for organizational arrangements** For a strategy of international public goods provision, not only the question of what kind of public goods, but also of how organizational arrangements need to be addressed. Key principles for sound international governance of public goods in general, and also related to agriculture and food are adherence to legitimacy combined with accountability (i.e. the decision making body has a legitimate basis and is accountable) and effectiveness (i.e. the chosen governance structure is the most cost-effective option among alternatives in delivering public goods). Given the fast changing and uncertain nature of the drivers of global food and agriculture, such as climate change or food related—health risks, a third principle needs to be inventiveness (i.e. the capacity to innovate and adapt to changing circumstances). While the current governance system with a host of UN agencies is strong in legitimacy, it lacks effectiveness and inventiveness for efficient public goods delivery. A conceptual framework for addressing the effectiveness principle can draw on transaction costs theory (Williamson, 1981), which can help to identify tradeoffs between principles. For example, participatory governance involving many stakeholders may enhance legitimacy, but it involves transaction costs that reduce effectiveness. The inventiveness principle requires capacity and freedom to experiment and to link to and among innovators in the research and innovation systems. The typical hierarchical structures of global organizations seldom provide the suitable context for that. A global food and agriculture architecture needs the capacity to adopt and test innovations generated in the public and private innovation systems. This speaks for independent research bodies as part of the global architecture for agriculture, food and nutrition policy.

**Challenges of restructuring** Global organizations are not designed from scratch, they have evolved over time, sometimes triggered by preceding crises that made the lack of their existence or desired functioning more visible. Any effort of reforming them has to take the cost of reform into account. Reforming established organizations involves its own governance challenges, as resistance is likely to occur (Luck, 2005). As a result, reforms are often complicated and involve substantial transaction costs. Reforms that aim to simplify existing organizations often end up in more complicated ones, since new structures are created while, owing to political resistance, existing structures are not abolished, especially if sufficient political will and leadership are missing. Reforming global organizations is inherently more
difficult than reforming national ones, since the collective action problem of global action also affects reform efforts.

3. Analyzing the Current Situation

This section applies the conceptual framework developed in section 2 to analyze the current global governance of the agricultural and food system.

Serving Global Goals

As indicated above in section 2, setting global goals is essential to define the scope of global action. The SDGs (UN, 2015) are particularly important in this regard. Goal 2, which aims to “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”, is most directly related to the agricultural and food system, but other goals are also relevant. These include Goal 12, “Ensure sustainable consumption and production patterns,” and Goal 15, “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss” (United Nations, 2015). As pointed out in the introduction, these goals need to consider a fast transforming context, in which the agriculture and food system is changing from a relatively large and distinct sector of the economy into a more pervasive, integrated system, in which consumers are linked via extended value webs to food distribution and services.

Considering Global Actors

For most of the above-mentioned areas of global action, organizations, conventions and declarations already exist (Table 2). Most intergovernmental organizations that are relevant for food and agriculture have been formed under the umbrella of the UN. They are shown at the left-hand side of Table 2. The right-hand side shows a wide range of other types of organizations that are relevant for the global governance of the agricultural and food system. They have been classified into five different types, as further specified in Table 2.

All these organizations serve important functions in the global arena and all have in the past made important global contributions. However, global action in support of agricultural and food systems does not only—and actually not mainly—happen through formal global organizations. It increasingly also occurs through a complex global web of government networks, in which a collection of nation states communicate via heads of states, ministers, parliamentarians and the UN, and in which corporations and NGOs participate in various ways (Slaughter, 2004).

The Required Set of IPGs for the Agricultural and Food System

Taking in the considerations of section 2 (see Table 1) on the rationale for global action into account, this section discusses seven IPGs that are particularly relevant for food and agriculture:

1. Natural resource management related to biodiversity, water and soils
2. Climate change adaptation and mitigation
3. Trade regimes, food reserves and related global information
4. Competition policy and standards for foreign direct investment (FDI)
These seven sets of essential international public goods elaborated above should not be seen in isolation. There are important synergies between them, which need to be tapped. For instance, addressing climate change adaptation and mitigation is supported by sound trade and food reserves policy. In the following sections the extent to which the problems are addressed by the existing global organizations and mechanisms is reviewed.

