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Industrial plantations in southern Chile. Retrospective analysis and development of prospective scenarios spatially explicit (district of San Juan de la Costa - Chile)

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1. Introduction and/or general background

The first exotic species appeared in the district of San Juan de la Costa (Los Lagos Region - Chile) in the 1990s. Predominantly populated by indigenous Mapuche this district has the highest poverty rate in the country. The arrival of multinational timber generated many environmental problems such as degradation of water resources, the substitution of native forests, biodiversity loss, accompanied by rising unemployment and a rural exodus.

Chile has since the 1970's an exceptional growth of its forest sector fueled by high-yield industrial plantations. The politico-economic orientation taken by the Chilean State, including the promulgation of Decreto Ley 701 (1974) and repeated updating, was the keystone of this forest expansion. He allowed the landowners and pulp industries to build in a few years, a nationwide weighty forest heritage.

The plantations are mainly concentrated in the 8th Region of Bio Bio in the 10th Region de Los Lagos. However, their distribution is not uniform and there is a clear interregional imbalance. Given that business strategy is to expand their forest heritage, the latter actually focus on new areas suitable for afforestation, as the district of San Juan de la Costa.

2. Objectives/purpose and scope of the study or project

The aim of this research is to arrive then at a future vision of the land and, more specifically, about the possible influence of multinational forest land in a district where the recognition of indigenous lands is lacking.
To answer this question we follow the methodology of scenario building (Hatem, 1993; De Jouvenel, 1999; Houet et al., 2008), offering three contrasting scenarios in order to achieve a representative range of possible futures.

3. Methodology of the work, research or project

The construction phase scenarios go through a retrospective analysis of the dynamics of land across the municipality. To do this, we use three Landsat satellite images taken in 1986, 1999 and 2008. Analysis of changes in land use will occur in three stages, with (i) quantifying the losses and gains, the analysis (ii) of the spatial distribution of these changes, and (iii) trajectories of evolutions. This phase will be refined by the identification, characterization and weighing of many factors playing this expansion.
The spatial allocation of future dynamics will be made via a multi-criteria evaluation (MCE). This will locate areas suitable for establishment of monoculture that rankings of competency units of space (pixels or geographic features) (Paegelow, 2005)

<u>Three scenarios:</u>
The first scenario (MCST) is exploratory. This assumption is the continuity of policies to encourage reforestation with forest owners, however, by offering an alternative to exotic plantations to small owners. The growth is continuing.
Scenarios 2 (M2E) and 3 (M0P) are prescriptive and suggest future mixed. The first count on a land cover dominated mostly by industrial plantations, while the second, more idealistic, assumes no growth.

4. Analysis and/or results, conclusions

Exotic plantations occupy only a very small share of the communal area (1% in 1986 and 4.3% in 2008), unlike the native forests (respectively 69.2% and 54%). However over 90% of them are on the Piedmont, on lands accessible, to low slope, and where the property system favored the purchase of thousands of hectares by enterprises.
The trajectories of changes are indicative of many modifications, including loss of thousands of hectares of native forests for the benefit of exogenous plantations.
The multicriteria evaluation will provide key elements to understanding the future trends of development, based on past dynamics.

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