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Contestation and Collaboration in the
International Food Security Debate
regarding GMOs. A Regime Analysis
of the WTO and the FAO

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*Contestation and Collaboration in the International
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ABSTRACT

This Paper argues that relations between the World Trade Organization (WTO) and the Food and Agriculture Organization (FAO) follow patterns that are consonant with the concept of contested multilateralism (Morse and Keohane, 2014). It contends that the regimes interact in a way that both contest and collaborate. The paper focuses on how the WTO and the FAO handled the introduction of Genetically Modified Organisms (GMOs) into the food security discourse, and how GMOs can serve to demonstrate a trend to contestation and collaboration between the two regimes.

Rather than there being one direct source of contestation in the GMO debate, the paper looks at various sources of indirect contestation between the regimes which are rooted in mission, rule, practice and reputation.

The WTO and the FAO use these sources of contestation to transform them into collaborative strategies and actions which complement their individual, overall policy goals. These are rooted within their distinct issue areas.

An analysis of policy documents like the Comprehensive Framework of Action (CFA) shows that the regimes have interacted in a way that aims to create shared knowledge and governance effects with regards to GMO policies. The paper poses a Contestation-Collaboration-Nexus as a way to describe how the trade related interests of the WTO have the potential to contest indirectly with the humanitarian interests of the FAO, especially with regards to GMOs. The consequences of collaboration manifest in an emphasis on trade liberalization and scientific research as a solution to food insecurity. The political, structural and ethical implications of GMOs in the food security discourse are also addressed.

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LIST OF ACRONYMS

AoA	Agreement on Agriculture
CBP	Cartagena Biosafety Protocol
CFA	Comprehensive Framework for Action
CGIAR	Consultative Group on International Agricultural Research
FAO	Food and Agriculture Organization
GMO	Genetically Modified Organisms
HLTF	High Level Task Force
IAAH	International Alliance Against Hunger
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
ICESCR	International Covenant on Economic, Social and Cultural Rights
MDG	Millennium Development Goals
PPP	Public-Private-Partnerships
SDG	Sustainable Development Goals
SPS	Agreement on the Application of Sanitary and Phytosanitary Measures
UN	United Nations
USAID	United States Agency for International Development
TRIPs	Trade-Related Aspects of Intellectual Property Rights
WB	World Bank
WHO	World Health Organization
WTO	World Trade Organization

1. INTRODUCTION AND OVERVIEW OF RESEARCH

Food insecurity is one of the greatest challenges of our time with 805 million people worldwide remaining chronically hungry (FAO et al, 2015a:8). Under the umbrella of the United Nations (UN), the Food and Agriculture Organization (FAO) is the leading agency tasked with ending world hunger and establishing secure access to food (FAO, 2009:2). The concept of food security has evolved and expanded over time (Maxwell, 1996:155). In 1975 food security was defined in terms of the volume and stability of food supplies (UN, 1975), with a focus on the ongoing global availability of such provisions. This definition opened up a dialogue about how to sustain a steady provision of food, while also engaging with the economic issue of volatility in production and prices (Maxwell, 1996).

From 1983, the focus shifted to an emphasis on the long-term resilience of livelihoods (Maxwell, 1996:157), with the goal that “all people at all times have both physical and economic access to the basic food that they need” (FAO, 1983:no pagination). In 1986, the World Bank (WB) report introduced the widely accepted distinction between chronic food insecurity, associated with structural poverty, and transitory food insecurity. The latter is characterized by periods in which populations are increasingly burdened due to natural disasters, financial crisis or civil conflict (World Bank, 1986). This concept of food security is further elaborated in terms of access by “all people at all times to enough food for an active, healthy life” (FAO, 1996:no pagination). This definition was agreed to at the 1996 World Food Summit in Rome (FAO, 1996; FAO, 2006). Based on this definition the FAO highlighted four main dimensions of food security: availability, access, utilization, and stability (FAO et al, 2015a). Only all four dimensions taken together represent a nuanced

picture of the state of food security in a given context (FAO, 2009). Various international regimes, among them the FAO and the WTO, are undertaking steps to achieve food security, one prominent strategy among them being the promotion of biotechnologies like genetically modified organisms (GMOs). Such technologies have been understood to benefit agricultural development through their ability to increase productivity (Ruane and Sonnino, 2011, FAO, 2015c).

An example of international regime cooperation in the area of food security is the Comprehensive Framework for Action (CFA). Under the umbrella of the UN Secretary-General's the UN High-Level Task Force (HLTF) was set up as an international response to the global food security crisis in 2008 (HLTF, 2010). It includes the WTO, the FAO and other international organizations, working in a collaborative effort to develop comprehensive policy recommendations and strategies.

Little is understood about the consequences of regime complexes and how they impact food security. Regime complexes can be understood as loosely coupled regulatory regimes that govern international efforts (Keohane and Victor, 2010). In particular the theoretical implications of international regimes from different, often conflicting issue areas and how they work together within the global governance arena requires more research (Zürn and Faude, 2013). So far research has focused on how and why nested, parallel, and overlapping international regimes emerge (Helfer, 2009; Alter and Meunier, 2009; Keohane and Victor, 2010). But whereas concepts of regime complexes remain in a descriptive stage of observation, the more recent concept of contested multilateralism by Morse and Keohane helps to analyze and draw conclusions about how global governance functions within these overlapping regimes, by bringing to bear the actions of actors in the complex (Morse and

Keohane, 2014). There is a lack of theoretical debate and analysis in this complex area (Zürn et al, 2012). In particular this is due to an overwhelming focus on states in the analysis of international relations, combined with a tendency to emphasize the sources rather than the implementation of formal rules. As a result scholarship has focused predominantly on the causes of international regime complexity rather than its consequences (Alter and Meunier, 2009; Zürn, 2010). This paper will examine the consequences of regime complexity within global governance, with a specific focus on the WTO and the FAO. It will analyze the extent to which contested multilateralism has negatively impacted strategic decisions made by the WTO and the FAO in relation to food security. For the WTO and the FAO, this process is complicated due to similar interests in one area (improving their overall regime interest) and conflicting interests in another (improving their individual authority in mission, rule, practice and reputation) (Keohane, 1984; Zürn et al, 2012; Morse and Keohane, 2014).

In this paper the unit of analysis will be international regimes, rather than nation states, recognizing their ability to alter and 'manage whole areas of transnational activity' (Held and McGrew, 2002:6). This will allow an investigation into strategies of international regimes to impact practices, missions and their influence to push for stronger rules (Morse and Keohane, 2014), as well as how they frame and reinforce their own reputation within the international policy discourse of food security (Keohane, 1984).

