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SUSTAINABLE FOOD SYSTEMS FOR FOOD SECURITY

Need for combination of local
and global approaches

A. Thomas, A. Alpha, A. Barczak, N. Zakhia-Rozis, editors



Chapter 1

Governance matters... but is it what you think?

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Since the 1970s, food security has been framed as a technical problem to be solved mainly through technical solutions like green revolution technologies or market information systems (Fouilleux et al., 2017). In the 2010s, when nutrition began to be coupled with food security in international forums, the technology focus shifted to nutrient deficiencies and fortification technologies (Loconto, 2021). Overall, analysis of the successive definitions of food security – from the one focused on food availability to the one emphasizing also the access to food and the nutritional dimension – shows that they have not explicitly addressed issues such as inequity or power imbalances within food systems nor their governance.

Non-state actors have developed alternative framings of hunger and malnutrition around norms of justice, rights and sovereignty. For example, in opposition to the food security concept, which some view as restricting political debate, many social movements around the world have emerged to defend the concept of food sovereignty. The transnational peasant organization La Via Campesina advocates for food sovereignty as a way to re-politicize the fight against hunger and malnutrition. The food sovereignty movement is part of wider social mobilizations that developed across the globe in the mid-1990s as a critique of neoliberalism (Trauger, 2015). In the 2000s, this stance was most apparent in the resistance to World Bank/International Monetary Fund (IMF) structural adjustment conditionalities that required market liberalization, which led to the strengthening of food sovereignty movements in many developing countries. The 2008 economic and food crises marked an important turning point in the way the international food security agenda was governed. Starting with the reform of the United Nations' Committee on World Food Security and the establishment of its Civil Society Mechanism and High-Level Panel of Experts on Food Security and Nutrition, a number of UN and G8/G20 initiatives on food security and nutrition also emerged, thus changing the contours of food security governance and its analysis.

Diverging from a normative approach that judges whether policies are good for achieving food security, governance is used in this chapter as an analytical

framework. This framework highlights the power struggles among actors as they propose different visions of food insecurity and solutions to this social problem (cf. Constance et al., 2018). This approach to governance not only concerns ‘hard law’ (regulatory frameworks, subsidies, taxes, etc.) but also metrics, models, standards, and the instruments that govern actors’ conduct and represent different forms of ‘soft law’ (Bernard de Raymond and Thivet, 2021).

Following an explanation of this governance framework, we illustrate its usefulness in three different cases: a national food programme in Nicaragua, the resilience agenda and its operationalization in the Sahel, and land-use modelling. We conclude by explaining why such an approach is essential when analysing food security, since ostensibly neutral instruments have the power to influence the possibilities for action, which in turn shape actors’ behaviours.

►► Analysing food security through the lens of governance

Two broad concepts of governance are present in public debate and in academia. The first is a normative approach, in which governance refers to a gentler way of organizing behaviour and coordinating actors that has emerged as part of the neoliberal project of reorganizing state-market-civil society relations (Jessop, 1998). In this form, governance is a multi-stakeholder vision of governing that promotes more inclusive processes of deliberation and decision-making (Lowi and Nicholson, 2015). There is a profoundly political element to governance, as those who promote different visions of the future tend to define it in terms that are consistent with their own normative visions. For instance, neoliberals define ‘bad governance’ very specifically in terms of the existence of inadequate markets and excessive state control. Others define governance from the perspective of a democratic deficit, defining it therefore in terms of transparency, accountability, fairness and participation (i.e., the ‘good governance’ agenda). Both such normative approaches have strongly influenced food security policies, but critics claim that focusing on a wide variety of one-size-fits-all indicators for the ‘goodness’ of governance most likely undermines efforts to govern (Sundaram and Clark, 2015).

This inadequacy of indicators brings us to the second definition of governance, which is based on the Foucauldian notion of *gouvernementality* (i.e., the conduct of conduct). Foucault (1997) places the focus of governing on the ‘disciplining’ of bodies in a population. In this version, governance covers a range of practices that ‘constitute, define, organize and instrumentalize the strategies that individuals in their freedom can use in dealing with each other’. This idea of instrumentalization has been expanded upon in political science to shift attention away from actors’ discourses and interests towards how they are embedded in specific public policy instruments (Lascoumes and Le Gales, 2007).

Studies in this vein have focused on classic public policy instruments that are under the state’s authority, such as regulations, laws, financial instruments, subsidies and taxes. However, with the neoliberal priority of state withdrawal from several sectors in the 1980s and its replacement with multi-stakeholder governance, increasing attention is paid to ‘soft law’ instruments. These include charters, evaluation tools,

models, standards and discourse that can influence not just debates in forums and arenas, but also the type of knowledge that informs public policy and debate.

