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Vincent Blanford · Marie Hrabanski
Julien Demenois *Editors*

Climate Impacts and Challenges in Agriculture, Forests and Food Systems

Perspectives on the Global South

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Climate Impacts and Challenges in Agriculture, Forests and Food Systems

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Second Edition

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Chapter 22

Territorializing Climate Action



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Guillaume Lestrelin, Ronan Mugelé, René Pocard-Chapuis, Fatma Rostom,
Tiago Teixeira Da Silva Siqueira, and Elodie Valette**

Abstract Climate change is a global issue but is experienced and understood differently across territories, which are spaces appropriated and governed by human groups. The territorial approach highlights how local social, political, and ecological contexts shape diverse climate impacts and responses. Territories reveal the connections between societies and climate change, making them crucial for designing relevant adaptation and mitigation strategies. This approach balances the broad global perspective with local specificities, enabling tailored solutions. The chapter explores how territories can be mobilized as key spaces to address climate change effectively.

Climate change is often presented—notably in the reports of the Intergovernmental Panel on Climate Change (IPCC)—as a “global issue” or a “planetary challenge”. Indeed, it affects the entire Earth system and societies worldwide. However, from the perspective of these societies, climate changes are multiple; they are primarily

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333

understood, in their causes as well as their consequences, through the territories in which they evolve. The territory can be understood as a space appropriated (in terms of ownership and identity) and governed by an organised human group. The territorial approach to climate change emphasises that socio-environmental changes are primarily experienced by societies living “here and now”. It involves anchoring and translating global change into the space-times of societies, in the North and in the South, in cities and in rural areas, according to different political, social, ecological, and economic contexts (Le Treut 2022).

The impacts of climate change are highly variable from one territory to another, whether concerning biophysical transformations (for example, rainfall records or droughts) which increase differentiated exposure to risks, or the responses of local societies given their history, their expectations, their experiences or their political struggles. All these factors also contribute to localising or specifying ways of relating to the issue of climate change according to very diverse considerations.

Because territories outline and make visible the organic links between societies and climate change, they are key spaces for reflection and for implementing relevant adaptation and mitigation actions. Again, variability of actions is high between territories, due to the diversity of resources they have, their history, their social capital, their access to information and the means of action of their populations. Halfway between the “too macro” to integrate specificities and the “too local” with limited impacts, territorial approaches propose a framework for collectively thinking, organising and developing contextualised mitigation and adaptation solutions. The aim of this chapter is to show how and why the territory, as a concept, as a place where biophysical changes are experienced, as a social entity and arena, can be mobilised to face climate change.

22.1 The Territory, an Arena for Collective Deliberation and Negotiation

Due to their increasing magnitude and intensity, floods, megafires, hurricanes, storms, droughts render individual or isolated adaptation initiatives powerless. These climate-related events call for large-scale collective commitments. This implies the coordination and collaboration of a diversity of actors, sometimes with divergent interests, in a situation of power asymmetry and incomplete knowledge. The territorial approach promotes coalitions of actors, through the sharing of a common identity, the result of history, experience, living in the same space. In the face of climate change, the inhabitants of a territory also share the same threats, the same uncertainties, although their vulnerabilities and their adaptation capacities are different. Thinking about climate change through the territory means making this threat the driving force of collective action, transforming it into a common aspiration, while avoiding that it reinforces divisions.

Territorial approaches thus propose an operational multiscale framework, aimed at transformation, and based on the principles of equity, participation, inclusion and accountability. It is about making the territory a space for negotiation, an arena for

building compromises and ideas to adapt and mitigate climate change. Territorial arrangements can take various forms of observatories, living labs (Box 22.1), third places, citizen debate platforms, etc. These are arenas in which the actors of the territory mobilise to bring about adaptation and mitigation actions.

Box 22.1 Feedback 1. Construction of Living Labs in Senegal

The concept of *living lab*, relatively new, admits different definitions all converging towards the idea of platform anchored in a particular social and local dynamic, where citizens, residents, users are considered as key actors in research and innovation processes. This approach is supposed to stimulate collaborations between heterogeneous profiles of people with the aim of developing unexpected discoveries (Romero 2017).

