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## Opinion: A new approach to agriculture is emerging in the world's tropical belt

**Options Summer 2019: Embrapa visiting scholar Mauricio Antonio Lopes writes about how policies informed by science are contributing to advances in Brazil's agricultural sector.**



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Brazil is the fifth largest country in the world with an extensive surface of continuous land, a large supply of fresh water, abundant solar energy, rich biodiversity, and a wide range of climatic conditions. Its experience in combining public policies and institutional and human development with science-based strategies, has allowed the country to promote agricultural innovation in a challenging tropical environment, thus achieving considerable diversification of its agricultural systems and making it one of the world's largest producers and exporters of food, animal feed, fibres, and renewable fuels. Apart from ensuring its own food security for years to come, Brazil's agricultural modernization has also had an impact on the country's energy security through its ethanol

production chain, which is considered a global model for efficient bioenergy production, distribution, and use.

Despite all its advances over the past 40 years, Brazil however still faces considerable challenges as the agricultural sector is increasingly under pressure to simultaneously focus on the economic, environmental, and social dimensions of sustainability. The UN 2030 agenda and the Sustainable Development Goals highlight the need for policies, science, and capacity building to advance the conservation of natural resources such as soil, water, forests, and biodiversity. In addition, countries are required to deal with global warming and its potential negative effects on food and environmental security – especially in the tropical belt.



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Responding to this reality, Brazil has launched several public policies to protect its biodiversity and water sources, and to lower carbon emissions through the promotion of sustainable agricultural practices and land use. The Brazilian Forest Code, for example, is a policy that ensures the protection of natural forests and water resources on private land. The Low Carbon Emission Agriculture Program is another innovative platform that aims to support the development and dissemination of technologies and agronomic practices directed at enhancing productivity and farm resilience while promoting

environmental preservation.

To support these policies, the Brazilian Agricultural Research Corporation (Embrapa) is currently leading the development of a systemic mode of farming that promotes the sustainable intensification of land use and the dissemination of low carbon emission technologies in large agricultural areas. Brazil has also intensified its collaboration with scientific research institutions like IIASA in order to increase the use of systems analysis tools to find the smartest ways to achieve sustainable agriculture and land management strategies that protect its natural resources.

The future indeed looks bright for the Brazilian agricultural sector, which is being further strengthened by new public-private partnerships to foster the adoption and upscaling of production systems integrating crops, livestock, and forestry. The design of innovative financing mechanisms, which is a current focus in the sector, will also be essential in fostering the adoption and dissemination of a new agricultural paradigm that could serve as a model for countries facing similar challenges.

### About the author

Mauricio Antonio Lopes is the former president of the Brazilian Agricultural Research Corporation (EMBRAPA) and an IIASA visiting scholar associated with the Ecosystems Services

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