This is related to the key political questions of how actors' governance arrangements are connected to power structures and authority (Hasenclever et al, 1996:178; Barnett and Duvall, 2005:41), what interests are behind them (Hall, 1986) and whose values are protected and promoted (Sell and Prakash, 2004:148). In particular, the research looks at the potential for contestation

between WTO and the FAO (FAO et al, 2011). Whilst encapsulating the two main elements of multilateralism which are embodied in the tension between cooperation and contestation (Morse and Keohane, 2014:386), it will also give insights into the complementary nature of these two dynamics.

The paper will seek to demonstrate a trend towards collaboration between multilateral regimes (the FAO and the WTO) from different 'issue areas' by exposing the ambiguity over the concrete source of contestation (Oberthür and Gehring, 2006:21; Biermann et al, 2009:18).

The contribution of this research will be in the form of a theoretical framework that captures how regime contestation and actor capacity can affect global governance.

Based on four causal propositions of regime contestation, the paper examines deductively the larger impact of those sources on the outcomes of a global governance goal. To demonstrate its claims, the paper employs and evaluates qualitatively a range of documents and publications from the regimes under enquiry.

An insight into actor capacity to govern is the contribution global governance literature makes to this field (Lake, 2010:592). However research can often remain in a descriptive state, by asking which actors are relevant in a certain issue area (Oberthür and Poarowska, 2013). Or by questioning what the factors for regime complexity are (Biermann et al, 2009; Zürn and Faude, 2013). While these ways of questioning are fruitful, they bear the potential to neglect what the actors do and what the consequences of their actions are (Lake, 2010). This paper looks at how, through the promotion of GMOs as a food security solution, the WTO and the FAO increased their individual authority. Scholars such as Weiss and Wilkinson suggest that the regime complexity in global governance requires the attention of actors and a change

in their institutional strategies (Weiss and Wilkinson, 2014:211).

Understanding and appreciating the different characteristics of the regimes can give deeper insight into their abilities to perform collaboratively, and what the consequences are for global governance (Weiss and Wilkinson, 2014:211). The paper elaborates these ideas over five sections. The first investigates the discourse on food security as a global challenge and how GMOs entered into the debate.

The second looks at the two regimes under investigation, the WTO and the FAO, and their diverse attempts to communicate a strategy on food security, in particular through the Comprehensive Framework of Action (CFA). The CFA aimed to address the four dimensions of food security (availability, accessibility, utilization and stability) (FAO, 2009). Therefore, this section will focus on the governance effects and knowledge effects the CFA caused in relation to the food security discourse regarding GMOs (Fukuda-Parr and Orr, 2014).

The paper then studies the WTO and the FAO in the light of four different sources of contestation (mission, rule, practice and reputation) and puts the role of this contestation into the context of the food security discourse (Keohane, 1984; Morse and Keohane, 2014)

On that basis, the paper suggests a conceptual framework based on regime complex literature, positing a 'Contestation-Collaboration-Nexus'.

This inquiry is not free from moral considerations. The last section will debate how the sources of contestation can be used strategically by actors to shape the political discourse in a collaborative way to advance their key interests.

The paper offers concluding remarks on in what way the 'Contestation-Collaboration-Nexus' is a useful framework for the analysis of contesting regimes from different issue areas.

2. FOOD SECURITY: DEBATE AND TENSIONS

The core objective of the FAO to eradicate hunger gained a new emphasis in 1996 with the Rome Declaration on World Food Security (FAO, 1996). In the declaration, governments reaffirmed that it was not simply the volume and availability of food that mattered and stressed the need for a focus on access and on food as a human right, adapting a comprehensive approach to food security (De Schutter, 2013).

With an increasing international awareness of food understood as a human right and food security as a multidimensional concept, agendas like the UN Millennium Development Goals (MDG) were agreed upon (UN, 2014). The MDGs were signed by all 192 member states of the UN. Representatives from a number of international organizations, such as the WTO, were also present throughout the negotiation process¹.

This development mirrors the discourse of Sen's entitlement approach, which notes that famine and food insecurity are not just a product of drought or lack of food (availability), but a shortcoming of societal structures and the mediating role of institutions for secure access (Sen, 1981; Scoones, 2009).

According to FAO statistics, the total number of malnourished people has steadily declined from 980 million in the 1970s to 805 million today (FAO et al, 2014). However, improvement has been slow in the least developed countries and in rural areas in particular where food access "remains an important challenge" (FAO et al, 2014:14; Fukuda-Parr and Orr, 2014). The debate over

¹ That being said, MDG reports deemed the primary goal of the international policy framework (that of eradicating extreme poverty and hunger) to be inadequate to measure and quantify the availability and stability of household food security (UN, 2010:11).

GMOs in the context of food security centred around the claim that GMOs are needed to feed the world sufficiently because they improve crop yields and productivity in regions that are most affected by hunger (Makoni and Mohamed-Katerere, 2006:300; Yuan et al., 2011). Agricultural biotechnology could provide developing countries with a broader array of more nutritious foods at lower costs, reduce harvest losses, and create higher and more stable rural incomes (Lacy, 2003:11). Currently, there are 28 countries that plant biotech crops worldwide, 20 of which are developing countries among whom the majority of undernourished people live (James, 2014).

Biotechnology is categorized as an item of trade and investment within the WTO regime,² but GM biotechnology came to prominence in developing countries by becoming a means of progress and poverty reduction (Makoni and Mohamed-Katerere, 2006).

A GMO can be defined and characterized as an organism in which genetic material has been changed by adjusting the DNA without traditional cross breeding to improve nutritional quality, drought tolerance, and insect and disease resistance (Ruane and Sonnino, 2011). The uptake of GM crops in most of the developing world was slow for various reasons. Causes for this can be found in national, international, regional regulatory and administrative shortcomings to create the right market structures (Pollack and Shaffer, 2010).

The way the FAO and the WTO collaborate on food security mirrors how both regimes use shared international venues to promote their individual areas of

² GMOs and the patenting of GM seeds are subject to WTO law, for example through the Agreement on TRIPs that regulates intellectual property in order to promote and reward innovation by the private sector (De Schutter, 2011). This legislation created tension with the moment that GMOs entered the food security debate since traditionally seeds are seen as a public good and not as a regulated trade item and it was questioned how the technology could benefit poor farmers who would have restricted access to use the crops (Helfer, 2009).

interest. For the WTO, the challenge is to communicate that open trade and stronger investment protection laws are key to achieving food security and to tackling poverty (WTO, 2010). For the FAO, the focus is on articulating a clear mission on how food security can be achieved. It is concerned with regulatory frameworks that can support its goal (FAO, 2008).