Natural resource management related to water, land and biodiversity The relevant natural resource base of agriculture comprises plant and animal genetic resources and its diversity, i.e. biodiversity, transboundary water systems, and soils and land use. Biodiversity, including the diversity of plant and animal genetic resources that are relevant for food and agriculture, is governed by the Convention on Biological Diversity (CBD), which was signed in 1992. It clearly allocates the rights to biological resources to the nation states, but emphasizes the need for global action to maintain biological diversity and the responsibility of industrialized countries to support developing countries. The CBD is an example of the coordination challenges of global governance. The allocation of genetic resources to nation states under the CBD required several years of negotiation to come up with a separate agreement, facilitated by the FAO: The International Treaty on Plant Genetic Resources for Food and Agriculture, which ensures that countries can continue to exchange genetic material for crop breeding purposes.

The least attention among basic resources has been paid to land use and soils, although their unsustainable management has potentially large international externalities (Nkonya et al., 2015, Byerlee and Rueda, 2014). Accelerated international land transactions indicating the emergence of an international land market have triggered a voluntary governance mechanism: the “Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security,” which include generic provisions to avoid environmental damage (CFS, 2012, section 12.4).

A more comprehensive approach to provide management guidelines and information bases for these resources is needed as public goods, such as world soil degradation mapping services, water systems monitoring and biodiversity tracking including respective standards that are also a public good (see The Economics of Ecosystems and Biodiversity (TEEB), 2010; Nkonya et al., 2015). There is a diverse set of global organizations and governance mechanisms with each being focused on singular aspects of these resources (see Table 2) and limited coordination among them.

Climate change adaptation and mitigation related to food security and agriculture Agriculture is both a contributor to greenhouse gas (GHG) emissions and part of the solutions for reducing GHG emissions, related to land use change and animal (ruminants) production (Wheeler and Von Braun, 2013). Still, agriculture has found it difficult to get attention in the climate change debates and was generally side lined at the big international climate conferences under the United Nations Framework Convention on Climate Change (UNFCCC). The climate and agriculture related global agenda requires a large internationally
coordinated research and financing effort to develop seeds and breeds adapted to the uncertain climatic conditions in the future, to design resilient and eco-efficient crop and livestock systems, while ensuring the conservation of soil, water and genetic resources, and to monitor greenhouse gases, verify soil carbon stocks and adapt water management (Soussana et al., 2012). In view of the complex linkages of climate policy of relevance to agriculture and food security, it seems necessary to call for a more prominent integral positioning of agriculture in the climate policies governed by the UNFCCC.

**Trade regimes, food reserves and related global information** Rule-based trade is an essential IPG for food security, in particular for the stability aspect of food security. Food security is considered by the World Trade Organization (WTO, 2011), but the WTO was not able to deal with the acute problems of export restrictions that made the 2008 food crises worse. A reform of WTO decision making is long overdue, but unlikely to be achieved soon. Many other regional and bilateral trade agreements have been established since the mid 1990s. Some of them have elements of food security related rules, such as the Association of Southeast Asian Nations (ASEAN), South Asian Association for Regional Cooperation (SAARC) and the Trans-Pacific Partnership (TPP).

Of importance at global level are regimes that might reduce food price volatility and extreme price spikes, which affect the poor the most. There is an institutional vacuum at the international level to address these matters. An essential basic element is reliable information on markets, production and stocks at national levels, which is shared internationally. The establishment in 2011 of the Agricultural Market Information System (AMIS) was an important step in this direction. It is an inter-agency platform to enhance food market transparency and encourage coordination of policy action in response to market uncertainty. The information shared is, however, not yet comprehensive.

