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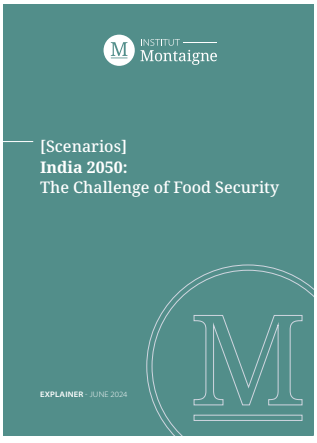
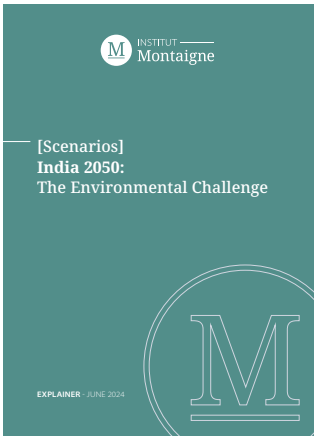
[Scenarios] India 2050: Facing New Challenges





How can France and Europe fully capitalize on the "Indian moment" that is shaping the 21st century? Both are key players in India's pursuit of a balanced global power dynamic, as India will remain committed to diversifying its partnerships.

India is far from being absent from our foreign policy priorities: France and India signed a strategic partnership as early as 1998, and the EU-India relationship was upgraded to the same status in 2004. Despite the country's robust economic growth – 8.4% in the last quarter of 2023 – the economic relationship between Europe and India remains underwhelming: the latter is only the EU's tenth-largest trading partner, accounting for just 2.1% of European exports of goods.

The term "untapped potential" frequently describes our relationship with India. Yet European companies are well-positioned to meet some of India's needs. The country, despite its macroeconomic successes, still faces classic development challenges indeed. Christophe Jaffrelot and his co-authors delve into these issues in two insightful papers on India's food security and environmental concerns (water stress, air pollution, and deforestation).

These papers provide forward-looking scenarios up to 2050 – with agriculture and the environment being particularly suited to twenty-five-year horizon projections –, outlining concrete avenues for reflection and opportunities for French and European businesses in specific sectors.

The coming years are a prime opportunity for France to enhance its economic ties with India and establish a robust agenda for collaboration in environmental and agri-food sectors. For both France and Europe, it will be a matter of overcoming bottlenecks and points of tension (notably divergences in the context of the EU-India FTA negotiations, especially as an FTA could be beneficial to the food and environmental issues that India wishes to address today), and of taking advantage of the many steps forward in the Europe-India agenda (solar, hydrogen, wind power, resilience of European industrial supply chains), in order to base the relationship on a positive and tangible dynamic.

By contributing to the debate on the conditions for India's success, each paper provides input for a revitalized France-India and Europe-India dialogue. Full versions of these papers can be accessed on Institut Montaigne's website.

The Challenge of Food Security

With 1.4 billion inhabitants, India has become the most populated country in the world since the beginning of 2023. Regardless of demographic scenarios, its population will continue to grow for another quarter-century. Will the country be able to feed millions of additional people? How can it fight against the mass undernutrition that persists despite Indian macroeconomic successes?

The legacy of the Green Revolution. The case of India reveals a significant contradiction: while cereal production has significantly increased (+2.5% per year on average from 1950 to 2007), encouraging exports, 16% of the Indian population is undernourished, one-third of Indian children under five are underweight, and 67% of children suffer from anemia. How can this paradox be explained? During the Green Revolution, priority was given to rice, wheat, and sugarcane at the expense of other protein-rich crops. It is mainly due to a lack of a sufficiently protein-rich diet and an inadequate inclusion of fruits, vegetables, and legumes that India is slipping in international rankings. Although the government is aware of the problem, the solutions implemented have so far failed to achieve decisive results.

Issues of availability and accessibility. 40% of agricultural products are reportedly lost in India due to poor storage, preservation, and transportation conditions. 1.3 billion tons of perishable food products disappear due to the lack of an efficient cold chain. The persistence of malnutrition in India is also explained by mass rural poverty, fueled by stagnating agricultural yields, particularly due to soil impoverishment (from the rise of monocultures and excessive pesticide use), competition for land between industry and farmers, and soil degradation (erosion, salinization). Furthermore, the decline in public investment in the agricultural sector, the general inflation rate, and a trend towards declining industrial labor do not help.

Five priority action areas. Based on two complementary sources, this paper proposes a statistical exercise showing the trajectories that population and production curves are likely to follow in India until 2050, through several scenarios. It appears that no category of agricultural output (cereals, pulses, vegetables, milk, eggs) is expected to grow significantly enough to contribute to the fight against undernutrition - without taking into account the potential drop in production due to accelerating climate change, which India seems already affected by. The authors outline five action areas in which India is already active, which will continue to be at the core of its priorities, and to which its French and European partners can make a positive contribution.

1. Productions

- India is making diversification efforts to escape the trap of monocultures.
- Debates in India also focus on banning the export of pulses and reducing rural inequalities.
- Some Indian states are reviving traditional forms of rainwater harvesting to better develop irrigation.
- The question of limiting livestock growth is also being raised.

2. Product availability

- Upgrading the cold chain in domains where it remains underdeveloped would require only limited investment, allowing better product preservation through cold rooms and refrigerated trucks. Foreign companies could play a role here.
- The availability of pulses for local consumers also depends on whether export priority is given.