3. BUILDING DITCHES–BUILDING BRIDGES

3.1 A SHARED ATTEMPT

In response to the Global Food Crisis in 2008 the UN High Level Task Force (HLTF) was established by the United Nations' Chief Executives Board as a temporary measure to enhance the efforts of the UN system and International Financial Institutions to ensure food security (HLTF, 2010).

In response to the food security crisis the HLTF was tasked with formulating a system-wide and coherent strategy to address the causes of the food crisis. It was also asked to put together strategies to respond to the consequences of the food crisis among the world's most vulnerable populations. The aim was a holistic response that would bring together the fragmented international organizations to a shared policy perspective (Lerin and Louafi, 2014). The HLTF on the Global Food Security Crisis was chaired by high level delegates from the FAO as well as representatives of other International Institutions, and included the Special Adviser on the MDG and the WTO (HLTF, 2010).

The CFA follows a 'Twin-Track Approach' that combines long-term goals (including regional structural adjustments and international trade) with short-term policies (food aid) to achieve food security (FAO, 2006:3). It also focuses on the availability, access, utilization and stability of food (HLTF, 2010).

Whereas a first version of the framework focused more on immediate needs (short-term goals in times of crisis) and emergency food supply, such as via humanitarian aid, the revised approach is more focused on long-term requirements and emphasizes the need for long-term development. It is as the regimes do this that GMOs become an increasingly relevant part of the discourse, and it is at this point that collaboration between the WTO and FAO becomes observable. In its recommendations for action, the HLTF stressed that it is a state's individual responsibility to ensure food sovereignty within their own territory, be it through policy decisions that restrict international trade in some form of protectionism or by encouraging local sustainable markets (HLTF, 2010:48).

The concept of food sovereignty is defined as the “right of each nation to maintain and develop its own capacity to produce the staple foods of its peoples, respecting their productive and cultural diversity, [and] by promoting regional and local food systems” (FAO, 2011:17; Menezes, 2001; Chaifetz and Jagger, 2014). The main component would therefore be to ensure that macroeconomic, budgetary, trade and sector policy frameworks provide “incentives for sustainable increases in smallholder production” and to “stimulate private investment in agriculture with focus on small-scale farming” (HLTF, 2010: 59).

As the report recognizes, GMOs have not yet sufficiently benefitted smallholder farmers with smaller budgets (HLTF, 2010:47). The report summarizes the various uncertainties surrounding GMOs for small-scale farmers, in line with academic literature on food security (Harbert, 2010; Burnett and Murphy, 2014). In summary biotechnology is not viewed as being suitable for poor farmers because of the high uncertainty of these varieties for health, environment and industrial dependence.

A report by the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), authored by over 400 international experts, even concluded that the key to food security lies in traditional and local knowledge on farming methods (IAASTD, 2009:11). The report did not endorse GM technology, noting that yields were “highly variable” and in some cases yield declines, noting also that better solutions were available (IAASTD, 2009:8).

Indeed, GMOs are more suitable for large-scale commercial agriculture (HLTF, 2010:52). As for the small farmers, their food insecurity originates from a combination of political, economic, social and environmental factors (UN, 2015). The HLTF therefore suggests solutions that contribute to rural development and long-term strategy building on the local level (HLTF, 2010:45). It also recommends protection for local food markets from the price volatility that often comes with more open global markets, one of the factors that arguably contributed to the food crisis in 2008 (HLTF, 2010:2).

At the same time however, the CFA encourages more research and investment into new technologies as well as to pursuing the “completion of the Doha Round of trade negotiations to provide an enhanced set of agreed rules for a more transparent and fair international trading system” (HLTF, 2010:29). This should involve an increase in trade finance, “assessment of feasibility”, and a “better understanding of national food security abroad” (HLTF, 2010:67). Opening markets to international trade is considered a crucial part of sustainable food security. As the HLTF states:

‘In order to enable countries to adopt suitable policy measures and to achieve food security for their populations, functioning and non-distorting international agricultural markets are critically important’ (HLTF, 2010:48).

In conclusion, the framework of the HLTF pursues two parallel strategies at the same time. On the one hand it promotes local food systems for their environmental benefits, their superior nutritional value, and their ability to contribute to the independence of smaller farms, which also serves to challenge an approach to excessive trade liberalization (HLTF, 2010:16). On the other hand the Doha Trade negotiations, (a treaty currently being negotiated within the WTO) seeks to, remove national regulations on food imports, by avoiding 'unnecessary restrictions' on trade (HLTF, 2010:48). This is despite research by the FAO stressing that the biggest group affected by the effects of international trade are rural farmers in developing countries, whose food insecurity status increases with trade liberalization (FAO, 2003:55). It is at this stage that the debate on GMO recommences. The HLTF asserts that with a food crisis, there ought to be questions about how it has been influenced by the "speed, sequencing and nature of on-going trade liberalization in agriculture" (HLTF, 2010:27). The HLTF argues that to solve this problem is to combine trade liberalization with "research, introduction of technology, agricultural extension, infrastructure, market information and marketing" resources which in a nutshell promotes GMO investment and expansion (HLTF, 2010: 29). As with GM biotechnology, there is vivid contestation over the role of intellectual property rights over plant varieties and its consequences for the rural poor (Toft, 2012). However important it is to create incentives and to encourage innovation in agriculture, the exclusivity that comes with GM technologies makes them unaffordable for the poor, and their benefits are proven to concentrate on the interests of big corporations (Stein, 2005; Glover, 2010). In addition to the exclusivity of the technology and the need for more investment in agricultural knowledge and science, the CFA also addresses that GMOs may have the potential to threaten

sustainability (HLTF, 2010:52). GMOs are seen to conflict with biodiversity in the ecosystem and health risks which could challenge the utilization and the stability dimension of food security (FAO, 2006). This in turn fundamentally challenges the relevance of scientific research into GMO as a long-term food security solution. GMOs are thus unable to address structural problems relating to access and stability, and potential utilization problems because of the uncertain nature of their consequences on ecosystems and human health. This shortcoming impacts upon all four dimensions of food security and may be a reason why the publicized advantages of GMOs focus to a great extent on how they can increase crop productivity in general and increase food exports to those in need, predominantly in the form of food aid (Dibden et al, 2013:66).

As with imports of GMOs to regions suffering from food crisis, this has presented a problem in the past, whereby countries like Zambia refused food aid containing GMOs due to the unknown effects on human health and sustainable agriculture (Zerbe, 2004:599; Makoni and Mohamed-Katerere, 2006). What's more, according to the World Food Program (WFP) as of today there is enough food available in the world to feed everyone and no scientific breakthroughs are required (WFP, 2015).

3.2 TWIN-TRACK VERSUS TWIN-WIN

A number of factors have contributed to making it difficult for farmers to operate in a profitable way, and to meet their own food security requirements.