A growing body of literature has examined the role of models (e.g., economic, geospatial, agronomic and computer-simulated models) in the global governance of agriculture and argues that models work to enact the visions they project (Cornilleau, 2019a, 2019b; Loconto and Rajão, 2020; Tétart, 2020). Similarly, an emerging body of literature focuses more specifically on instruments of measurement (metrics and indicators) that have been fundamental in the development of goal-oriented policies (Cabane and Tântchou, 2016; Kanie and Biermann, 2017). This literature shows that governance patterns and processes themselves have become an ‘expertise of political practice and process’ (Dingwerth and Pattberg, 2009). Indeed, the knowledge of experts (particularly agronomists, economists and development experts) has long been privileged over that of other types of knowledge in food and agriculture policy (Cornilleau, 2019b; Loconto and Fouilleux, 2019). This expert knowledge approach has been accompanied by a strategy to quantify and objectify policy (Diaz-Bone and Didier, 2016), a hallmark of neoliberal governance (Desrosières, 2014; Porter, 2015).

By adopting this second approach to governance, we can see more clearly who is governing and why. We can thus ask: Who has the power to define the rules that others must follow? Who influences the creation and design of policy instruments that serve the interests of different actors? How do the developed instruments shape the possible actions once they are taken up by the subjects of public policy?

►► Three perspectives on food security governance

We address the abovementioned questions in this section by exploring three case studies carried out under the GloFoodS programme: a national instrument for food sovereignty, a regional instrument for resilience in food aid, and a set of international instruments for modelling land used for food production.

The limits of a national instrument for food sovereignty policy: the Zero Hunger Programme in Nicaragua

Nicaragua is a low-income country in Central America, marked by a tumultuous history linked to multiple crises and natural disasters. With about 17% of its population still suffering from hunger, Nicaragua remains one of the most food insecure countries in the Americas. Food insecurity is mainly found among the poor and rural populations who are affected by multidimensional poverty (INIDE, 2016). Gender and age inequalities, degradation of natural resources, isolation and limited access to services exacerbate poverty and food insecurity.

To address these problems, agricultural and food policies evolved conjointly in Nicaragua. These policies were designed as import substitution policies focused on agro-export production to generate foreign exchange in order to import food to meet local needs (Fréguin-Gresh and Cortès, 2021). However, in the 1980s, a radical change occurred: the Sandinista revolution of 1979 promoted new policy directions

and focused on transforming the food system, addressing land issues and improving the social conditions of agricultural production. While agro-export production remained essential, policies first targeted the peasantry (Zalkin, 1987) and gave priority to rural and urban food self-sufficiency (Austin et al., 1985). In the 1990s, the return to power of liberal governments again prioritized agro-export production in a context where the population, and especially marginalized populations (e.g., indigenous people, farmers, women and children), was extremely poor and hungry. Few public interventions addressed those issues, with the exception of limited, targeted actions focusing on child nutrition that were funded by international aid.

Since the early 2000s, a series of policy shifts occurred, thanks to the initiative of a coalition formed by social actors and Sandinista deputies in resistance to the institutions established by the government and supported by elites and multilateral organisations. Emerging in the debates as a reaction to the Uruguay Round negotiations of the World Trade Organization, which advocated food security through the market (Godek, 2014), the concept of food sovereignty was progressively introduced into the national agenda and translated into a draft of a national food and nutritional security policy. In 2007, Ortega was re-elected to the presidency. While his government ensured some continuity of macroeconomic policies, a new policy shift was nonetheless observed. The new government strategy, called the National Human Development Plan (PNDH), profoundly reoriented the content of the policy frameworks towards the fight against poverty and hunger. Based on old diagnosis, a new comprehensive rural policy was designed, following the enactment of the Food and Nutritional Security and Sovereignty (SSAN) law in 2008, known as Inclusive PRORURAL. The law targeted family farming, poverty reduction, adaptation to climate change and strengthening food security. Inclusive PRORURAL was designed as both an agricultural and food policy that revolved around three programmes: 1) a national food programme (PNA), which included a Zero Hunger programme; 2) a national agro-industry plan (PNAIR), and 3) a national forestry programme (PNF).