**Sound competition policy, and standards for FDI** An important IPG for FDI is an appropriate list of rules for assuring efficiency as well as fairness for both sides of investment—investors and countries invested in. Trade and FDI policies are increasingly inseparable elements of IPGs. This applies to FDI along the whole value chain from land (with access to water) to processing and retailing. An international land market has evolved and is a particularly complex matter for global governance. For investments in land and other agricultural resources, voluntary guidelines have been established recently, as mentioned above (CFS, 2012). They need further strengthening toward enforcement in key elements, i.e., transparency in negotiations, respect for existing land rights, including customary and common property rights, sharing of benefits with local communities and environmental sustainability. Because of the transnational nature of such arrangements, no single institutional mechanism will ensure this outcome.

**International research and innovation in food and agriculture** The backbone of technological change is research and for developing countries agricultural research in particular is a public good that is vital to poverty reduction. The CGIAR, as a specialized global organization, plays an important role in providing IPGs in the area of research and innovation, making use of economies of scale, e.g., in germplasm improvement. However, the CGIAR represents only about 4% of the total global agricultural research spending and related capacities. The global
challenges need to be addressed by a broader mechanism that also draws on research capacities by middle and high income countries. Also, developing countries need to invest more in improving their own science systems. The R&D driven component of agricultural growth, i.e. total factor productivity (TFP), accounted for about two thirds of total global agricultural productivity growth (Fuglie et al., 2012). However, in view of the large disparities in TFP between industrialized and developing countries, it remains a challenge to identify institutional and incentive systems for transferring technological innovations of relevance to low income countries’ farmers and food processors.

Responding to and preventing food emergencies and nutrition

Nutrition as a global problem with its at least three dimensions of undernutrition, micronutrient deficiencies and obesity, currently has no well-defined organizational home. Many nation states are obviously not capable of addressing the nutrition problems effectively. The Scaling Up Nutrition movement (SUN) by 2015 involving more than 50 countries with the UN playing a facilitating role is a promising international effort to overcome this deficiency. An international capacity to respond to and prevent food emergencies is a basic IPG. This IPG can be derived both from social goals as well as from an economic rationale (see section 2), such as the transboundary nature of emergencies, for instance regional droughts, and negative spillovers (externalities) of large national calamities and complex emergencies related to combinations of conflicts and natural disasters. Food assistance in failed states and war-affected regions remains a tremendous challenge. A more comprehensive emergency aid mechanism is called for, in which the food and nutrition element covered by the World Food Programme (WFP) remains essential and where non-governmental actors find improved ways to effectively engage in coordinated ways. The complex nature of the problem calls for an equally complex organizational arrangement at international level and not just one entity to handle it all.

Transboundary food safety and health related standards

Food safety is an important public good. While it largely can be left to national policy of control and enforcement, international food trade and the demands by consumers for sound standards make parts of it an essential IPG (Oosterveer, 2007). Setting standards for transparency and safe and comparable foods (i.e. Codex Alimentarius) has a long-standing tradition. Less well established are preventive measures for transboundary food and agriculture related health risks, such as livestock-originated human diseases (e.g. bird flu, severe acute respiratory syndrome (SARS), etc.). Early detection seems to have improved, and WHO and FAO play important roles in that (WHO and FAO, 2013), but emergency measures to address the root causes of agriculture-linked infection risks remain too ad hoc. This set of food risks calls for strengthened international arrangements that facilitate swift and strong government-to-government cooperation.

Deficits of Global Governance Mechanisms to Respond to Crises

The food crisis of 2008 shocked the global players in agriculture and food into some actions. With a view to the definition of global governance presented in section 2, the question arises as to whether the existing formal and informal institutions produced a systematic organizational response that was adequate for the crisis. What became most obvious is that a functioning coordination mechanism was
lacking. Instead, parallel efforts of coordination with a lot of consultations took place. The then G8 and G20 extensively discussed food security at the heads of state meetings in 2008 and 2009 and committed to coordinated action. A further initiative was taken by G7 in 2015, committing to bring 500 million people out of hunger by 2030.