The HLTF mentions competition over land, transport limitations, market and price instability, and various infrastructure problems (HLTF, 2010:3).

For those unable to access land or employment, the report stipulates protection, especially during times of crisis (HLTF, 2010:3). It emphasizes that amongst the causal factors of the food crisis in parts of the world was the inability of the global community to provide timely food aid at the location where it was most needed (FAO, 2015b). This is why the report stresses the importance of an expanded aid programme and other measures to avoid future food shortages in poor areas, such as the support of the WTO initiative 'Aid for Trade' (HLTF, 2010). The aim is to put in place a system resilient to shocks (availability dimension), able to provide 'direct and immediate access to food' (FAO, 2006:3), by considering food safety, the nutritional, dietary, cultural and religious needs of recipients (HLTF, 2010). Incidences of communication, such as those from the HLTF, reveal several key things about where there are contesting interests of the two regimes and a potential for collaboration. In the following chapter four sources of contestation drawn from the literature on regime complexes are discussed with reference to the WTO and the FAO. These are mission, rule, reputation and practice (Keohane, 1984; Morse and Keohane, 2014).

4. THE REGIMES

4.1 WTO

4.1.1 MISSION

The WTO deals with global trade between nations. Its main mission is to ensure that trade flows run smoothly, “predictably” and as “freely as possible” (WTO, 2014:12). Much of the international rule making and norm building in the economic sector is administered by the WTO, as it is the international regime that coordinates trade and investment between states. This involves the global expansion of value chains and the attempt to strengthen cooperation across companies in the form of intra-national investment. This would create “new opportunities for developing countries to join an international production chain” (WTO, 2014:105).

The WTO’s annual report showed that the Aid for Trade initiative is one of the cornerstones of WTO efforts in which it communicates its mission to produce “tangible results in improving trade performance and bettering people’s lives” through liberalization as well as targeted aid and investment (WTO, 2014:105).

4.1.2 RULES

An important instrument of international rule in the agricultural sector is the agreement on TRIPs that clearly sets out the intellectual property protection relevant in the area of biotechnology. By embedding TRIPs in WTO jurisdiction more rigid property rights and regulations in the agriculture are enforceable via WTO trade sanctions (Sell, 2010). The legal framework protects genetic technology, streamlining international regulatory processes

and giving more access to local seed markets. This also increased international competition and foreign investment (McMichael, 2000). The increase in trade linkages and investment is related to the call for biotechnology innovations and their legally protection (Sell, 2010; Azadi and Ho, 2010). The TRIPs play an important role in conjunction with food security policies as they build a legal framework that potentially excludes the poorest from the benefits of the technology (Stein, 2005). TRIPs rules have been criticized for being safeguards of the corporations who own GM technology (De Schutter, 2011).

Concerns that a small number of huge biotech firms, such as Monsanto and DuPont would capture all gains from agricultural biotechnology have been rejected with the explanation that competition among those firms would force down the selling price of new seeds, and that farmers would only adopt the new technology if they could perceive a net benefit to themselves in any case (Anderson, 2010).

In any case, TRIPs demonstrate the WTOs strong international legal influence on biotechnology and trade policies. In the CFA, the WTO is explicitly encouraged multiple times to pursue the implementation of various treaties and agreements, such as the parameters within which the rules that the international community will engage in trade and investment in the context of food security (HLTF, 2010).

4.1.3 PRACTICES

The WTO has a vested interest on influencing both tracks of HLTF twin-track approach. In the area of trade and investment, the WTO has more recently seized its opportunity to frame the international discourse regarding long-term food security in terms of trade liberalization (HLTF, 2010; UN, 2015). The WTO also has a long history of engaging with shorter term hunger relief, such as foreign aid policy regulations. The origins of food aid can be traced back to the early 1950s, when some developed countries articulated an interest in disposing their accumulated food surpluses (FAO, 2003). Within the WTO framework, countries argued about how food aid from developed countries could help to end hunger (Murphy, 2010). In 2002, this became an issue when various Southern African nations most affected by a famine were offered GM foods, pressuring those governments who refused food aid in this form on the basis of health and safety concerns (Oxfam, 2005). This flags a potential incoherency between the WTO and the FAO which has caused international debate. The Codex Alimentarius Commission, hosted by the FAO secretariat approves GMOs on the basis of the precautionary principle, meaning that human health and the environment must be considered in favour of possible economic benefits in circumstances where there is uncertainty about the outcome (Anderson and Nielsen, 2000). For this purpose the international food standards body has produced standards on regulatory risk assessments for GMOs (Oberthür and Gehring, 2006; Halfon, 2010:309). The Cartagena Biosafety Protocol (CBP), is an international agreement that regulates the transboundary movement of a subclass of GMOs called living modified organisms that also follows a precautionary approach to GMO approvals (Halfon, 2010:320). The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) gives guidance on the application

of food safety pursuing the principle of scientific justification as opposed to precaution, where a government may be asked to provide scientific justification for its decision to ban a certain product if the decision is considered to restrict trade (Adler, 2000). Both, the Codex Alimentarius and the CBP are articulating practices and norms that conflict with existing WTO doctrine and its approach to food security (Vapnek and Spreij, 2005; Myhr, 2007).

4.2.4 REPUTATION

Many developing countries still strictly regulate GMOs and protect local markets from international competition, irrespective of whether they are already signatories of international treaties such as the TRIPs agreement, complemented by national legislation (Makoni and Mohamed-Katerere, 2006). In that regard there seems to be less of an issue about unsafe legal environments for corporations. The challenge is rather regarding the ethics and morality of GMOs as perceived by developing countries and their perception of the WTO (Lacy, 2003). As Paarlberg argues, there is a reluctance of developing countries to accept GMOs and the slow uptake seems to be linked to a suspicion that the technology is an unknown quantity and proprietary to foreign multinational corporations (Paarlberg, 2001). He theorizes that if the technology was perceived to be scientifically approved to benefit national development purposes, and research was funded publicly, political distrust could be overcome. For this purpose, international agricultural research institutes, such as the Consultative Group on International Agricultural Research (CGIAR) have been tasked with the development of plant varieties adaptable to local circumstances in developing countries (Toft, 2012).

Nevertheless, CGIAR falls short of credibility as to how independent its research is. It is funded by a number of international foreign aid programs, among them the United States Agency for International Development (USAID) (Clapp, 2004:7). Since the US foreign aid policy, in accordance with the Agricultural Trade Development and Assistance Act, seeks to provide benefit to the US itself by ensuring that contracts go to American farmers and firms, the cooperation between CGIAR and USAID has raised suspicion among GMO sceptics and is unlikely to have improved the WTO's reputation (Sharife, 2009).