The Zero Hunger programme was based on the distribution of productive asset transfer (*Bono Productivo Alimentario*, or BPA, in Spanish). In addition to a clear reference to the Brazilian Public Policy ‘Zero Hunger’, the BPA instrument was inspired by the work of a Nicaraguan economist named Orlando Núñez Soto, who founded an ideology for agrarian development elaborated during the Sandinista revolution (Núñez Soto et al., 1995) and became the presidential advisor on social issues in 2008. The objective of the BPA instrument was to provide women with the means to acquire productive resources such as livestock, equipment and agricultural inputs. The SSAN law established a twofold aim for the BPAs: to ensure sufficient income for rural households, and to guarantee the right to healthy, sufficient and adequate food for all. The law also placed food sovereignty front and centre, promoted the environmental and economic sustainability of the food system, and sought inclusion, with an emphasis on women, children and young people. It provided services to actors in different value chains, prioritizing staple foods (rice, beans, maize, sorghum, meat and dairy), the rural sector, and small and medium producers.

The BPA instrument was a livestock productive asset transfer programme for women who were identified as poor, so to strengthen their families’ food production

capacity and wealth. Aid was provided in the form of agricultural inputs (e.g., cows, seeds, tools, construction materials) according to criteria defined by the instrument and interpreted by technicians working in the region. Beneficiaries also received technical assistance, training and financing, and were required to manage a savings account to earn a surplus of 20% of the value received through a rural credit union for the development of their villages. The Ministry of Family Economics (MEFCCA) was responsible for operational planning while its technicians handled local implementation.

However, the way the BPA instrument was actually implemented was controversial (Fréguin-Gresh and Cortès, 2021). In the 1980s, when many revolutionary leaders lacked technical and managerial skills, local organizations played a central role. The Cabinets for Family, Community and Life – organizations inspired by the Sandinista Defense Committees (CDSs) – were instrumental in choosing beneficiaries. The role and legitimacy of these organizations was contested from the very beginning. While their mandate was to strengthen citizen-state relations and to stimulate social participation in field-level decision-making, the Cabinets carried out technical inspections and influenced the choice of beneficiaries, theoretically in coordination with administrative actors. Their legitimacy depended on local political forces and the personal ethics of their representatives, making their role in programme implementation a sensitive issue (Kester, 2009; Finnegan, 2011). Indeed, some Cabinets showed a selection bias between women engaged in local politics and those who were not. This called into question the principles of universality and non-discrimination promoted in the SSAN law. In addition, a clientelistic system – consistent with the decades-long tradition of political and economic activities in Nicaragua – quickly formed (Envío, 2015). As a result, the effectiveness of the BPA instrument was mixed. Although it was implemented throughout the country, the number of beneficiaries remained too low, which might be explained by the restrictive beneficiary selection process. In addition, men were often beneficiaries instead of their wives. At the time, women rarely owned the family plots, which was an eligibility criterion (i.e., demonstration of access to the land needed to feed the animals). The composition of the food production vouchers was subject to fierce discussion and tensions (Kester, 2009; Finnegan, 2011). Following an initial provision of cattle (or pregnant cows), women beneficiaries of the BPA instrument received pregnant sows and small backyard animals. This shift in rule interpretation effectively confined women to the home where ‘traditionally’ they were responsible for domestic tasks. Although the Ministry of Family Economics provided capacity-building to beneficiaries to increase farm productivity and promoted women’s associations and empowerment, it did not take into consideration the change in power relations within the household. Nor did it break the historically gendered division of labour (see chapter 6), which remains a source of high vulnerability for women’s food security.

The BPA instrument illustrates how rules such as beneficiary selection criteria, their interpretation by technicians, and the politics of local actors responsible for a programme’s implementation can thwart the stated ambition of empowering women to strengthen food sovereignty.

Who governs food security in countries 'under an aid-regime'? The case of the resilience agenda in Sahel

Studying governance actors is of great importance as each actor often has a unique understanding of a public problem with tailored solutions. The resilience agenda, which took hold in international development aid policies in the early 2010s, illustrates this point. Before this agenda, food security was usually depicted as an agronomic production problem or a market failure. However, the resilience agenda has sanctioned the rise of another conceptualization of food security – one that is embodied by emergency, public health and social protection actors. This idea of food security emphasizes its nutritional dimension, and the importance of interventions in the fields of health, hygiene, education and social protection to achieve zero hunger.

