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Title:

Agro-industry versus agroecology? Two macroeconomic scenarios for 2050 in Andhra Pradesh, India

Abstract:

It is no longer feasible to look at agricultural livelihoods, food, health and the management of natural resources in isolation. The 2030 Agenda for Sustainable Development stresses the urgent need to take concerted action and pursue policies directed at transformational change. It calls for a new agricultural approach to achieving multiple benefits to ensure sufficient, safe and nutritious food through a stable multifunctional landscape, while respecting human rights.

In India, agri-food systems are under increasing pressure to meet nutrition, health and poverty eradication targets while reversing the depletion of water tables, soil degradation, deforestation, and threats to agrobiodiversity (Patel et al., 2022). In addition, climate change impacts related to rising temperatures, increasing frequency of extreme weather events, shifts in precipitation and hydrology, will expose the country to increased vulnerability and threats.

Systemic challenges require systemic solutions. Ending poverty and achieving zero hunger, while ensuring inclusive growth and sustainably managing the planet's ecosystems in the context of climate change and loss of biodiversity, will only be possible through holistic and integrated approaches for a change of sociotechnical regime (Geels and Schot, 2007; Dorin, 2017).

In 2019, [RySS](#) (Government of Andhra Pradesh, India), [Cirad/Cired](#) (France) and [FAO](#) (Italy) initiated the collective foresight study "[AgroEco2050](#)". This foresight was based on the knowledge, expertise and visions of a multistakeholder group that met, worked and debated together in India from 2020 to 2022, with the support of the retro-prospective numeric and interactive model "Agribiom" (Dorin and Joly, 2020) developed and customized for the states of the Indian Union to study their past and possible future structural transformations (1960s-2050).

The AgroEco2050 group studied past and possible future evolutions of various dimensions of the agri-food system (population, land use, employment, total and sectoral value-added, land and labour productivity, income inequality...) and quantified two macroeconomic scenarios for 2050 for Andhra Pradesh (AP), a State of South India with 53 million inhabitants and 9.3 million farmers in 2020. One scenario focuses on intensification of the industrial food and agriculture model (IA) which is currently dominant in India and worldwide, and the other on a full agroecological transition (AE) through "Andhra Pradesh Community-managed Natural Farming" (APCNF; Dorin, 2022; Duddigan et al., 2023).

The AgroEco2050 collective foresight shows that in Andhra Pradesh by 2050, compared to the IA scenario, natural farming could feed more and much better the population, with much less impacts on ecosystems, soil regeneration, less unemployment, higher farmer income and well-being, and

lower social and policy costs than today if policies support this full agroecological transition instead of industrial food and agriculture.

A forthcoming book (Dorin et al., 2024) will present in details the method and results of this participatory foresight exercise which combines quantitative and qualitative approaches, expertise and knowledge to help societies and their governments to better choose the future world in which they would like to live and work.

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