Around Lake Guiers in Senegal, two *living labs* have recently been established. They are part of a context of scarcity of land and water resources exacerbated by climate change and generating social and spatial tensions between different categories of actors. The ambition of the *living labs* is to improve the health of humans, agricultural production systems and the environment, and then positively affect the livelihoods of the populations of the territories. Anchored in local territorial management institutions, the two *living labs* associate local actors (farmers, breeders, fishermen, elected officials, entrepreneurs) with scientists who will accompany the experiments. After a phase of territorial diagnosis, the stakeholders chose to prioritise certain experiments. For this, two forums, one per *living lab*, bringing together all the users and scientists, were constituted and thought of as dialogue arenas allowing collective validation of choices. Then, the communities of actors, users and scientists, organised around the experiments. This process of territorial validation, at the scale of the *living lab*, through the forum, allows the community to engage in actions previously put up for debate. This governance tool, based on debate with the diversity of territory users, allows the formation of collectives capable of organising, validating, choosing and then testing. It is about anticipating the necessary adaptations that the community *living lab* will need to be able to implement, beyond the project time.

22.2 Towards Multisectoral Initiatives Based on Spatial Complementarities

From this territorial intelligence emerge contextualised initiatives for the adaptation and mitigation of the local effects of climate change, such as ideas of experiments, new synergies, solidarities and forms of governance. Due to the diversity of skills and knowledge gathered, territorial initiatives strive to break away from siloed approaches to propose a multi-sectoral approach. The spatialisation of problems

and solutions is a structuring element: the links between biophysical and social realities are anchored in a geographical space. Climate adaptation or mitigation actions are thus based on a systemic conception of the territory, which values synergies and interactions between the different components of the territorial system.

The management of flood risks, increased by the effects of climate change, is interesting in this respect. Flooding is certainly the result of a meteorological hazard, but also of a vulnerability built up over time within territories. In eastern Amazonia, Brazil, most watersheds have been affected by deforestation and agricultural practices that poorly protect the soil against erosion, for five to ten decades. Year after year, the action of erosive rains silts up the hydrographic drainage network. When an event of exceptionally intense rainfall occurs, such as during La Niña episodes, the flows are no longer absorbed either by the forest vegetation, which has disappeared, or by the soils, which have become impermeable, or by the riverbeds, which are silted up. Therefore, a flood occurs, which can be dramatic as in Paragominas in 2018, this city being built in the middle of an alluvial plain. This event mobilised the public authorities, and a payment plan for environmental services has since been put in place. All farmers in the watershed receive an incentive amount, deducted from the bills of each household connected to the urban drinking water supply network. The condition to receive this payment is that farmers comply with the land use plan defined by the public authorities, after extensive consultation. This plan provides for (1) anti-erosion arrangements and agricultural practices in areas identified as suitable for agriculture, (2) forest restoration practices in areas identified as crucial for the water cycle. The entire system is therefore based on a mapping of soil aptitudes, i.e. a precise zoning sanctioned by a municipal law that defines the rules of use for each zone. This reorganisation of mixed landscapes, composed of forests and agricultural land, should make it possible to desilt rivers, reduce flood risks and improve the quality of the waters of the Uraim river, thus reducing the costs of their treatment to supply the drinking water network. This saving would then be used to increase incentives for farmers.

Another illustrative example of territorial initiatives for the adaptation to climate change is the transformation of territorial agri-food systems. These are defined as “the set of actors, networks and mechanisms which guide the way food is produced and consumed at the territorial level. They therefore include, beyond the flows of production, collection, transformation, and distribution—which correspond to the agri-food system in its economic definition—consumers, civil society, agricultural or rural development supporting services, and local authorities and public institutions” (Authors' translation of Lamine et al. 2022). Agri-food systems play a pivotal role in climate change, being at the same time (i) major emitters of greenhouse gases, (ii) particularly vulnerable, and (iii) with a significant potential for mitigation and adaptation. Thus, the reconfiguration of agri-food systems at the territorial level helps rethinking production and the circulation of products, as well as consumption patterns and waste treatment, offering a breakdown with the globalised industrial model. The establishment of short food supply chains, for example, can contribute to “reformulating commercial links in the direction of increased cooperation not only between producers, but also between producers and consumers, between consumers, between actors in the same territory or region” (Chiffolleau and Prevost

2012). Box 22.2 presents a case study of the reconfiguration of an agricultural sector to adapt to the impacts of climate change in Mediterranean territories.

Finally, because they involve multi-stakeholder consultation, territorial approaches help to improve the success of certain greenhouse gas emission reduction initiatives. This is the case, for example, with energy transition strategies towards less emitting energy sources, such as solar or wind. It has been shown that projects disconnected from local socio-economic and environmental contexts can generate impacts that are not desired by local actors, whether on landscapes, ecosystems, employment structure, energy access but also on land issues, leading to strong local opposition movements (Siamenta and Dunlap 2019) (see Chap. 19).