The initial concept of resilience was borrowed from the field of materials physics and refers to the ability of a structure to return to its initial state after a shock (Holling, 1973). It has gradually gained acceptance in international discourse with the rise in crises and disasters (Lallau, 2014) and the idea that crises are becoming recurrent phenomena in the context of climate change. Improving the resilience of populations, countries or territories against such shocks is a governance challenge requiring coordination between the two disparate worlds of emergencies and development. In West Africa, the introduction of resilience to food insecurity discourse arrived later than in other regions (Vonthron et al., 2016) and was linked to the 2005 food crisis in Niger. The Niger example highlights the fact that food crises can no longer be seen as cyclical episodes, but that they have structural causes and, above all, long-lasting consequences (Galtier, 2012). Decapitalization (i.e., the sale of livestock by households to cope with a crisis) is a clear example of a long-term consequence of a crisis. Introduced by British and American national development agencies, the resilience agenda was promoted by the European Commissioner for International Cooperation, Kristalina Georgieva (now managing director of the IMF), starting in 2011. The Food and Agriculture Organization of the United Nations (FAO) also contributed to the resilience agenda in West Africa; a full team called 'the resilience team' was set up in 2016 in the FAO's subregional office for West Africa dedicated entirely to dealing with the protracted food security crisis in the Sahel region. The objective of better prevention and response to crises embodied in the resilience agenda translates into a call for cross-cutting, multi-sectoral approaches, beyond the agricultural and food sectors. The resilience agenda thus provides an opportunity to introduce issues related to nutrition, health, hygiene, education and social protection into the governance of food security.

Resilience is thus a polysemic term, now part of a global strategy to fight poverty, supported in particular by the World Bank. The World Bank does not rely solely on productive investments and their benefits in terms of economic growth, but on multi-sectoral interventions targeted at the most vulnerable who do not benefit from the effects of economic growth. In principle, resilience is not a new policy characterized by a specific object or domain, but a marker to assess and rationalize existing policies. The resilience agenda goes hand in hand with a desire to contribute to the construction of social welfare states in the Global South. In particular, the aim is to establish the foundations of a social protection system through the financing of

safety nets for the most vulnerable. In West Africa, it is implemented through the Global Alliance for Resilience Initiative (AGIR), launched by the European Union and the Economic Community of West African States (ECOWAS), West African Economic and Monetary Union (WAEMU) and Permanent Interstate Committee for drought control in the Sahel (CILSS) countries in 2011.

Given these stated ambitions, what can be said about the implementation of the resilience agenda? Here, we can see that the concrete scope of the resilience agenda is largely conditioned by its financing and implementation instruments. Two elements are particularly salient. First, in countries ‘under an aid regime’ (Lavigne-Delville, 2017), resilience is implemented through the country-specific resilience priorities adopted at the national level. The resilience agenda functions not as a cross-cutting marker but as a new policy with a dedicated budget, expected to be funded by donors. Second, this approach of relying on donors echoes the logic of operations and project-based financing of many western donors and NGOs present in the region. The projects implemented by these NGOs certainly make it possible to broaden the range of interventions in the field of food security (e.g., cash transfers, nutrition-sensitive agriculture). However, such interventions generally remain confined to a locality or region and frequently demonstrate the limits of this approach for the sustainability of benefit provision. This mode of operation poses problems for consolidation, coherence among numerous interventions, and long-term maintenance of the proposed initiatives in relation to the objective of building a social welfare state.

The case of Sahel resonates with other countries ‘under an aid regime’, such as Haiti, which also illustrate the tensions between national actors, international organizations and donors. The analysis of the interplay of actors in the development of Haiti’s National Strategy for Food Sovereignty and Security (Crétois, 2018) highlights additional problems with this form of governance. First, it shows that existing institutions are not being challenged, despite a broad and inclusive participatory process. Second, it underscores the impossibility of reaching a compromise, because the strategy is based on the juxtaposition of ideas and proposals for action rather than on the search for clear policy directions. Finally, the participatory nature of the process is severely hampered by the fact that actors with influence and decision-making power (importers) are not invited to the discussions, and those concerned with food security issues (civil society) lack the capacity to effectively participate in these forums.

Who governs when models are the instruments of governance? The case of land-use models in food security policy

Achieving food security at a global scale while protecting the environment, as envisioned in the Sustainable Development Goals, requires a complex process of collaboration and the integration of analyses and actions at multiple scales. This goal-driven agenda is part of the most recent wave of evidence-based policymaking in global governance (Kanie and Biermann, 2017). A range of approaches are used to articulate these future visions and to identify the indicators that will measure progress and the type of data that will be accepted as evidence. Since the 1970s

when the first models developed by the International Institute for Applied Systems Analysis (IIASA) were used to build bridges across the cold war divide (Bonneuil and Fressoz, 2016), scientific cooperation to confront problems on an international scale (e.g., climate change and energy transitions) has grown in importance (Aykut and Nadaï, 2019). A prescient question in policy debates on food security is: Can we feed the world with our current land use? To answer this question, modelling agricultural and land use is now used as a means to envision future land access, use and management in different agricultural production systems (Lambin et al., 2000).