A second coordination effort was the establishment of a High Level Task Force on the Global Food Crisis, chaired by the UN Secretary General with 22 members (composed of 13 heads of UN organizations, eight heads of UN offices and UN Departments and the OECD). The ad hoc nature of this effort is in itself an indication of deficits in the existing governance structure.

A third effort was the holding of high level conferences in 2008 and 2009 including summits under the auspices of FAO and a reform agenda for the Committee on World Food Security (CFS) was established. The creation of the CFS was in fact a pioneering reform effort of global governance, which takes the non-UN players into account that have come to play an increasingly important role since the mid 1990s. Unlike other UN committees, where civil society and industry have observer functions, the CFS has an advisory committee as part of its governance structure which includes UN bodies, civil society organizations, international agricultural research organizations, private sector associations, and philanthropic foundations as equal members. As a mechanism to provide evidence for decision making, the CFS has also established a High Level Panel of Experts. The accelerated flow of conferences on agriculture and food security since 2008 has created a complex market place of ideas and action proposals like never before, which—with considerable overlaps—shapes the international agenda setting today. As this brief account shows, the concept of response in general has been to seek solutions in consultations at global level, leaving the governance structures as they are. However, consultations are overdue on what a well-functioning future global institutional architecture and governance of agriculture, food and nutrition might look like, and how it might be achieved. Such redesign needs to be based on the design principles identified in the framework above.

4. Toward Redesign of Global Food and Agriculture Governance

This section proposes institutional redesign mechanisms, which may help to better address the global challenges outlined in the introduction: (1) a platform that facilitates the coordinated delivery of IPGs, (2) a set of clusters that overcome silos, and (3) a science and research-based global assessment mechanism to provide an evidence base for strategic direction of policy actions.

A Platform for International Food, Nutrition, and Agriculture

Ideally, a legitimate and innovative set of well-informed strategic bodies should help coordinate global actions of main actors (including some of the existing international organizations) to overcome the current governance challenges. Following the design principles outlined in section 2, there is a need to invest in institutional coordination capacity to match the increased scope of global action that has been outlined in the SDGs. The body should have a legalized intergovernmental authority and could take the form of a “Platform for international food, nutrition, and agriculture.” It should be designed as a
coordination mechanism that can facilitate global action as well as government-to-
government networks, with inclusion of private sector and civil society actors. This
Platform should be flat in hierarchical structure and thus able to respond quickly to
new risks. The Platform would be truly independently governed and could be built
on a further strengthened CFS.

Connected to the Platform, FAO should be strengthened to deliver the IPGs that
facilitate sustainable agricultural intensification under climate change, food security
information and global food safety services. Second, global nutrition policy needs
an organizational home rather than being split among many agencies; and third, the
WFP needs to be supported to better mitigate and respond to emergency food
crises by getting a reliable global food store and funding that permits flexible
response. These three proposed elements should be integral to the Platform and
follow the design principle to match global organizational capacity with the agreed
scope for IPG delivery (see section 2 and 3).

Clusters Serving Related IPGs as Platform Structure

Institutional redesign might best be arranged on the above-mentioned Platform,
comprising three focal clusters of organizational setups—each having its
coordination capacity and authority at the level of such a Platform, to serve the
above-identified seven IPGs for which global action is called for:

1. **Cluster 1 on food and nutrition security, and food safety:** serving IPG action
   areas identified in section 3 above: (3) Trade regime and food reserves, and
   related global information; (6) Responding to and preventing food and
   nutrition emergencies; (7) Transboundary food safety and health related
   investments and standards;

2. **Cluster 2 on protection of natural resources:** serving IPG action areas identified
   in section 3: (1) Natural resource management related to biodiversity, water,
   and soils; (2) Climate change adaptation and mitigation;

3. **Cluster 3 on enhanced sustainable intensification and productivity growth:**
   serving IPG action areas: (4) Sound competition policy and standards for FDG;
   (5) International research and innovation in food and agriculture.