3. Access to food

- To reduce mass poverty, some public policy solutions have already proven effective in the past, such as rural employment guarantee programs (MGNREGA).
- The Indian Public Distribution System (PDS) could be optimized by adding millets, pulses, fruits, and vegetables to food rations.
- The "mid-day meals" distributed in schools have significantly improved children's nutrition. Expanding this program nationwide would amplify its results.
- To restore purchasing power to the countryside, the "minimum support prices" set by the government are a convenient solution.

4. Agricultural market reform

- Following the 2020-2021 Indian farmers' protests, which centered around concerns of regulation and price guarantees, stakeholders are naturally being called upon to revisit the agricultural sector reform together.
- If India chose to limit its exports of pulses, rice, and meat and lower its tariffs on imports of commodities it needs most, international aid, which India currently refuses, could compensate for this loss of income - particularly from the World Food Programme.

5. The Indian Brand of Agroecology: the long-term solution

- The experience of Andhra Pradesh, a state that has pioneered natural farming, is an insightful case. The paper concludes with an overview of the observed and expected benefits of this type of agriculture.

The Environmental Challenge

In 2022, India became the third largest global carbon emitter after China and the United States, and its share of global emissions will continue to grow. Beyond India's contribution to climate change, the stakes are high for the rest of the world, considering the migratory impact that an ecological crisis depriving the Indian economy of vital resources could have.

This paper addresses the Indian environmental issue through three challenges: water stress, air pollution, and deforestation. It outlines the current state of each issue, examines the public policies New Delhi has enacted to address them, and includes a forward-looking analysis up to the middle of the century. The findings offer concrete ideas with potential opportunities for foreign businesses. France and Europe, by positioning themselves as privileged partners, can contribute to India's search for innovative solutions in these areas.

Water Crisis: Combining Technological Innovations and Public Policy Adaptation

India ranks thirteenth globally among nations most affected by water shortages, and 200,000 Indians die each year due to lack of access to safe drinking water. Monsoon disturbances, rising average annual temperatures, depletion of groundwater, lowering dam levels, infrastructure shortages, and poor consumer supply management are all factors that make water a scarce resource in India. Additionally, 70% of the

country's surface water is unfit for consumption. In the coming years, the risk that India will be the most severely affected by water shortages is very high due to this combination of factors.

For the past fifteen years, the Indian government has been multiplying programs and initiatives to address water stress. The most relevant solutions, some of which have already been adopted, combine technical innovations and changes in public policies or behaviors. In the water sector, India could rely more on the expertise and know-how of French and European companies.

- Efforts to limit leaks in urban water distribution networks are expected to intensify.
- Initiatives regarding desalination of seawater are the subject of significant debates in India. Despite their potential, some projects face strong criticism from Indian environmental NGOs, who highlight how energy-intensive these desalination plants are – often relying on fossil fuels – and who raise the issue of solid discharges into the sea. Environmentalists opposed to desalination advocate for the exploration of more sustainable alternatives, such as rainwater harvesting and the rejuvenation of existing water bodies.
- Several Indian urban planners advocate for the de-artificialization of soils to transform major cities into "sponge cities".
- Wastewater treatment constitutes a priority for many public actors in India, from cities to states. The impact of these initiatives could be amplified with better use of international funding to expand access to the most effective technologies.

Air Crisis: Opting for Simple Adjustments

In 2019, ambient and indoor air pollution caused 1.7 million premature deaths in India. The deterioration of air quality in India coincides with the increase in greenhouse gas emissions, explained in particular by the pace of economic growth and an ever-increasing reliance on coal. Despite the stated ambitions in renewable energy, per capita CO_2 emissions from coal increased by 29% between 2016 and 2023. How can this challenge be overcome?

- Solar energy, identified as a priority in France-India relations, with both countries founding the International Solar Alliance in 2015, will continue to be a key area for Indian energy policy. Beyond the proliferation of solar farms, European companies could position themselves on network maintenance and particularly on connecting local production sites in isolated areas.
- The Indian government is striving to equip building roofs with solar panels, aware that there remains considerable room for improvement in this area.
- Some voices in India are calling for improved energy efficiency in production sites, modernization of coal plants, and improved transmission devices to consumption sites.
- Greening facades and roofs is gaining new importance to reduce India's energy-intensive air conditioning needs.
- Developing energy storage capacities (solar and wind energy), especially batteries, holds promise; in this area, European companies could invest more to contribute to Indian development.

Forest Crisis: Prioritizing Forests Again

In a prospective study, the Indian government determined that 45% to 64% of the country's forests will be affected by climate change and rising temperatures by 2030. India ranks second globally in deforestation rates, behind Brazil. Several factors explain this structural trend: population pressure, urbanization, land conversion for agricultural purposes, the opening of new mines, frequent fires, and warmer weather conditions. Furthermore, India's urban population, which grew from 222 million to 508 million between 1990 and 2022, is expected to reach 600 million by 2030. Additionally, laws requiring consideration of the ecological impact of mining projects or factory construction are generally not enforced.

India aims to acquire the technical means to measure the extent of forest cover and assess its density. Cooperation in space observation (satellite) with the best-equipped operators could be initiated with European partners.