One of the key promises of land-use models – understood here as a range of instruments for describing, explaining, projecting, predicting, prescribing, planning and managing the use of land – is the ability (or at least the ambition) to provide comprehensive representations of the world and reveal the underlying ‘real’ causes of specific land-use configurations (e.g., high yields) and changes (e.g., deforestation) (Riebsame et al., 1994). Accordingly, it is expected that land-use models will allow decision makers to devise evidence-based policies that are more effective than those based on traditional political negotiation. Land-use modelling builds on a long tradition of cartography as a quintessential instrument of state power (Scott, 1998). Critics of this form of governance claim that the over-reliance on land-use models might lead to the distancing of government officials from local communities, as modelling can lead to selective imaging of communities’ social reality (Rajão, 2013). Once a reality is removed from a model, decision makers do not see them and important aspects of social life remain invisible and are not addressed by their policies (Pickles, 1995).

Modellers and social scientists thus argue that a plurality of modelling methods improves knowledge, policy and democratic processes. This is because specific models govern the gap between modelled and material reality in different ways. Amazonian deforestation models are ‘drivers’: they produce virtual realities with real effects on the ground such as large-scale dams, roads and bridges. This has turned the Amazon from an unmanageable forest into a legal place for export extraction (Hecht and Rajão, 2020). In measuring high carbon stock, forest classification models are ‘composers’ that exclude land-use temporalities, which in turn means that small and indigenous farmers’ use of ‘degraded’ land through rotations or grazing does not fit within a clear classification (Cheyns et al., 2020). The result is the devalorization of this type of land for local food security needs.

With regards to the well-known land sparing model used to determine which farming system is best for nature while still ensuring enough food to eat, we found that these models are ‘performative’, i.e., they reproduce not just their assumptions on the ground, but also their worldviews (Loconto et al., 2020). The result is that the most intensive producers have better outcomes for nature and modellers argue they are better able to ensure food security. By mobilizing a network of like-minded scientists, significant evidence was produced that was easily simplified and incorporated into industry adaptations of life cycle analysis tools. These tools were used in turn to select commodity suppliers who were using the least amount of land for a given volume of crop. The incorporation of these same metrics and knowledge into sustainability standards meant that intensive production was also certified as sustainable. In reality, the result is an expansion of intensive agriculture and a strengthening of the power

of these actors in the market and in the agribusiness sector – to the exclusion of small producers – all without solving either environmental problems or food insecurity.

In the Agribiom model, used to determine how much food is needed for the future, models are ‘boundary objects’ that produce real virtualities (e.g., scenarios) (Dorin and Joly, 2020). The authors explore an alternative modelling exercise that was developed as a participatory foresight model with the specific intention of supporting public debate, rather than predicting outcomes. They argue that when the political stance of using a model as a ‘learning machine’ rather than a ‘truth machine’ is adopted, some virtual realities, processes and actors that were invisible in mainstream predictive models can enter into both scientific and public debates.

Exploring the ways in which models govern leads us to a more nuanced understanding of the politics of models and the invisibilities of their use in food security policy. By providing detailed accounts of how scientists work and interact, modellers become human products of situated social contexts, rather than simply numb instruments of modern capitalism. This is clear, for instance, when Hecht and Rajão (2020) show that the colonization of the Amazon was a civilizing dream shared with land-use modellers rather than the mindless destruction of nature. In many cases, scientists and experts are aware of the consequences of those trade-offs, but they must also negotiate with multiple demands and the need to provide objective answers to policymakers. Cheyns et al. (2020) show that the focus of scientists on carbon sequestration, which brings with it the possibility of participating in markets for carbon as a tradable commodity, has overlooked civic notions of justice for the rural palm oil producing communities. Likewise, Wolf and Ghosh (2020) show that the policy decisions to optimize a model and market for only one nitrogen management practice in one crop has overlooked a range of diverse nitrogen management practices that may better reduce nitrogen emissions. As a result, industrial-scale farming benefits from such situation at the expense of both effective climate change mitigation and small farmers’ livelihoods. Here, the visible outcomes are more the consequence of institutionalized practices by public actors that produce evidence (i.e., it is easier to model a monoculture crop than a complex agroforestry system) than adherence to a specific political agenda.

These examples demonstrate that the increasing use of models in food security governance is a ‘double-edged sword’. Modelling allows public actors to ‘visualize’ land and its use in food security discussions (e.g., what to include/exclude, prioritization of short-term production or long-term productive ecosystems), but without thoughtful support upstream of what is modelled. The models risk changing the very reality of the objects to be governed.

