

## • Studying territorial dynamics in the Anthropocene

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### Background

The global environmental crisis shows that human societies are not external to the environment, but rather they occupy a special place within it. The complexity of the processes linking human systems and natural ecosystems is the key to understanding the concept of the Anthropocene, which, while signalling the start of a critical era of systemic disruption, emphasises that social systems have never been autonomous. This article looks at the dynamics of interactions between society and the environment, using the example of the semi-arid Nordeste region of Brazil, a vast area with a long history of anthropisation, where demographic changes and urbanisation in recent decades have transformed social and territorial dynamics.

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#### Further reading

[www.ird.fr](http://www.ird.fr)



Courtyard of a family farm. The type of fencing is indicative of a sheep or goat farm.

On the left, a semi-buried water storage tank.

In the background, the *caatinga*, a dry forest; Tauá, Ceará, Brazil (2020).

## Studying the Anthropocene

A large proportion of studies on the environmental crisis focus on understanding biogeochemical disruption on a global or regional scale. Integrating the anthropogenic dimension most often involves categorising human activities by major economic sector (transport, industry, construction, agriculture) with a view to measuring their current and future impact on the environment. Another approach is to look at “natural” risks on a case-by-case basis,

analysing their effects on social organisation using explanatory models (inequalities, vulnerability, segregation, environmental justice, for example). A complementary approach is to look at contemporary lifestyles, in other words routine activities, both group and individual, and the way in which they interact with the environment. This makes it possible to place the study of the Anthropocene within an individual-society continuum in the ordinary life of contemporary societies and their local interactions with the environment. One potential

approach concerns the contemporary disruptions to modern life, namely demographic and urban transitions, because they have changed lifestyles and the way space is organised, and because they are putting intense pressure on the biosphere. To begin thinking about the intensity of the environmental impacts of human societies, it is necessary to: 1) bring together the scientific disciplines of the Earth, life and social sciences; 2) incorporate different timescales into the analysis, from the pre-anthropoc era to the present day, with a view to developing a systemic analysis of the environment without giving priority to the environment or society; 3) adopt a territorial approach, because the territory is defined as the materiality of socio-ecosystems; and 4) define a common research medium for linking time frames, materiality and the variety of interactions specific to each socio-ecosystem.

### **An interdisciplinary approach for the semi-arid Brazilian Nordeste region**

This analytical framework has been used within the young SANA combined team (“The Semi-Arid Brazilian Nordeste in the Anthropocene”) and the ANR Tasab project (“What can a territory do when faced with the global Anthropocene crisis? Socio-environmental dynamics in the Brazilian semi-arid region”). Despite its status as one of Brazil’s “problem” regions, because it is exposed to the disastrous effects of cyclical droughts, the semi-arid region is undergoing rapid change, experiencing unprecedented demographic growth and intense changes in land use. To understand

what is at stake in this volatile environment, we need to explore the material links between the people and the environment, through a multidisciplinary analysis of the territories from two perspectives. The first concerns the social sciences. It covers several spatial scales, mainly in contemporary times. It is based on the idea that demographic and geographical changes over the last 50 years, including the demographic transition and the urban transition, have led to profound changes in both settlement patterns and lifestyles. These developments have produced specific territorial configurations and spatial points of reference that define society’s relationship with the environment and its place in it. The second perspective is that of the life and Earth sciences. Human territoriality in the Anthropocene – and in the socio-historical context under study – is putting pressure on vulnerable ecosystems and their resources. The forms this pressure takes need to be described not only in terms of risks, but also in terms of their evolutionary dynamics over the long term, from several decades to several millennia. By bringing these two perspectives together, the Anthropocene can be described as a socio-environmental territorial dynamic that feeds into forward-looking thinking on ecological transition.

### **A mosaic of semi-arid regions**

The study of the mosaic of territories in the semi-arid Nordeste region of Brazil combines various disciplinary approaches centred on soils, which are essential interfaces for interactions between societies and the environment. Combining, on the one hand, pedologists and

palaeoecologists to study pollens and sediments on water reservoirs and surrounding soils, and, on the other, human and social science surveys on agricultural practices and settlement phases through collecting life histories, the analysis focuses on how the mutual relations between people and the environment have evolved, by detailing how their daily activities manifest themselves locally. Studying two municipalities undergoing rapid change in different contexts reveals a variety of uses of resources and adaptations by local people to the various constraints of a tension-filled environment. In Tauá, a predominantly rural municipality prone to accelerating desertification,

a hybrid rural farming model combines agrosylvo-pastoral family farming that includes food commercial cash crops and small-scale sheep/goat rearing on forest plots. One of the challenges of sustainability is to understand the soil nutrient cycle and the lifestyles and consumption of household units. In Crato, with its wetter climate and interface with a metropolitan area, the effects of urban growth on the rural environment and the resulting forms of peri-urbanisation need to be viewed in a context that encompasses the history of land use and the climatic and environmental changes in the area, which are representative of changes in Brazilian society over the last few decades.

## KEY POINTS

Documenting society-environment relationships in a developing country in the Anthropocene era necessitates adopting a dual perspective to understand the fundamental changes in social and territorial frameworks and to assess the local conditions associated with the global environmental crisis. An approach structured around the society/climate/vegetation/erosion nexus aims to deepen our understanding of current social and environmental dynamics and shed light on them through a diachronic analysis of geographical spaces that are characteristic of contemporary territorial dynamics, providing a starting point for reflecting on the ecological transition of societies.

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