4.1.5 RESUMÉ

This section has evaluated four different areas in which the WTO is exposed to contestation. Despite various areas of indirect contestation, the WTO has strongly argued that trade norms and food security are compatible and mutually beneficial to each other. The WTO has already established itself as a strong and effective institution with a good record of state compliance (rule) and therefore has a good reputation for efficacy in its area of expertise (mission) (Guzman, 2006). Furthermore, it has incorporated intellectual property into its legal framework, which indeed as mentioned above is crucial to GMO agriculture. The WTO's ability to incorporate and promote GMOs into the food security discourse has expanded its remit in the issue area. The WTO remains foremost a trade institution, and its expansion into what were traditionally considered non-trade areas has arguably caused the non-trade values at stake to be compromised in favour of trade values (Guzman, 2004:304). This can be seen in the negative economic impact that GMOs have had on small farmers (Altieri, 2009). Hence why the WTO has been criticized for its practices with regards to food security (De Schutter, 2011).

However, within the international food security context the WTO has established a lead role in promoting cross issue area policies, advancing its practices and working to improve its reputation (HLTF, 2000; UN, 2014)

4.2 FAO

4.2.1 MISSION

For the FAO, food security exists when “all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 1996; Schmidhuber and Tubiello, 2007). In only addressing the provision of food aid in times of famine (availability), which is but one element of the larger concept of food security, the dominant policy approach of past decades falls short of meeting the goal of food security as defined by the FAO. The agency has been accused of ambiguity regarding its mission and an unclear action plan to achieve its goals (De Schutter, 2013). Perhaps in response to such charges, the FAO began chairing international gatherings on food security, producing action papers that seemed to communicate its mission more concisely (Helfer, 2009; De Schutter, 2013).

The following table by the World Health Organization (WHO) captures the inadequacy of GMOs with regards to the mission on food security. The first two dimensions (availability and accessibility) in the table match the FAO’s first two dimensions and the component of adequacy in the table is interchangeable with the FAO terminology of ‘utilization,’ mainly covering the nutritional aspects of GMOs (WHO, 2005; FAO, 2006).

Table 1: 'Components of food security' (WHO, 2005:35)

Components of food security	Claims of agricultural biotechnology proponents	Counter-critiques
<p><i>Availability:</i> is there enough food available through domestic production or imports to meet the immediate needs? Is production environmentally sustainable to meet long term demands? Are the distribution systems effective in reaching low-income and rural communities?</p>	<p>Agricultural biotechnology represents a new Green Revolution. Promise of: increased yields crops adapted to different conditions: drought resistance, etc. Decreased use of agricultural chemicals.</p>	<p>The earlier Green Revolution had mixed results. Currently only ergonomic traits (herbicide and pesticide resistance) are available. Increased yields and adaptability remain promises. Initial decreases in chemical use have been followed by increases as restraint crops and 'super weeds' emerge. Biodiversity and landrace crops have been damaged.</p>
<p><i>Accessibility:</i> do the vulnerable in society have the purchasing power to attain food security? Can they afford the minimum basic diet of 2100 calories per day required for an active and productive life?</p>	<p>Increased yields will lead to lower prices.</p>	<p>Ignores inequality. Corporate control increases cost of seed purchases. Seeds cannot be saved by farmers. Small farmers cannot afford the technology.</p>
<p><i>Adequacy:</i> does the food supply provide for the differing nutritional needs, i.e. a balanced diet, offering the necessary variety of food at all times? Is the food properly processed, stored and prepared?</p>	<p>Nutritionally enhanced crops, e.g., Golden Rice, will meet the nutritional needs of the poor in developing countries.</p>	<p>Improved nutritional benefits have not been realised. Ignores the need for a more balanced diet and socio-economic barriers to more adequate diets for poor people.</p>

4.2.2 RULES

For those state parties, signatories to the International Covenant on Economic, Social and Cultural Rights (ICESCR) ensuring the right to food security is legally binding and it promotes the incorporation of the right to food

in a domestic legal system (Bultrini, 2009). According to the FAO the four dimensions of food security, that is the availability of food, access to food, utilization of food and food system stability, must be fulfilled simultaneously for food security objectives to be realized, and individuals may have the right to rely on a legal provision of such rights “before the competent administrative or judicial authorities” (Bultrini, 2009:2; Ruane and Sonnino, 2011). The FAO’s role in that is to provide support to governments in developing modern, effective national food laws and regulations, national and international codex standards and guidelines. Among the various instruments developed at the international level the two most influential for national law and policy-makers with regards to GMOs are the Codex Alimentarius and the WTO Agreements (Adler, 2000:192). Many important changes have taken place in the agricultural sector, notably through WTO law, as the ‘Guide on Legislation for the Right to Food’, produced for the FAO, emphasises (Bultrini, 2009:236).

4.2.4 PRACTICES

Reduced investment in agriculture has led to a slowdown in productivity growth compared to previous decades (Ruane and Sonnino, 2011). It would therefore be necessary, as the WTO and FAO have argued, to substantially increase investments in international and national public agricultural research and development (FAO, 2015c; WTO, 2015). Would investment in GMO technology be beneficial in its contribution to the four FAO food dimensions of food security?

Availability focuses on the sufficiency in quantity and quality of foods, access means the affordability and price of goods, but the concept also includes actual availability in the marketplace and policies that surround it. Utilization does not only mean food safety and sanitation, but it also encompasses

nutrition. In this regard codes of conduct like the Codex Alimentarius play an important role to communicate the FAOs understanding of best legal practice. Stability of food is achieved when the other three dimensions remain stable over time. Environmental sustainability is key in order to achieve stability, focusing on aspects of sustainable food production, addressing the supply of critical inputs to food production such as land, water, and fertile soils (HLTF, 2010; Chaifetz and Jagger, 2014:87). The question is how GMOs perform along the four dimensions of food security. Such an assessment may help to gauge how successful GMOs can be as a food security solution.