►► Conclusion

The concept of food security has a well-established definition around four pillars – food availability, access to food, food utilisation and stabilisation – that is the result of years of global debate and international consensus. However, the case studies presented in this chapter show that a global definition does not remove the tensions that exist between actors who hold different visions of the problems responsible for

food insecurity, nor the solutions that should be applied. In various national, regional and global contexts, these cases underscore the importance of studying who defines food security through the development of specific instruments and who implements them. The approach used by several GloFoodS-funded projects to examine governance through its instruments demonstrates that the operationalization of discourse through these instruments varies greatly. Very often, the discrepancies that exist between the discursive visions and what is governed can be explained by the way the instruments are designed and used.

This form of governance raises concerns about the representation and legitimacy of actors (i.e., who speaks for the hungry? who takes ownership of the problem?). However, it also calls into question the instruments themselves and the types of knowledge and power that can be embedded in them. The creation and use of instruments are linked to certain worldviews and their application by actors reproduce these worldviews, hence their capacity to govern the ‘conduct’ of food security. There are winners and losers depending on the mode of governance that is introduced by the instruments. Our analysis calls for paying particular attention to the inequalities that governance instruments produce or reinforce, whether consciously or not. From this perspective, the existence of a plurality of instruments in a public policy approach to food security not only improves knowledge, but also contributes to strengthening democratic processes that allow for the debate of worldviews.

Finally, while scholars tend to focus either on global food security governance or on governance in specific national contexts, a promising avenue that emerged from looking across these three projects is to study the interactions among scales. In addition to studying the circulation of actors and ideas between scales, it would be interesting to look at how each scale is constructed as its own situated context of food security and the ways that actors and instruments enable these contexts to interact. Indeed, many local forums (e.g., food councils) are not necessarily connected with international debates, yet they may still be strong levers of change at other scales of policy implementation. In addition, in the digital age, the dynamics of interaction among actors, at different scales and between scales, are increasingly constructed with the collective mobilization of actors. Finally, we see a clear shift in the focus from individual experts towards a role for networks to play in linking different forums of policy action (such as the ambition of the Milan Urban Food Policy Pact to create a global network of city-level food systems).

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►► References

Austin, J., Fox, J., & Kruger, W. (1985). The role of the revolutionary state in the Nicaraguan food system. *World Development*, 13(1), 15–40. [https://doi.org/10.1016/0305-750X\(85\)90064-6](https://doi.org/10.1016/0305-750X(85)90064-6)

- Aykut, S. C., & Nadaï, A. (2019). Le calcul et le politique. Le Débat National sur la Transition Énergétique et la construction des choix énergétiques en France [Calculation and politics. The 'National Debate on the Energy Transition' and the construction of energy choices in France]. *Revue d'anthropologie des connaissances*, 13(4), 1009–1034. <https://doi.org/10.3917/rac.045.1009>
- Bernard de Raymond, A., & Thivet, D. (Eds.) (2021). *Un monde sans faim. Gouverner la sécurité alimentaire*. Presses de Sciences-Po, Paris. <https://www.pressesdesciencespo.fr/en/book/?gcoi=27246100851060>.
- Bonneuil, C., & Fressoz, J. B. (2016). *The Shock of the Anthropocene: The Earth, History and Us*. Verso Books. <https://www.versobooks.com/books/2388-the-shock-of-the-anthropocene>
- Cabane, L., & Tantchou, J. (2016). Instruments et politiques des mesures en Afrique [Measurement Instruments and Policies in Africa]. *Revue d'anthropologie des connaissances*, 10(2), 127–145. <https://doi.org/10.3917/rac.031.0127>
- Cheyns, E., Silva-Castañeda, L., & Aubert, P.-M. (2020). Missing the forest for the data? Conflicting valuations of the forest and cultivable lands. *Land Use Policy*, 96, 103591. <https://doi.org/10.1016/j.landusepol.2018.08.042>
- Constance, D. H., Konefal, J. T., & Hatanaka, M. (Eds.) (2018). *Contested Sustainability Discourses in the Agrifood System*. Taylor & Francis, 1st edition, London. <https://doi.org/10.4324/9781315161297>
- Cornilleau, L. (2019a). Définir et gouverner les crises au sein du Comité de la sécurité alimentaire mondiale (1974–2008) [Defining and governing crises in the Committee on World Food Security (1974–2008)]. *Critique internationale*, 85(4), 23–41. <https://doi.org/10.3917/crii.085.0023>
- Cornilleau, L. (2019b). Magicians at work: modellers as institutional entrepreneurs in the global governance of agriculture and food security. *Science & Technology Studies*, 32(4), 58–77. <https://doi.org/10.23987/sts.65187>
- Crétois, N. (2018). Jeux d'acteurs et blocages institutionnels dans l'élaboration de la Stratégie Nationale de Souveraineté et de Sécurité Alimentaire en Haïti. Master's thesis. Sciences Po Toulouse. CIRAD. PPAL. Montpellier. 41p. <https://agritrop.cirad.fr/591659/>
- Desrosières, A. (2014). *Prouver et gouverner : une analyse politique des statistiques publiques*. La Découverte, Paris. <https://doi.org/10.3917/dec.desro.2014.01>
- Diaz-Bone, R., & Didier, E. (2016). Introduction: The sociology of quantification – perspectives on an emerging field in the social sciences. *Historical Social Research*, 41(2), 7–26. <https://doi.org/10.12759/hsr.41.2016.2.7-26>
- Dingwerth, K., & Pattberg, P. (2009). World politics and organizational fields: The case of transnational sustainability governance. *European Journal of International Relations*, 15(4), 707–743. <https://doi.org/10.1177/1354066109345056>
- Dorin, B., & Joly, P.-B. (2020). Modelling world agriculture as a learning machine? From mainstream models to Agribiom 1.0. *Land Use Policy*, 96, 103624. <https://doi.org/10.1016/j.landusepol.2018.09.028>
- Envío, R. (2015). El Programa Hambre Cero: como se le va a las mujeres. *Revista Envío*.
- Finnegan, K. (2011). Sostenibilidad y Autogestión en Programas de Seguridad Alimentaria en Nicaragua, Independent Study Project (ISP) Collection. 1042. https://digitalcollections.sit.edu/isp_collection/1042
- Foucault, M. (1997). *Ethics: Subjectivity and Truth. The Essential Works of Michel Foucault, 1954–1984*. Vol. 1, New Press, New York.
- Fouilleux, E., Bricas, N., & Alpha, A. (2017). 'Feeding 9 billion people': global food security debates and the productionist trap. *Journal of European Public Policy*, 24(11), 1658–1677. <https://doi.org/10.1080/13501763.2017.1334084>
- Fréguin-Gresh, S., & Cortès, G. (2021). Politiques agricoles et alimentaires au Nicaragua au prisme des changements institutionnels : trajectoires socio-historiques et défis actuels. *Économie Rurale*, 377, 5–21.