Box 22.2 Feedback 2. Territorialised Initiatives in the Face of Climate change in the Mediterranean Area: The Case of the Pistachio in Provence

Some agricultural productions in Mediterranean areas are heavily affected by recurrent droughts and the rising temperature (Ivits et al. 2012). Territorialised initiatives based on more resilient agricultural production systems and sectors are emerging to face these impacts, as illustrated by the pistachio sector in Vaucluse. Once very common in the area, the pistachio tree has returned to the wild. Drawing on its significant hardiness (resistance to drought and extreme temperatures), its histocam presence and its adaptation to the Mediterranean territory, certain quality-oriented value chains are re-emerging thanks to the collective work of local actors (Debolini and Siqueira 2021).

The first reflections and studies were initiated in 2016 by some local pioneers. They made trips to pistachio-producing areas and consulted departmental archives. These elements laid the first foundations for the development of the sector. In 2018, civil society actors, farmers and processors came together to create a non-profit association, called Pistachio in Provence. In parallel, some pioneer farmers planted the first plants despite the lack of local nurseries for their supply. From 2018–2019 onwards, in response to requests from several local farmers, the Vaucluse Chamber of Agriculture began conducting technical and agronomic studies to facilitate local planting. It also offered technical support to interested farmers. An initial Feader project allowed local actors from agricultural advisory services, technical and scientific research and farmers to come together. In 2021, farmers organised themselves into a union to build a project aimed at structuring of the industry together with local transformation actors. Currently, over 400 hectares have been planted, and stakeholders are working towards obtaining recognition for Provence pistachios under a quality and origin label—SIQO.¹

¹https://rd-agri.fr/detail/DOCUMENT/chambres_d%27agriculture_294233

The acceptability of installing renewable energy infrastructures therefore does not depend solely on the *not-in-my-backyard syndrome* that is empirically contested and that pejoratively plays down opposition arguments to these infrastructures. The way projects are implemented is a crucial factor influencing this acceptability. In particular, governance and the financial participation of citizens and local communities in such projects are key (Mussal and Kuik 2011) and such participation depends on the level of trust among citizens and the sharing of a local identity (Kalkbrenner and Rossen 2016), two levers at the heart of territorial approaches.

22.3 Territorial Approaches for Climate Justice

The importance of the acceptance of climate change mitigation and adaptation initiatives by the inhabitants of a territory leads to questioning the concept of climate justice. Mitigation and adaptation solutions are more easily accepted and adopted if they are fair (Newell et al. 2021). However, although justice is increasingly mobilised at national or international scales (Gupta et al. 2023), particularly on issues of north-south inequalities in the face of climate change, the application of these notions remains rare at the local level (Tsayem and Philippe 2022), at best, confined to urban territories (Bulkeley et al. 2014).

Climate justice refers to an ethical approach translated into a multidimensional legal analysis framework aimed at promoting equity in responses to the challenges posed by climate change (Schlosberg and Collins 2014). To do so, it posits the following fundamental principles:

- Social equity: ensuring that the most vulnerable and marginalised populations do not disproportionately bear the consequences of climate change and that they also benefit from the solutions;
- Environmental equity: avoiding the concentration of the harmful effects of climate change in certain regions and guaranteeing equitable access for populations to natural resources;
- Responsibility: recognising the differentiated responsibilities (of countries, social groups, etc.) in contributing to greenhouse gas emissions, in mitigating the impacts of climate change, and the adaptation strategies developed;
- Participation and inclusion: involving a wide diversity of stakeholders in climate-related decision-making processes, with an emphasis on the representation of affected populations;
- Fair solutions: developing mitigation and adaptation policies and measures that take into account the diverse needs and realities of populations and seek to reduce existing inequalities.

Through these distributive, procedural and recognition issues, climate justice emphasises the relationships, institutions and social structures that are both the origin of climate change and contribute to shaping responses to it. By adopting a more transformative perspective, questions of inequality and power relations lie at the heart of climate justice (Newell et al. 2021).