In relation to availability, the first dimension, the expectations that GMO would lead to an increase of yields and falling food prices couldn't be confirmed, it is therefore questionable that investment into more GMOs would contribute to higher availability of food (Gilbert, 2014). Furthermore, liberalization of the global market and restrictions on seeds in the context of TRIPs and other regulatory processes have meant that the benefits of biotechnology have excluded poorer farmers (Lacy, 2003). Regarding the second dimension highlighted by the FAO, GMOs violate the concept of food sovereignty, "defined as the right of each nation to maintain and develop its own capacity to produce the staple foods of its peoples, respecting their productive and cultural diversity" (FAO, 2011:17). This concept promotes regional and local food systems, guaranteeing the access to the food market (Sen, 1981; FAO, 2006; FAO, 2010: 17). It could be argued that the third dimension (utilization) challenges the use of GMOs because of potential impacts of GM foods on human health (Zerbe, 2004; Clapp, 2004, Skogstad, 2011). The nutritious aspects of GMO have also been called into question by independent research (WHO, 2005). There is also evidence that the pesticides used in the production of GM crops are producing super weeds, which have the potential

to negatively effect yields (Azadi and Ho, 2010:165; Anderson and Nielsen, 2010:2). This evidence raises health concerns as well as ethical considerations over how food should be produced and how agricultural systems should be managed. The evidence also seems to stand at odds with various food security practices that the FAO has committed itself to. For example, in 2009, the FAO committed itself to various food security practices at the 'World Summit on Food Security.' At the root of these practices was the conviction that everyone has the right to 'safe, sufficient and nutritious food' (FAO, 2009:3). The FAO had also previously committed itself to the 'precautionary principle' that GMOs could only be approved if all known health and safety risks could be excluded. Therefore, it could be argued that the FAOs endorsement of GMOs is not entirely justifiable due to the current disagreement in the scientific community regarding the benefits and risks of GMOs (Pollack and Shaffer, 2010; Dibden et al., 2013). It is at this point that one could raise the issue of contestation and collaboration between the WTO and the FAO. It could be argued that the FAO has compromised some of its practices where they are indirectly contested by the trade objectives of the WTO (WTO, 2011).

There are increasing worries over the impact of agriculture on climate change and the ethics of genetically modified organisms (Gilbert, 2014). Agricultural stability (fourth dimension FAO) depends largely on the 'services provided by ecosystems, sustainable agriculture must minimize negative impacts on the environment while optimizing production by protecting, conserving and enhancing natural resources and using them efficiently' (FAO, 2014:12). Based on the insecurities that come with GMOs, the assertion that they could foster practice that would improve food stability cannot be confirmed.

4.2.3 REPUTATION

In early days the stance on GMOs as a means to end hunger was viewed with skepticism by the FAO, which is why developing countries turned to this venue over the WTO to articulate their policy preferences, in the hope of achieving greater bargaining power when the issues were finally discussed in negotiations within the WTO (Helfer, 2009; Dupraz and Postolle, 2013). The FAO was perceived to take a far more cautious stance on GMOs as a food security solution and that it would better represent the interests of the developing countries (Helfer, 2009). This is a good example of the often observed regime shift in international politics (Morse and Keohane, 2014), where actors choose regimes on the basis of which of them best reflect their preferences. It would however be wrong to assume that the FAO would therefore necessarily be against GMOs as a food security solution per se. In fact the FAO Director General recently highlighted that GMO technology is indeed one of the various mechanisms towards food security, stating that:

"Options such the use of genetically modified organisms [should be explored]... Food production needs to grow by 60 percent by 2050 to meet the expected demand from an anticipated population of 9 billion people. We need to explore these alternatives using an inclusive approach based on science and evidences, not on ideologies," as well as to "respect local characteristics and context" (FAO, 2015c)

All the same, the FAO strives to keep a reputation for cautiousness towards new technologies. It works in close cooperation with Public-Private-Partnerships (PPP) involving civil society organizations and business actors who are supportive of FAO values (Kaan and Liese, 2011). One example is its strong support for the International Alliance Against Hunger (IAAH), the advocacy forum is following a twin-track approach to achieve long-term

stability and focuses on political as supposed to technical solutions for the problem of global hunger. The idea is that in the long run, political initiatives would encourage more investments in agriculture and rural development, to ensure that people at risk would have better access to food. As confirmed by FAO representatives, the IAAH intends to “mobilize political will, technical expertise, and financial resources” (Kaan and Liese, 2011:393).

4.2.5 RESUMÉ

In all the scenarios, the struggle for the FAO to frame GMOs as a suitable option for food security presents itself. Food insecurity is a result of a combination of factors. Agricultural technologies, however productive cannot resolve what is by definition also a social, political and economic question (Zerbe, 2004:598). This important fact is often overlooked by the advocates of GMO biotechnology, who assume that higher yields available through new technologies will resolve the problem of food insecurity (Lerin and Louafi, 2014). This doesn't mean that the FAO should oppose long-term investment decisions and food aid in crisis. But the question is how GMO technology is compatible with the FAOs commitment to food security along the dimensions of availability, accessibility utilization and stability. Indeed, despite the unsuitability of GMOs to contribute to food security, the FAO is not banning GMOs from its agenda. This allows the agency to cooperate with the WTO, relying on a strong legal WTO framework and equally benefitting from a clear mission as communicated by the WTO. This chapter has highlighted some of the challenges and controversies in the institutional and normative struggle of the WTO and the FAO. Table 2 summarizes the main findings.

Table 2: 'Regimes attitude to GMO as food security solution' (Authors own working)

	WTO	FAO
Mission and Rule	Increase free trade and investment opportunities	Legally embedded policies for food security along dimensions of accessibility, availability, utilization and stability
Reputation and Practices	Frame trade as means for progress and development	Social and cultural factors and promotion of human right to food
Signs of contestation over GMO	'Scientific justification' GMO as food security solution through increased productivity	'Precautionary principle' GMO as one of many ways in combination with other options
Prominent example of collaboration	HLTF	
Strong contested source	Mission and Rule	Reputation and Practice
Weak contested source	Reputation and Practice	Mission and Rule

5. REGIME CONTESTATION AND COLLABORATION

This research restricted the analysis on food security and the role of GMOs to the macro level and limited insight on single state behaviour. Deeper analysis of state behaviour is succinctly analyzed in two in depth studies (Pollack and Shaffer, 2010; Dibden et al, 2013) and the influence of private actors and

corporations in shaping the global food system is insightfully investigated in reports such as Adler (2000), Lacy (2003), Glover (2010).

Depending on the level of analysis, suppressed elements of structure can arguably have a great impact on the analytical perspective dictating the extent of what can be observed. This paper is concerned with the exercise of institutional authority, the role of norm advancement, and the communication of expertise as the regimes engage in public bargaining in the discourse surrounding GMOs (Barnett and Duvall, 2014).

There is an understanding that norms not only exist as ideas in the mind of an actor but also as institutional patterns that constrain or promote specific types of the WTOs and the FAOs actions (Della Porta and Keating, 2008). This explains why it was important for the WTO to create a discourse verifying the WTOs institutionally embedded norms to be concerned with food security.

The FAO in contrast was already perceived to embody such institutional norms but its weakness is rooted in its institutional legal efficacy and related to that the incapability to suggest a clear course of action.