- Galtier, F. (2012). Note sur la crise alimentaire en cours au Sahel. Montpellier, CIRAD. <https://agritrop.cirad.fr/568969/>
- Godek, W. (2014). The institutionalization of food sovereignty: The case of Nicaragua's Law of Food and Nutritional Sovereignty and Security [Doctoral Thesis, Rutgers, The State University of New Jersey]. RUcore: Rutgers University Community Repository. <https://doi.org/doi:10.7282/T3TD9VMH>
- Hecht, S., & Rajão, R. (2020). From “Green Hell” to “Amazonia Legal”: land use models and the re-imagination of the rainforest as a new development frontier. *Land Use Policy*, *96*, 103871. <https://doi.org/10.1016/j.landusepol.2019.02.030>
- Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics*, *4*(1), 1–23. <https://doi.org/10.1146/annurev.es.04.110173.000245>
- INIDE (2016). Reporte de Pobreza y Desigualdad EMNV 2016, GRUN. Instituto Nacional de Informacion de Desarrollo. <https://www.inide.gob.ni/docs/Emnv/Emnv17/Reporte%20de%20Pobreza%20y%20Desigualdad%20-%20EMNV%202016%20-%20Final.pdf>
- Jessop, B. (1998). The rise of governance and the risks of failure: the case of economic development. *International Social Science Journal*, *50*(155), 29–45. <https://doi.org/10.1111/1468-2451.00107>
- Kanie, N., & Biermann, F. (Eds.) (2017). *Governing Through Goals: Sustainable Development Goals as Governance Innovation*. MIT Press, Cambridge, MA. <https://mitpress.mit.edu/books/governing-through-goals>
- Kester, P. (2009). Informe evaluativo (2007–2008) Programa Productivo Alimentario (PPA) “Hambre Cero”. Managua, Embassy of the Kingdom of the Netherlands.
- Lallau, B. (2014). La résilience contre la faim: nouvelle donne ou nouvel artifice?, 8^e Journées de Recherches en Sciences Sociales, Société Française d'Economie Rurale (SFER). December 2014, Grenoble, France. https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=La+r%C3%A9silience+contre+la+faim%3A+nouvelle+donne+ou+nouvel+artifice&btnG=
- Lambin, E. F., Rounsevell, M. D. A., & Geist, H. J. (2000). Are agricultural land-use models able to predict changes in land-use intensity? *Agriculture, Ecosystems & Environment*, *82*(1–3), 321–331. [https://doi.org/10.1016/S0167-8809\(00\)00235-8](https://doi.org/10.1016/S0167-8809(00)00235-8)
- Lascoumes, P., & Le Gales, P. (2007). Introduction: understanding public policy through its instruments – from the nature of instruments to the sociology of public policy instrumentation. *Governance*, *20*(1), 1–21. <https://doi.org/10.1111/j.1468-0491.2007.00342.x>
- Lavigne Delville, P. (2017). Pour une socio-anthropologie de l'action publique dans les pays « sous régime d'aide ». *Anthropologie & développement*, *45*, 33–64. <https://doi.org/10.4000/anthropodev.542>
- Loconto, A. (2021). Gouverner par les métriques : un exercice dans l'intermédiation des connaissances. In Goulet, F., Caron, P., Hubert, B., & Joly, P.-B. (Eds.). *Sciences techniques et agricultures. L'impératif de la transition*, Presses des Mines, Paris.
- Loconto, A., & Fouillieux, E. (2019). Defining agroecology: exploring the circulation of knowledge in FAO's Global Dialogue. *International Journal of Sociology of Agriculture and Food*, *25*(2), 116–137. <https://doi.org/10.48416/ijfaf.v25i2.27>
- Loconto, A., & Rajão, R. (2020). Governing by models: exploring the technopolitics of the (in) visibilities of land. *Land Use Policy*, *96*, 104241. <https://doi.org/10.1016/j.landusepol.2019.104241>
- Loconto, A., Desquilbet, M., Moreau, T., Couvet, D., & Dorin, B. (2020). The land sparing – land sharing controversy: tracing the politics of knowledge. *Land Use Policy*, *96*, 103610. <https://doi.org/10.1016/j.landusepol.2018.09.014>
- Lowi, T. J., & Nicholson, N. K. (2015). *Arenas of Power: Reflections on Politics and Policy*. Taylor & Francis. <https://doi.org/10.4324/9781315635958>
- Núñez Soto, O., Cardenal, G., & Morales, C. J. M. (1995). Desarrollo agroecológico y asociatividad campesina: el caso de Nicaragua. Managua, CIPRES (Centro para la Investigación, la Promoción y el Desarrollo Rural Social).

