



Organizing anarchy: The food security–biodiversity–climate crisis and the genesis of rural land use planning in the developing world



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ABSTRACT

Shortfalls in global food production, coupled with the growing visibility of climate change's disruptive effects, have underlined for many observers the importance of devoting rural lands to their 'optimal' use, where they can make maximal contributions to the global imperatives of feeding the human population and maintaining vital environmental services. In this context observers have endorsed rural land use planning as a way to insure that, at least in theory, lands get devoted to their best uses. In practice, land use planning in the developing world has resembled 'organized anarchy'. Small landholders with insecure land tenure, overseas investors seeking large land deals, NGOs representing indigenous peoples, government officials, and staff from international environmental NGOs and multilateral organizations have come together in strategic action fields to struggle over and sometimes negotiate land use plans for contested landscapes. These plans represent a strategic, spatially explicit response to the climate change–biodiversity–food security crisis.

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Introduction: the crisis and rural land use planning

As the magnitude of global environmental change has become clearer during the past decade and collective action to address the problem has fallen short of expectations, global change scientists have begun to rethink their research agendas. Going beyond the strict documentation of environmental changes, they now argue for a 'solutions oriented' research agenda (DeFries et al., 2012). This paper responds to this call through a study of rural land use planning in the developing world. Solutions to our environmental and economic problems will have to come in part from deliberate attempts to reshape the spatial organization of land uses so as to maximize both carbon sequestration and food production in multifunctional agricultural landscapes (Wilson, 2007). Because it is difficult, if not impossible, to sequester large volumes of carbon on lands devoted to producing large volumes of foodstuffs, it becomes important to accomplish these ends with limited amounts of land devoted to each activity. This imperative implies rural land use planning to insure that lands are devoted to their 'best' use.

What is land use planning? A land use plan expresses a vision of the future, of how a community wants to look after continued territorial development. When planners assess the potential of different land uses with the intention of selecting 'the best land use options' for the scrutinized tracts of land (FAO, 1993, quoted in Lestrelin et al., 2012, p. 1), they create land use plans. As this definition suggests, land use planners assume that optimal land uses exist for particular pieces of land. An ensemble of optimally located land uses should in theory have a beneficial collective effect. Proponents of one plan may desire a particular land use for their tract of land, but they share a growing concern for a larger landscape because they understand that they will not fully capitalize on the use of their own land if the owners of other, adjacent tracts of land make sub-optimal use of their lands (Molotch, 1976, pp. 310–311; Rudel, 1989). As Jon Elster put it (1982, p. 464), "the reward of each depends on the choice of all".

During the 20th century, most land use planners focused on arranging urban land uses in optimal ways. During the past decade, the language of land use planning has become much more evident in discussions about rural land uses and the global food security–biodiversity–climate change predicament. The world's farmers want to increase agricultural production at the same time that policymakers want to see increased amounts of carbon sequestered on these lands (Foley et al., 2011). People have articulated these differing agendas for rural lands at the same time that the extent of land available for agricultural expansion seems more limited than previously thought (Lambin et al., 2013).

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Although some synergies between different land uses are possible (Tscharrntke et al., 2012), the same tract of land cannot simultaneously maximize food production, sequester carbon in long standing forests, and preserve biodiversity. Under these circumstances observers have begun talking about ‘trade-offs’. Reforesting some lands with an accompanying loss in agricultural production in order to increase carbon sequestration becomes tenable only if agricultural intensification occurs on other lands with likely declines in biodiversity (West et al., 2010; Koh and Ghazoul, 2010). To extract maximum value from the tradeoffs, analysts try to identify optimal uses for tracts of lands. “Optimal” in this usage refers not only to material outcomes like the size of a harvest but also to the values, norms and interests of the affected peoples. They and the planners define these optima through political processes.

Land change scientists have made substantial progress in recent years in outlining the components that would inform decisions about optimal land uses. Researchers have learned how to calculate the value of the ecosystem services generated in a place (Nelson et al., 2009; Chan et al., 2006). With agricultural land use optima in mind, researchers at the International Institute for Applied Systems Analysis (IIASA) constructed a GAEZ (Global Agro-Ecological Zoning) GIS (Geographic Information System) from a vast array of data.¹ The GAEZ uses largely ecological variables such as soil quality, length of growing seasons, and precipitation to divide the world into agro-ecological zones. In effect it identifies bundles of agricultural uses with highest yields or profits for parcels of land. Planners could use the GAEZ to create a global land use plan. Investors could use the GAEZ to identify potential sites for large-scale land acquisitions (Deininger and Byerlee, 2011).