It is helpful to draw on international regime theories to understand the inter-institutional phenomena between the FAO and the WTO (Haggard and Simmons, 1987). The “interaction and interplay” strand of this research asks how and with what consequences two different institutions influence each other’s normative development and efficacy in terms of institutional interaction (Zürn and Faude, 2013). In contrast regime complex literature looks at how networks of “overlapping and loosely coupled international institutions” from different issue areas are co-governed (Zürn and Faude, 2013:119). The concept of fragmentation often used in this context is to highlight the implications of a multiplicity of institutional levels in the absence of hierarchical coordination (Biermann et al, 2009). An analysis on the basis of this concept

is particularly insightful when it is applied to understand overlapping issue areas such as exist in the area of GMOs, particularly in relation to trade and investment versus the human right or entitlement to food, but it doesn't reveal much about power relations as it is more of a descriptive exercise. As for a conceptual framework, Morse and Keohane's contested multilateralism serves the purpose of this paper well, as it combines actors with structures. Although predominantly developed with a focus on states, it can equally be adapted for regime analysis.

5.1 CONTESTATION

The regimes under observation in this paper seem to fulfil the criteria for contested multilateralism (Morse and Keohane, 2014). Contestation can exist over rules, missions and practices of established organizations. In fact, GMOs show that all these sources are to some extent a source of contention between the WTO and FAO. Another source of contestation is that of reputation, recognizing an actor's perceived legitimacy to act in a certain policy domain (Keohane, 1984).

It became apparent in the CFA that by incorporating the language of both regimes into one discourse, both regimes were able to boost their overall leverage. They were also able to boost their individual interests in terms of rule, mission, reputation and practice, both inside and outside those shared platforms, utilizing competitive and collaborative methodologies. Multilateral institutions like the FAO and the WTO often face situations characterized by direct sources of contestation. They can be confronted by situations where they have to deal with 'active contestation' (Morse and Keohane, 2014:406). Scholars are debating the question as to what role international trade can play in addressing world hunger (McMichael, 2009; Margulis, 2014). An example of

that is when UN Rapporteur on food, De Schutter, claimed publicly in a debate that WTO trade rules would not be compatible with food security goals (WTO, 2011).

The other source of contestation refers to the strategies that actors pursue in such situations (Morse and Keohane, 2014). This is an indirect way to deal with contestation. It is often constrained and less apparent, which can often occur through shared policy projects where each side tries to contribute as much as possible to the final document. As with the CFA, Nabarro, Special Representative of the UN Secretary-General, acknowledged in a speech that the negotiations were hard, but overall everyone involved was comfortable with the outcome (WTO, 2010).

5.2 COLLABORATION

At the same time, there is a need for interaction between the actors in which one institution affects the development or performance of another institution (Oberthür and Gehring, 2006). To give an example of institutional interaction, it is necessary to describe the particular components and decisions by which a source institution implements its goal of achieving greater influence.

Conversely the particular components which are the subject of this influence also require further elaboration. When these relations can be uncovered, a cause-and-effect interaction can be expected whereby the precise causal mechanism that drives the incident of institutional interaction can lead to an observable or anticipated effect within the issue-area governed (Oberthür and Gehring, 2006: 3).

Recently the WTO and the FAO have reaffirmed a closer cooperation in the area of food security and have allocated the highest priority to collaborative efforts in this area, due to the important role of trade in the issue (WTO,

2015). Institutional interaction moves the scope and capacity of actors to cooperatively manage institutional complexes (Oberthür and Gehring, 2006). The CFA exemplifies how the two institutions worked together under the umbrella of the FAO and its institutionally embedded norms to create a framework to liberalize trade in global governance by advancing a WTO typical strategy. Over time, the regimes produced an international narrative of GMO biotechnology as a food security solution (FAO et al, 2011:53). They shifted the discourse of GMOs as a technology for western industries and presented it as an option for small scale farmers from developing countries, emphasizing the importance of research and investment in this area (Stein, 2005).

The exercise of discursive power and the collaboration enhanced the actors' instrumental, structural, and discursive power (Fuchs, 2005).

After all, the discursive power exercised in the food security debate influenced practical norms. Both, the FAO and the WTO agreed that food availability achieved through GM biotechnology would be a practical step towards achieving food security.

Furthermore the discursive power created constitutive norms such as the CFA. Discursive power as a result enables actors to influence the framing of specific policy issues through new fundamental norms and structures (Fuchs 2005; Sell 2013). Framing is intended to let problems appearance in a certain way and the promoted ideas to look like common sense (Boas and McNeill, 2003).

For measuring expected shifts in regimes Fukuda-Parr and Orr suggest there can be two types of effects (Fukuda-Parr and Orr, 2014). The first is known as "governance effect" and can be characterized as a shift in the policy of a regime. In terms of the WTO and the FAO, the governance effect can be

observed in the way that they collaboratively express their respective rules and mission objectives. There can also be a “knowledge effect” which occurs when the concepts and norms of a regime are redefined with a new agenda in view (Fukuda-Parr and Orr, 2014). In this sense it is possible for a knowledge effect to produce a governance effect. It could be argued that these effects were observed within the FAO and the WTO when GMOs were debated as a food security solution. For example, the regimes worked collaboratively to initiate knowledge effects within the food security debate by issue framing GMOs as a viable, scientifically justifiable food security solution. This can be observed in the CFA policy paper (HLTF, 2010).

The publication of statements and reports in favour of GMOs were aimed at achieving GMO friendly governance effects leading to actions in the area of food security. For example, the promotion for stronger TRIPs and the encouragement of research and investment in venues like the FAO Biotechnology Forum (HLTF, 2010; FAO, 2010; UN, 2014). The FAO and the WTO worked on their mission, rule, practice and reputation in order to steer the dialogue about GMOs in a particular direction. The dialogue was framed so that GMO research and increased trade liberalization could be justified as strategies for responding to the food security problem (Ruane and Sonnino, 2006). Therefore, it could be suggested that knowledge and governance effects both played a part in collaboration between the WTO and the FAO. This does not necessarily mean that the collaboration was morally dubious, rather it helps to show how the regimes decisions produced certain consequences for the food security discourse.