- Pickles, J. (Ed.) (1995). *Ground Truth: The Social Implications of Geographic Information Systems*. Guilford Press, New York.
- Porter, T. M. (2015). The flight of the indicator. In Mugler, J., Rottenburg, R., Merry, S. E., & Park, S.-J. (Eds.). *The World of Indicators: The Making of Governmental Knowledge through Quantification*. Cambridge University Press, Cambridge, pp. 34–55. <https://doi.org/10.1017/CBO9781316091265.002>
- Rajão, R. (2013). Representations and discourses: the role of local accounts and remote sensing in the formulation of Amazonia's environmental policy. *Environmental Science & Policy*, 30, 60–71. <https://doi.org/10.1016/j.envsci.2012.07.019>
- Riebsame, W. E., Meyer, W. B., & Turner, B. L. (1994). Modeling land use and cover as part of global environmental change. *Climatic Change*, 28(1–2), 45–64. <https://doi.org/10.1007/BF01094100>
- Scott, J. C. (1998). *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. Yale University Press, New Haven, Yale Agrarian Studies.
- Sundaram, J. K., & Clark, M. T. (2015). The Good-Governance Trap. *Project Syndicate*. <https://www.project-syndicate.org/commentary/governance-reform-development-agenda-by-jomokwame-sundaram-and-michael-t-clark-2015-06>
- Tétart, G. (2020). Debating global food security through models. The Agrimonde foresight study (2008–2010) and criticism of economic models and of their 'productionist' translations. *Science, Technology and Society*, 25(1), 67–85. <https://doi.org/10.1177/0971721819889919>
- Trauger, A. (Ed.) (2015). *Food Sovereignty in International Context: Discourse, Politics and Practice of Place*. Taylor & Francis. <https://doi.org/10.4324/9781315764429>
- Vonthron, S., Dury, S., Fallot, A., Alpha, A., & Bousquet, F. (2016). L'intégration des concepts de résilience dans le domaine de la sécurité alimentaire : regards croisés [An integrated perspective on resilience and food security]. *Cahiers Agricultures*, 25(6), 64001. <https://doi.org/10.1051/cagri/2016039>
- Wolf, S. A., & Ghosh, R. (2020). A practice-centered analysis of environmental accounting standards: integrating agriculture into carbon governance. *Land Use Policy*, 96, 103552. <https://doi.org/10.1016/j.landusepol.2018.08.003>
- Zalkin, M., 1987. Food policy and class transformation in revolutionary Nicaragua 1979–1986. *World Development*, 15(7), 961–984.