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# Estimating potential supply and demand of land in Galicia: a decision support tool for the Galician Land Bank

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Presentation of a cooperation agreement between the Consellería de Innovación e Industria, the Sociedade para o Desenvolvemento Comarcal, and the University of Santiago de Compostela: "Modelling current and future supply and demand of agricultural land in Galicia. Development and application in a geographic information system of a multi-criteria assessment in four Galician districts"

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## BACKGROUND INFORMATION ( I )

A large reduction of the number of farms in Galicia has taken place in the last 50 years, from about 430,000 in 1962 to 270,000 in 1999. Most of the farms that disappeared were small familiar farms.

Land previously used by the farms that ceased their activities has scarcely been transferred (leased / sold) to those farms that are still active in the present, but it has usually been afforested or simply abandoned.

This process has somewhat blocked the possibilities of active farms to increase the area of land they manage. Besides, other negative consequences of land abandonment (wildfires, loss of ecosystems, loss of cultural heritage...) appeared.

## BACKGROUND INFORMATION ( II )

The Land Bank of Galicia (Bantegal) was created to provide land owners with legal and financial security to overcome their unwillingness to lease land, and thus allow active farmers to increase the amount of land they manage.

The high number of land parcels and land owners in the region (both counted in the millions) does not make this task an easy one. Besides, land abandonment and farm closing are not homogeneously distributed over the region: both are spatially complex processes that take place at different scales (from the province to the individual plot).

There is a need for SPATIAL DECISION SUPPORT TOOLS to help Bantegal focus its attention in the areas where its actions are more necessary: i.e. where there is plenty of high quality, unused land (latent land supply), or where numerous farms urgently need to increase their area (land demand).

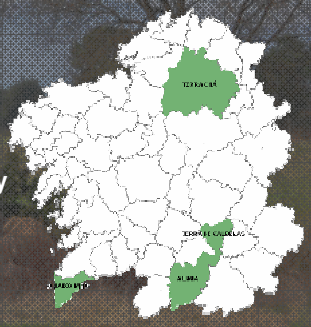
## THE PROJECT

The project (currently ongoing) is a pilot project aimed at estimating potential / latent land supply and land demand in 4 districts (groups of municipalities) at parish scale.

In other words, the project tries to make up a reasonable estimation of which parishes do concentrate the best (?) available land in each district, or in which ones there are more farms in need of land.

The project is divided in two separate modules:

1. Estimation of potential land supply
2. Estimation of land demand



## ESTIMATION OF (LATENT) LAND SUPPLY ( I )

The existence of a given amount of land that could be potentially used by agriculture is generally acknowledged by our scientific community. In particular, it has been hypothesized that there is a mismatch between the capability of land and the actual distribution of land use.

The project assumes that every plot fulfilling two conditions...

1. Suitable for agricultural use

2. Not supporting any economic activity (covered by shrubs)

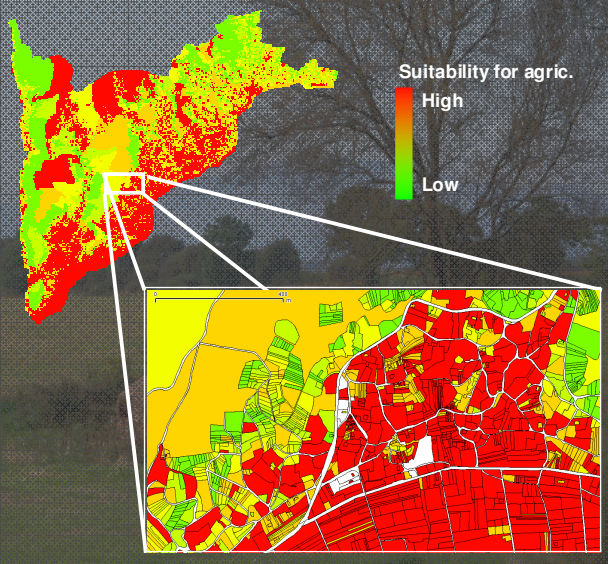
...should be considered as potential supply of agricultural land.

## ESTIMATION OF (LATENT) LAND SUPPLY ( II )

Suitability for agricultural use is estimated (at individual plot scale) using multi-criteria assessment. Several biophysical and structural variables are included in the model:

(Biophysical)
Slope
Aspect
Climate
Water availability
Soil's parent material

(Structural)
Area
Shape
Access



## ESTIMATION OF (LATENT) LAND SUPPLY ( III )

Land supply at parish level is done considering ONLY land plots listed as "shrubland" in a up-to-date land use map.