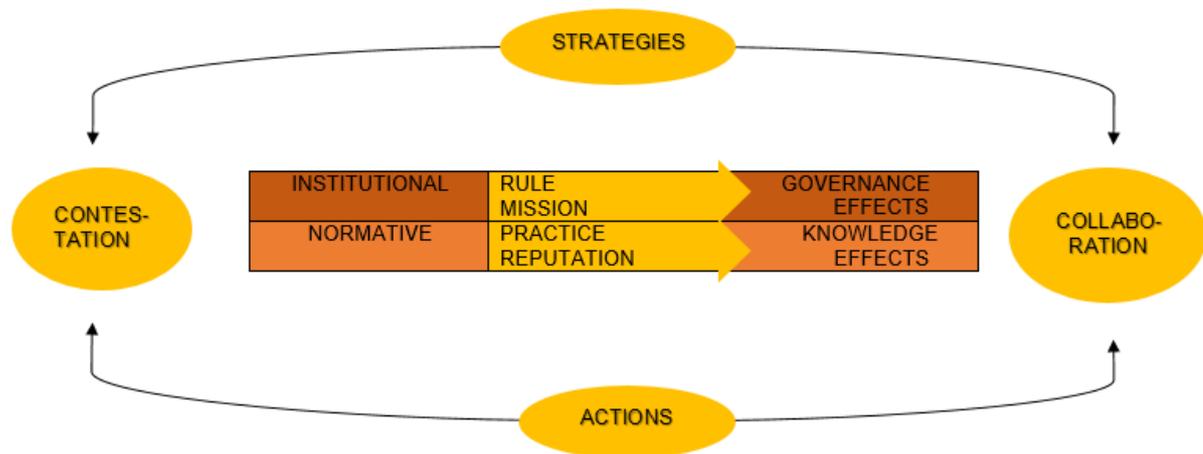
5.3 CONTESTATION-COLLABORATION-NEXUS

The framework presented in this paper analyses the interplay between institutions when they are attempting to improve their rule, mission, reputation and practice. This often involves engaging in shared practices and in framing specific issues that supports their individual goals. The research in this paper provides evidence in support of the Contestation-Collaboration-Nexus showing how regimes from different issue areas can collaboratively employ a new inter-institutional governance perspective to increase their normative and institutional power. That process calls for attention to what actors do but also highlights the institutional structures in which they work. The research has shown that the WTO and the FAO don't compete directly as their objectives and issue areas differ (Helfer, 2009). However indirect contestation could occur, for example, when the regimes pursue shared practices in order to maintain their own distinct goals. It could be argued that their collaboration often occurs at points where the FAO might have been expected to contest the more trade related practices of the WTO. Or conversely, the WTO could have legitimately contested the more humanitarian practices of the FAO. The paper has argued that the trade practices of the WTO have the potential to contest indirectly with the predominantly humanitarian practices of the FAO. It has suggested that the introduction of GMOs to the food security debate allowed the WTO and the FAO to collaborate in a more intentional way (WTO, 2010). The result of this is a Contestation-Collaboration-Nexus whereby the WTOs strong rule and mission³ contest and collaborate with the strong

³ These can be seen in the WTOs legal framework and pursuit of open trade (WTO, 2014).

practices and reputation of the FAO⁴. These dynamics are captured in Figure 1.

Figure 1: Regime Contestation-Collaboration-Nexus (Authors own working)



It could be argued that when the FAO's overall goal intersects with the WTO's trade objectives, the FAO is likely to sacrifice some of its food security principles in favour of free trade in order to maintain clear avenues of communication and to be able to work alongside the strong WTO legal framework. For example, the FAO's decision to support the WTO's interests, specifically in pushing for stronger TRIP rules, as it did in 2000 (FAO, 2000). Arguably, intellectual property laws contravene a fundamental FAO objective, in that they constrain independent agriculture development in rural areas, binding local farmers to the already formidable power of large corporations and states (McMichael, 2000; Sell, 2010). However, this only highlights one side of the argument. It is more likely that the FAO supported this policy, as it did not directly challenge its own organizational interests, which revolved

⁴ The FAO advocates for a holistic approach to food security and advocacy for small farmers from developing countries (FAO, 2014).

around positioning itself as an agency with a clearly defined mission and an increased influence for policy change. In addition, the FAOs advisory role limited what it could realistically achieve. This meant that it needed the WTOs legal framework in order to secure further investment and trade in GMOs (Bultrini, 2009; De Schutter, 2013:5). It was less concerned about its reputation as an advocate of the poor, as it already benefited from a favourable perspective from developing countries on this front (Helfer, 2009; Margulis, 2014:5). This is another way that the Contestation-Collaboration-Nexus can be seen in the food security debate.

6. CONSEQUENCES AND CONCLUSION

Food security is a multi-dimensional concept. The way to achieve it is anything but straight forward and requires a comprehensive approach (HLTF, 2010).

What's more, food security is embedded in a complex of contesting regimes trying to shape the discourse. Food security is a wide-ranging challenge, requiring the cooperation of different international issue areas, in particular those from the regimes of trade and sustainable agricultural development (De Schutter, 2013). The regimes from these issue areas are exposed to sources of contestation (Morse and Keohane, 2014). Yet they produce policies in a collaborative way that serve to improve their own authority in the relevant issue areas. By looking at international food security policies applied by the WTO and the FAO it is possible to argue that GMOs have reinforced a narrative focussed on open trade and scientific research (Foran et al., 2014:92). It could be suggested that while open trade and scientific research are crucial dimensions to food security, there is a risk that these issues could

distract from analyses of power structures, which are nevertheless relevant to food security policy decisions. Sen's Entitlement Theory argues that the broader socio-political constituents of food insecurity must be taken into account in addition to the purely economic supply and demand rationale (Sen, 1981). The narrative of trade and investment in biotechnology, arguably constrained the implementation of hunger and food security at the four dimensions: availability, access, utilization and stability.

This paper contributes to an understanding that regimes from different issue areas are likely to experience indirect contestation which helps them to collaborate. This collaboration is made possible by the institutionally intrinsic political responsibilities of each regime (such as trade for the WTO and the human right to food for the FAO).

The concept of contested multilateralism is a helpful tool to analyze the different sources of contestation (Keohane, 1984; Morse and Keohane, 2014).

However with regimes from different issue areas, an analysis of their collaborative actions and strategies could be a fruitful second step to regime analysis. The paper has sought to shed light on this by exploring the role of GMOs in the food security discourse, flagging knowledge and governance effects produced by the regimes. The sources of contestation between the WTO and the FAO seem to be related to institutional framing and philosophy (knowledge effects) as much as structural questions of regulatory frameworks and implementation (governance effects).

The paper suggests that contestation between regimes from different issue areas is less a question of how much of the final policy outcome is a result of the stronger institution coercing the weaker, although this may happen to

some degree⁵. More intriguing is an exploration of how collaboration took place when the regimes originate from fundamentally contesting normative and institutional principles. In that regard the Contestation-Collaboration-Nexus comes to the fore. Actions and strategies of collaboration have enabled the regimes to reciprocally strengthen their overall authority, using GMOs as a means to shape the discourse in a way that best supplements their weaker sources of contestation.

⁵ For example by the FAO approving of more liberal markets where those may have negative effects on infrastructural poorly developed countries (Chaifetz and Jagger, 2014).

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