

## Production and/or conservation?

BEST-P: Bridging ecosystem services and territorial planning, a southern South American initiative

Budget: US\$698,995

Main agency: National Council of Scientific and Technical Research, Conicet, Argentina

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Countries: Argentina, Chile, United States, Mexico and Uruguay



<http://bestp.agro.uba.ar/>

### Abstract:

*This big project, delivered in three South American ecosystems analyses the bond between territorial arrangement plans and ecosystem services. Supported by the Inter-American Institute for Global Change Research (IAI), the research concludes that conservation is possible without reducing the productivity of the silvopastoral sector.*

It is not easy to convince those who have worked for decades in agricultural or livestock activities to transform their properties – or part of them – to provide conservation ecosystems. Likewise, it is hard to suggest that decision makers consider the ecosystem while working on territorial arrangement plans. We don't need “greenwash”, but instead to understand that, in the end, these conservation areas are useful, since they generate what researchers call *ecosystem services*.

This project brings together a team of 23 researchers including sociologists, anthropologists, ecologists, climatologists, agronomists and economists, who represent nine institutions from five countries of South America. They have worked for more than five years with a main goal: that the concept of ecosystem services – the goods and services that ecosystems provide – should be an essential component for land use planning in south of the continent.

For instance, the group has found that this region registers the highest rate of natural habitat transformation in the world.

Human beings modify land use according to a variety of factors, such as social, economic, cultural, historical, and political, which BEST-P has taken into account in its studies. Supported by the Inter-American Institute for Global Change Research (IAI), the studies have been centred in three ecosystems of five countries: the Grasslands of Rio de la Plata in Argentina and Uruguay; the dry-forests of the Gran Chaco in Argentina, Paraguay and Bolivia; and the Valdivian forests of south-central Chile.

For the Chacopampean plain, the network of researchers has focused its work on four ecosystem services: capture of organic carbon in the soil; recharge of groundwater; hydrological yield and avian biodiversity. The team has done this based on observations and simulations of biomass and the yield of soil organic carbon using the CENTURY model. “The simulations show that the replacement of woods for annual crops has generated a loss of 66mg of carbon per hectare of biomass in the surface, a loss of 40% of carbon in the highest soil layer, to a depth of 1m,” the researchers said. “This loss of soil carbon has affected negatively ecosystem services such as weather and regulation of soil drainage, as well as erosion protection.”

A key problem is deforestation of the Argentinian Chaco, as more than a half of it is illegal. The researchers conclude that the lack of instruments to quantify the damage caused hampers efforts to constrain this process. This has consequently decreased what ecosystem services can offer, compromising the sustainability of agricultural production.

The fieldwork measurements showed that in the semiarid Chaco forest patches have a positive effect on drainage of agricultural parcels. By expanding the results, they concluded that if producers decide to preserve the remnant of forest that they still have in their properties, in some areas of southern South America “they can improve their conservation results by 30–50% without significantly reducing productivity”.

The team also studied and analysed other aspects of ecosystems, such as climate regulation, trace gas emissions and the kind and distribution of habitats. In some of them, they analysed the recovery potential of ecosystem services through the restoration of ecosystems and landscapes that have been impaired or degraded.

The book *The place of nature in decision-making: Ecosystem services and rural territorial arrangements* has been produced as a consequence of the projects carried out by BEST-P researchers. It is a valid tool to combine conservation of ecosystems with development of the studied rural areas, useful for public policy and relevant for other regions of the continent. The book emphasised that, in order to understand the territory, it is not only necessary to understand “the ‘current picture’ but also the historical trajectory of the human and natural dimension”.

Thus, ideal land use planning achieves a greater offering of goods and services, or effectiveness, and a fairer distribution of them, or equity. In this last aspect, the researchers concluded that, for instance, due to land-use change during the past 15 years the aboriginal communities of Chaco have lost more than 25% of their subsistence resources. “Territorial disputes, motivated by land-use changes,” said the researchers

“have affected the basic human rights of peasants and indigenous people.” In addition, they concluded that “throughout southern South America, the costs and benefits of this land transformation for the different stakeholders are poorly characterized, and the benefits are not available to the most vulnerable social sectors.”

Some of the results of the Project have affected the instances of decision-making, such as in the implementation of the Native Forest Law of Argentina. They have also been shared with local communities and landowners through workshops and training sessions. Twenty videos that show the findings of the project can be seen at the following link: [https://www.youtube.com/playlist?list=PLIhbZHvVRROQWcJeDO\\_MPU-cv68dJKNHB](https://www.youtube.com/playlist?list=PLIhbZHvVRROQWcJeDO_MPU-cv68dJKNHB).

In one of them, while speaking with a community that suffered because of land-use change, the principal investigator of the project, José Paruelo, said: “I do not know if we are going to find a solution, if we are going to solve the problem, but we will not stay still.”