The proposed Platform should not be misinterpreted as a call for a global
mega-organization, considering the internal governance challenges of any large
organization (see section 2), and it would not have an investment implementation
function. The Platform should embrace and not replace government-to-
government networks and give room for inclusion of corporate and civil society
organizations.

A Science-based Assessment Mechanism for Food, Nutrition and Agriculture

Agriculture, food security and nutrition are increasingly knowledge intensive. As
outlined in the conceptual framework (section 2), the provision of a sound evidence
base for decision making is an important element of global governance. While the
demand for research-based evidence should be part of above-mentioned seven IPG
policy clusters, the research-supply side needs to be organized independently. The
current and future challenges of food and nutrition security justify a permanent
institutional arrangement for this purpose. An international arrangement tasked
with this should be inspired by the Intergovernmental Panel on Climate Change (IPCC), but established with less transaction costs as an international, not intergovernmental, entity, i.e. an International Panel on Food, Nutrition and Agriculture (IPFNA). While its focus up to 2030 should relate to the SDGs, it must have a long-term perspective on food and nutrition related risks and challenges beyond 2030. Importantly, this mechanism needs to include the global scientists’ community in an organized fashion only, since the experience of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) has shown that the inclusion of stakeholders and interest groups, such as NGOs and industry representatives makes assessments that are based on best scientific evidence impossible (cf. Edwards, 2012). It is essential here to apply the IPCC-type design principle to separate the provision of science-based assessments from political decision-making, where the latter should be based on facts but takes value judgements on trade-offs into account.

The proposed mechanism should facilitate the peer reviewed assessments on food and nutrition security and agriculture for delivering evidence-based analyses for action with foresight. This function goes far beyond any of the existing science advisory bodies for policy at international levels. The whole international science system related to food and nutrition security and agriculture needs to be engaged for this purpose. Such an institutional innovation would bring about important advantages compared with the current system, as it would:

1. Better reflect the diversity as well as the lack of consensus in international science insights from different disciplines, and may resolve key issues with new research;
2. Improve exchange and cooperation among science disciplines and research efforts at scale, as well as between science and policy domains;
3. Increase transparency in the assessment process based on rigorous peer review and thereby increase the legitimacy of assessments and recommendations to governments and society.

The Platform and IPFNA would need to interact in productive and constructive ways. IPFNA will need to deliver relevant and evidence-based assessments. If the Platform ignores IPFNA, policy making will be ill informed. Besides regular assessments on the state of international food, nutrition and agriculture research-based insights, the strength of such an institutional arrangement would be to deal with controversial assessments, for instance on nutrition interventions, market stabilization policies, technologies and innovations (potential, risks, regulation), land use change and resource management. This function would have a global reach and not only focus on developing countries. The InterAcademy Partnership (IAP),2 the CGIAR, and the high level panel of experts of CFS and their networks, together with many others in the university and public research systems could partner for the establishment of the IPFNA mechanism.

Way Forward

To provide guidance about how to move forward toward a redesign process of global food governance, would require sound political economy consideration about structures, agents, actors, and interests. This goes beyond the scope of this article, which is focused on concepts related to the question of what to redesign rather than
focusing on how to do so. We limit our related suggestions to a few general points. First, for practical purposes it would be useful to establish a high-level, broad-based, legitimized time-bound international dialogue forum that addresses the organizational implications of the redesign proposals. Second, to assure effectiveness and avoid path dependency would suggest mapping that dialogue along the structures of the identified international public goods, rather than along the lines of existing agencies. Third, redesign of the global food governance system should be done step by step. The steps should be guided by the above-mentioned principles of legitimacy with accountability, effectiveness, and inventiveness. Fourth, coming to a meaningful implementation of redesign will require leadership. Such leadership for change could come from the developing countries via the UN or from the G20 or from a committed group of nations.