While the search for spatial arrangements that would promote conservation and meet food production objectives has never seemed more urgent, research about the institutional arrangements that would achieve these objectives is hard to find (Mastrangelo and Gavin, 2012; Foley et al., 2011). The circumstances would seem to call for a kind of *strategic* land use planning in which collectivities articulate visions, elaborate strategies, and mobilize an array of resources to achieve a range of common land use purposes, from carbon sequestration and other ecosystem services to food production (Albrechts, 2004).

The rational process depicted here departs significantly from the actual practice of land use planning. There is an irreducible element of anarchy in land use planning. In most places the initiative in changing land uses resides with developers who propose and often withdraw their proposals without warning. Participants in deliberations about land use often disagree, and the less powerful stakeholders frequently do not get a seat at the table where decisions get made. Sometimes the conflicts drag on interminably. Competing items on the agendas of influential participants take precedence over the completion of a plan. All of these elements can be found in ‘garbage can models’ that describe organizational behavior as ‘organized anarchy’ (Cohen et al., 1972).

This depiction of land use planning applies with special emphasis to rural land use planning in developing countries. In these settings, where the organizing authority of states tends to be weak (Migdal, 1988), land use planning is anarchical, but even here it contains organizing elements that recur across diverse settings in different biomes and societies. Here we describe one recent organizing element, an empirical link between an increase in land use planning and attempts to address the climate change–biodiversity–food security crisis.

The argument focusses on strategic action fields that have emerged to address issues raised by the food

security–biodiversity–climate crisis and do so largely through rural land use planning. A strategic action field is a ‘meso-level social order’ that develops out of recurring interactions between interested parties as they seek advantages over one another in contests for control over resources (Fligstein and MacAdam, 2011). These fields have emerged as conflicts over natural resources have increased and intensified, in part in response to the food security–biodiversity–climate change crisis. The fields have become vehicles through which interested parties have assembled land use plans for rural districts in the developing world.

The argument takes a comparative historical form. First, we establish an empirical baseline for land use planning through brief descriptions of historically prevalent practices in Europe, North America, and the developing world. Then we describe recent changes in land use planning in the developing world, where the spread of the new strategic action fields has been most evident. The paper concludes with a discussion of two salient elements of rural land use planning in the developing world, the emergence of trans-scalar land use planning and the growing salience of the language of ‘trade offs’ in discussions about land use. By ‘trans-scalar land use planning’, we mean a planning process that incorporates through representatives the views of people living far from the affected area as well the views of people who live in and around the affected areas. We contend that these institutional changes derive, to an appreciable degree, from responses to the climate change–biodiversity–food security crisis.

Rural land use planning around the world: regional patterns

To appreciate recent changes in rural land use planning, observers need a baseline of previous patterns. The paragraphs below provide brief summaries of the prevalent patterns of rural land use planning in both developed and developing countries during the late 20th century. As illustrated in Fig. 1, some of the largest differences in the patterns of planning stem from the geographical scale at which planning has typically occurred in a region. This feature of the planning process is particularly important to note because, as documented below, the participants in the recently adopted planning processes think and operate at different scales, some of which can only be understood in terms of the climate change–biodiversity–food security crisis.

Europe

European land use planning policies generally lodge most authority in local planning bodies that work within constraints set by national policies (Albrechts, 2004). Municipalities establish land use regulations, but they must conform to national land use policies that lay out general priorities like the preservation of agricultural land uses. National level enabling legislation (e.g. the Town and Country Planning Act of 1954 in the United Kingdom) establishes constraints on local decisions about land use (Cullingworth and Nadin, 2006). Despite the multiplicity of actors involved in planning and its implementation, the initiative for changes in land use still resides with the owners of land, so changes in landscapes occur in autonomous ways that prevent the full realization of land use plans (Antrop, 2005).

European planners have placed a priority on agricultural land uses. They prioritized agricultural land uses shortly after World War II, first out of a longstanding concern with food security, later for regional development and poverty alleviation, and more recently for environmental, cultural and touristic purposes. In practice these plans have contributed in recent decades to the emergence of a multifunctional agriculture in Europe (Wilson, 2001). Pressure to convert agricultural land to urban uses in Europe has been low because slow population growth has reduced rates

¹ The URL for the GAEZ website is as follows: <http://www.iiasa.ac.at/Research/LUC/Research-GAEZ.Workshop/index.html>.

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