Territorial approaches suggest that heterogeneity, synergies and spatial complementarities may provide a relevant entry point for addressing the challenges posed by climate change through consultation processes, decision-making and collective action (see paragraph 1). Indeed, they are grounded on the question of inter and intra-territorial inequalities—inequalities in terms of endowment and access to goods and resources, but also in terms of exposure to risks, capacity to adapt, contribution to environmental issues, etc. (Chaumel and La Branche 2008). By fostering interactions and collaborations between actors, promoting participation and inclusion of local populations in the design, planning and implementation of policies, generating collective learning, and establishing new modes of governance, they can also contribute to reducing inequalities and changing the power relations that govern territories, in the direction of a consolidated climate justice, as illustrated in Box 22.3. This case

Box 22.3 Case Study 3. Territorial Platforms for Climate Justice in Tunisia

Since 2018, the Programme for Climate Change Adaptation in Vulnerable Rural Areas (PACTE) in Tunisia has been piloting the establishment and facilitation of territorial planning platforms in six rural regions. This multi-stakeholder consultation mechanism aims to:

- contribute to reducing inter and intra-territorial inequalities through the co-design of integrated development plans and the implementation of public investments for climate change adaptation targeting highly marginal rural areas that have historically neglected by territorial planning policies;
- alter existing power relations by establishing local governance bodies for territorial diagnosis, planning, and monitoring-evaluation of public investments. These bodies are composed of elected representatives from different local communities, institutional actors, and civil society. They are engaged in a consultation process designed to address territorial inequalities within the intervention regions themselves.

The mechanism has generated massive participation at the local level, with notably 4300 direct participants in the diagnosis and definition of priority development issues and 11,500 collective action proposals collected from citizens (Braiki et al. 2022). Based on these inputs, development plans have been drawn up, taking into account spatial heterogeneity (in terms of access to natural resources, labour, land, etc.) and aiming to reduce territorial inequalities.

Since 2023, these plans have guided public investments across numerous sectors. While networks and social structures conducive to emancipation and the empowerment of collective action have also spontaneously emerged, the interim results remain nuanced. For example, techno-administrative norms have hindered the programme's ambition to benefit the most marginal communities. Pre-existing power relations, between local notables and ordinary citizens, have also been partially reproduced in the new bodies, generating new distributive inequalities.

study also highlights the limitations of territorial approaches, which sometimes fail to achieve the desired changes, particularly when they encounter institutional lock-ins at regional or national scales, such as rigid standards incompatible with change or centralised power structures. This underscores the importance of developing territorial approaches capable of articulating different scales of action.

22.4 Territorial Approaches at the Intersection of Scales of Action

The ambition of some territorial initiatives for climate change mitigation and adaptation can conflict with national and regional sectoral public policies if they have not been thoughtfully articulated. For example, in the case of the transformation of territorial agri-food systems presented above, short supply chains can have negative impacts if they have been designed without coordination or scale articulation. It is therefore not automatic to significantly reduce the carbon footprint of transport through short supply chains if there is no adapted logistics (Ademe 2017). Territorial agri-food systems and associated territorial innovations therefore require specific local (Box 22.4) and national public policies, highlighting the relevance of territorial approaches articulated with other scales. The design of new multi-level governance mechanisms, integrating the interdependencies between different scales of action, and new institutional practices is necessary to enable integrated territorial approaches.

In practice, territorial development initiatives often have to accommodate the existing institutional framework, advocating for increased permeability of institutional and sectoral boundaries (Rhodes 1996) within the framework of projects. Conversely, when a successful territorial experience has demonstrated the relevance of reshaping the institutional framework (Box 22.4), it is sometimes difficult to transfer this successful experience to the specificities of other territories in a country. It is unlikely that the “large-scale impacts” sought by development agencies to meet the challenges of the 2030 agenda will result from the replication of local successes (Caron et al. 2017). Successful experiences here are rarely reproducible and extrapolatable elsewhere, due to their specificities, the volume of resources to be invested, and the need to act at different scales to induce changes. Scaling up involves a more complex process than simply diffusing or propagating a product or model (Moore et al. 2015). Tunisia provides us with an example of building an institutional framework at the national level, taking into account territorial specificities. After several years of experimentation, the Tunisian Ministry of Agriculture developed an innovative approach in 2016 for the implementation of its new water and soil conservation strategy, proposing a new action framework, based on a consultation process between local actors and regional service experts and on the integration of sectoral approaches at the watershed level (Chevrillon et al. 2017).

Box 22.4 Case Study 4. Paragoclima, or the Commitment of an Amazonian Territory to a Low-Carbon Development Trajectory

The Amazon is severely affected by the impacts of climate change: fires, droughts, and floods strike the region with alarming frequency. At the same time, the Amazon is also internationally held accountable, being a “climate killer” due to the massive deforestation affecting the global climate. This dual status of victim and perpetrator of climate change exposes the Amazon to a major territorial risk, hence the need for a territorialised response.