References

Besley, T. and M. Ghatak, “Incentives, Choices, and Accountability in the Provision of Public Services,” *Oxford Review of Economic Policy* 19 (2003):235–49.

Birner, R. and J. von Braun, “Decentralization and Poverty Reduction,” in Ehtisham Ahmad and Giorgio Brosio (eds), *Handbook of Multilevel Finance*, Cheltenham: Edward Elgar (2015): 471–505.

Byerlee, D. and X. Rueda, “From Public to Private Standards for Tropical Commodities: A Century of Global Discourse on Land Governance on the Forest Frontier,” *Forests* 6 (2014):1301–24.

Candel, J. J. L., “Food Security Governance: A Systematic Literature Review,” *Food Security* 6 (2014):585–601.

CFS, *Reform of the Committee on World Food Security (CFS)*, Thirty-fifth Session, 14, 15 and 17 October 2009, Committee on World Food Security, FAO, Rome (2009).

——, *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*, Committee on World Food Security, FAO, Rome (2012).

CGIAR Independent Review Panel, *Bringing Together the Best of Science and the Best of Development*, Independent Review of the CGIAR System, Washington, DC (2008).

Dingwerth, K. and P. Pattberg, “Global Governance as a Perspective on World Politics,” *Global Governance* 12 (2006):185–203.

Edenhofer, O., C. Flachsland, M. Jakob, and K. Lessmann, “The Atmosphere as a Global Commons—Challenges for International Cooperation and Governance,” Mercator Research Institute on Global Commons and Climate Change (MCC) working paper 1-2013, Berlin (2013).

Edwards, L., “Food Fight: The International Assessment of Agricultural Knowledge, Science, and Technology for Development.” *AgBioForum* 15 (2012):70–76.

FAO, “Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security,” FAO, Rome (2005).

——, “Report of the Independent External Evaluation of the Food and Agriculture Organization of the United Nations (FAO),” September 2007, FAO, Rome (2007).

FAO, IFAD and WFP, “The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress,” FAO, Rome (2015).

Finkelstein, L. S., “What Is Global Governance?” *Global Governance* 1 (1995):367–72.

Forest Stewardship Council, “FSC Principles and Criteria for Forest Stewardship,” SC-STD-01-001 (version 4-0), FSC, Bonn (1996).

Fuglie, K. O., V. E. Ball, and S. L. Wang, *Productivity Growth in Agriculture: An International Perspective*, Wallingford, UK: CABI Publishing (2012).

Higgins, V. & G. Lawrence, *Agricultural Governance: Globalization and the New Politics of Regulation*, London: Routledge (2007).
IFAD, “An Independent External Evaluation of the International Fund for Agricultural Development (IFAD),” Office of Evaluation, IFAD, Rome (2005).

Islam, N., “Foreign Aid to Agriculture—Review of Facts and Analyses,” IFPRI discussion paper, Washington, DC (2011).

Lele, U., “Food for All: International Institutions and the Transformation of Agriculture,” paper presented at 29th International Conference of Agricultural Economists, 8–14 August, Milan (2015).

Luck, E. C., “How Not to Reform the United Nations,” Global Governance 11 (2005):407–414.

Margulis, M. E., “The Regime Complex for Food Security: Implications for the Global Hunger Challenge,” Global Governance 19 (2013):53–67.

Marshall, G. R., “Nesting, Subsidiarity, and Community-based Environmental Governance beyond the Local Level,” International Journal of the Commons 2 (2008):75–97.

McKeon, N., The United Nations and Civil Society: Legitimating Global Governance—Whose Voice?. London: Zed Books (2009).