A preliminary indicator of the quantity AND quality of available land in each parish might be:

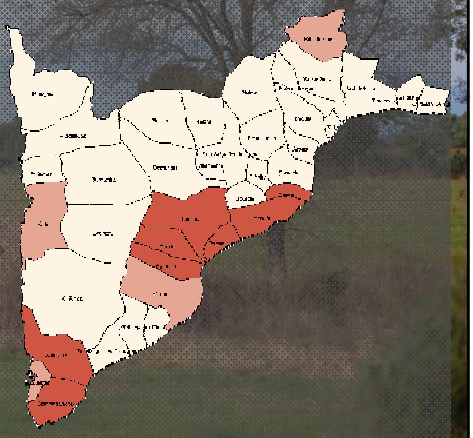
$$Est.Supply = \sum A_i S_i$$

where...

***Est.Supply*** is the estimated latent land supply for each parish

$A_i$ is the area of each land plot covered by shrubs in the parish

$S_i$ is the estimated suitability of each land plot



## ESTIMATION OF LAND DEMAND ( I )

Estimation of land demand is done by taking individual farms as the basic unit.

Previous scientific work suggests farms can be classified according to their demographic and economic viability:

a) Lack of demographic viability usually means the farm is due to disappear in a near future (regardless of economic viability). Their land can be expected to constitute future land supply.

b) Demographic viability AND lack of economic viability generally mean the farm is not large enough. Thus it can be expected to demand land

c) Demographic and economic viability mean the farm's future is not compromised. Nevertheless, some of these farms could also need more land depending on their actual size (e.g. very small farms at the edge of economic viability).

## ESTIMATION OF LAND DEMAND ( II )

Criteria used in the decision tree:

... regarding demographic viability:

Farmer is younger than 55... OR ...at least 1 close relative is known to work (full-time) in the farm.

... regarding economic viability:

Profit margin larger than 9 European Dimension Units (about €10,000)

... additional criteria (depending on the type of production):

Stocking density (animals / ha)
Farm area

## ESTIMATION OF LAND DEMAND ( III )

One of the most important problems is the scarcity of accurate and up-to-date information about individual farms.

The most recent agricultural census dates back to 1999.

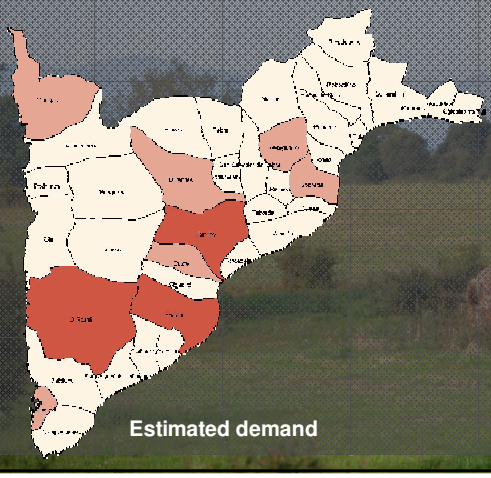
The official registers are not always updated and sometimes many farms are simply not listed.

As a consequence, some other sources (e.g. consultation with local experts) have to be explored sometimes...

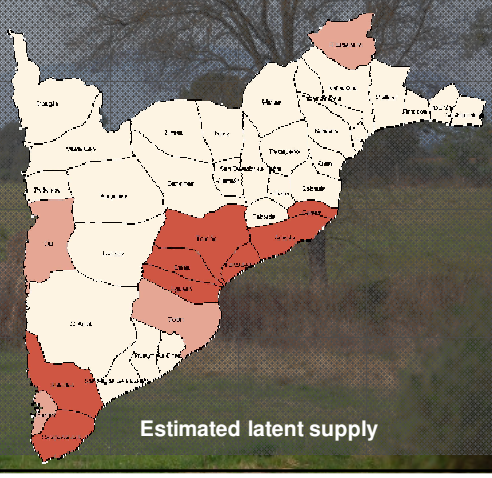
## CONCLUSIONS

The results at parish level are easily comparable, allowing to detect where unused land is more abundant or where there are more farms in need of land.

At the current stage of the project, though, the units of both maps are not equivalent.



Estimated demand



Estimated latent supply

Thank you for your attention

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**Project partners**

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