Paragominas is known as the first Amazonian municipality to have defeated the spectre of illegal deforestation, 15 years ago. In early 2023, it centred its new development strategy, called Paragoclima,² on the exceptional virtues of the Amazonian climate, to transform atmospheric carbon into agricultural and forestry biomasses of interest. Heat, rainfall, and solar radiation naturally accelerate the metabolism of plant and animal organisms, which, if managed within a framework of good agricultural practices, restore soil fertility, increase the productivity of plantations, pastures, forests, and agroforests. These good practices are cost-effective in terms of inputs, investments, and mechanised work, thus being socially inclusive. Moreover, the new environmental code organises land use according to their aptitudes, thereby recomposing mixed landscapes of forests, pastures, and agricultural lands, capable of generating income while regulating the cycles of water and carbon, in a habitat favourable to biodiversity. Monitored and certified using a comprehensive set of indicators, this development strategy reassures investors and gains the support of local stakeholders, regardless of their social group, as evidenced by the massive support for Paragoclima, formalised by a territorial pact in May 2023 (65 local institutions have committed to it).

Bottom-up approaches play a key role in research for development. It seems important that top-down approaches are not neglected and that support for their practices is developed in parallel. Often described as exogenous, out-of-place and failing in terms of transparency and accountability, it is important to invest in political dialogue and reconsider these top-down and institutional approaches in connection with bottom-up ones, in order to provide grounding for public action and opportunities for learning for all parties involved in multi-level governance. Box 22.5 develops an example of back-and-forth between territories and the national level in Congo for the development of public policies.

²For more information: <https://paragoclima.com.br>; <https://www.terramaz.org>

Box 22.5 Feedback 5. Back-and-Forth Between Public Policy and Territory in Congo

The forest territory of Northern Congo is mainly oriented towards the production of timber (7.7 Mha, nineteen concessions) and the maintenance of exceptional biodiversity through a significant network of protected areas (1.8 Mha, six protected areas). The forests of Northern Congo play a central role in mitigating climate change.

This territory is experiencing land pressure resulting from population growth and migrations from neighbouring countries, but also from practices of often informal and extensive extractive operations, leading to degradation of the forest cover, deforestation, or pollution. The expansion of urban centers is also associated with the progressive opening up of this territory. Indigenous and autochthonous populations, who constitute the majority on the territory's inhabitants, are poorly represented formally in censuses and land allocation plans.

As part of the Northern Congo Forest Landscape project (PPFNC), Cirad supports the establishment of a multi-sectoral and multi-stakeholder platform. This is intended to guide future political choices regarding land-use planning at the level of the Northern Congo forest landscape. A first phase of three workshops held in 2023 resulted in the establishment of a shared and concerted diagnosis of the territory among sectors and actors. Within this platform, eight central administrations, three private companies, two conservation NGOs and six civil society structures have developed a shared vision of the territory. Over a period of eight months, and iteratively, stakeholders have built a model of territorial representation from initial sectoral visions, progressively supported by quantitative data and field feedback. This sharing has led to the emergence of divergent postures and interests and to collectively develop a roadmap for the future activities of this platform, between territorial foresight and multi-actor advocacy.

22.5 Conclusion

Although often relegated to the background in debates on adaptation and mitigation, territorial approaches play a crucial role in the fight against climate change. This chapter outlines the general principles on which these approaches are based to address climate issues—collaboration, inclusivity, trust, justice, spatialisation of problems and responses, multi-sectorality and multi-scalarity—while highlighting the diversity of forms they can take depending on contexts and specificities. Territorial approaches are therefore not ready-made tools, they offer frameworks for thinking and building collective action, which must be reinvented and readapted to each territory and each issue. These frameworks do not replace more global or local approaches, rather, they aim to complement, articulate, strengthen and contribute to

reshaping them. This is a major challenge of territorial approaches, as their development can be sometimes limited by their short temporal horizon and the locked institutional frameworks in which they are often embedded.

The focus on the territory, its internal dynamics, and the local impacts of climate change, in connection with other scales of action, should not overshadow the interterritorial dimension of adaptation and mitigation strategies. We have demonstrated how the biophysical manifestations of climate change and the vulnerability of populations vary from one territory to another. These inequalities are even more pronounced between territories in the North and those in the South, with the North historically being the origin of climate change and the poorest countries in the South often facing the most severe impacts and damage. In addition to the essential questions of interterritorial climate justice raised here, these inequalities also reflect significant knowledge gap issues: the potential or actual effects of climate change are more or less documented depending on the territory. This is a fundamental challenge for research which should also be more inclusive and “fair”, particularly between certain territories in the South that are less accessible or less equipped and others in the North where common concerns about climate change are perceived as legitimate, but not very audible.

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