—, Food Security Governance: Empowering Communities, Regulating Corporations, London: Routledge (2015).

Mechlem, K., “Food Security and the Right to Food in the Discourse of the United Nations,” European Law Journal 10 (2004):631–48.

Niskanen, W. A., Bureaucracy and Representative Government, Piscataway, NJ: Transaction Publishers (2007).

Nkonya, E., A. Mirzabaev and J. von Braun, Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development, Berlin: Springer (2015).

North, D. C., “The New Institutional Economics and Third World Development,” in J. Harriss, J. Hunter and C. M. Lewis (eds), The New Institutional Economics and Third World Development, London: Routledge (1995): 17–26.

Olson, M., The Logic of Collective Action: Public Goods and the Theory of Groups, Cambridge, MA: Harvard University Press (1971).

Oosterveer, P., Global Governance of Food Production and Consumption: Issues and Challenges, Cheltenham: Edward Elgar (2007).

Ostrom, E., Governing the Commons: The Evolution of Institutions for Collective Action, Cambridge: Cambridge University Press (1990).

Paarlberg, R., “Governance of Food Security in an Age of Globalization,” IFPRI discussion paper 35, Washington, DC (2002).

Roundtable on Sustainable Palm Oil, “RSPO Principles and Criteria for Sustainable Palm Oil Production—Including Indicators and Guidance,” October 2007 Kuala Lumpur, Malaysia (2007)

Samuelson, P. A., “The Pure Theory of Public Expenditure,” The Review of Economics and Statistics 36 (1954):387–389.

Shaw, D. J., World Food Security: A History since 1945, Basingstoke, Hants: Palgrave Macmillan (2007).

Slaughter, A. M., A New World Order, Princeton, NJ: Princeton University Press (2004).

Soussana, J.-F., E. Fereres, S. P. Long, F. G. M. J. Mohren, R. Pandya-Lorch, P. Peltonen-Sainio, J. R. Porter, T. Rosswall, and J. von Braun, “A European Science Plan to Sustainably Increase Food Security under Climate Change,” Global Change Biology 18 (2012):3269–71.

TEEB, “Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations,” The Economics of Ecosystems and Biodiversity (TEEB), Geneva, Switzerland (2010).

United Nations, Transforming Our World: The 2030 Agenda for Sustainable Development, New York: United Nations (2015).

United Nations Development Programme (UNDP), “Governance for Sustainable Human Development,” Published for the United Nations Development Programme (UNDP), New York Oxford University Press (1997).
Voigt, S. and E. Salzberger, “Choosing not to Choose: When Politicians Choose to Delegate Power,” *Kyklos* 55 (2002):289–310.

von Braun J., B. Algieri, and M. Kalkuhl, “World Food System Disruptions in the Early 2000s: Causes, Impacts and Cures,” *World Food Policy* 1, no. 1 (2014):1–22.

Wheeler, T., and J. von Braun, “Climate Change Impacts on Global Food Security,” *Science* 341, no. 6145 (2013):508–13.

WHO, FAO, *International Food Safety Authorities Network (INFOSAN), INFOSAN Activity Report 2013*, Geneva: WHO, FAO (2013).

Williamson, O., “The Economics of Organization—The Transactions Cost Approach,” *American Journal of Sociology* 87 (1981):548–77.

World Bank, “The World Development Report 1997, The State in a Changing World,” World Bank, Washington, DC (1997).

—, “The World Development Report 2008, Agriculture for Development,” World Bank, Washington, DC (2007).

WTO, “Geneva Ministerial Conference 2011: Briefing. Briefing note: Food Security,” WTO, Washington, DC (2011).

Notes

1. See https://www.cbd.int/convention/.

2. The InterAcademy Partnership (IAP) brings together established networks of academies of science, medicine and engineering, the global network of science academies, the InterAcademy Medical Panel (IAMP) and the InterAcademy Council (IAC). See http://www.interacademies.org/.