

Scenario Planning to Guide Long-Term Investments in Agricultural Science and Technology in India

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SYNOPSIS

An Indian Council for Agricultural Research (ICAR) and World Bank team engaged in scenario planning from September 2004 to June 2006 to assess critical policy and institutional challenges for agriculture and corresponding reforms that would enable the research system to meet them. ICAR management evaluated the likely benefits and impact of alternative reform scenarios and determined which specific reforms to support through the National Agricultural Innovation Project (NAIP). This process increased the government's ownership of the reforms and its commitment to implement them. This profile summarizes key elements of the process and its findings. The cost of the scenario planning in India involved several components: external facilitators (US\$100,000); preparatory studies (US\$30,000); workshops (US\$60,000); peer reviewing (US\$5,000); and dissemination (US\$20,000). Funding came from the budget for preparing NAIP (US\$155,000) and a US\$60,000 grant from the World Bank's Agricultural and Rural Development Department (ARD) to support knowledge generation. The investment of staff time was also substantial for ICAR and the World Bank, on the order of 30 weeks for each institution.

BACKGROUND AND CONTEXT

To address the challenges facing agriculture in India and consolidate the gains under the completed National Agricultural Technology Project, the Government of India and the World Bank agreed to undertake a new National Agricultural Innovation Project (NAIP) (see IAP 2 in module 4). In preparing the project, it became clear that many uncertainties faced agriculture and agricultural science and technology in India. For example, how would global warming affect the production characteristics of Indian agriculture?

How would the technology system embrace the growing importance of the private sector? Would Indian agriculture remain competitive in the global marketplace? What would be the fate of the small-scale farmer?

Scenario planning may help address such questions

Scenario planning is a structured process of thinking about and anticipating the future that helps to break the mindset that the future will be a continuation of the past (van der Heijden 1996). It entails the development and collective analysis of a set of scenarios, which are narratives of alternative environments that show how different interpretations of driving forces can lead to different plausible futures (Ogilvy and Schwartz 1998; van der Heijden 1996).

PROJECT OBJECTIVES AND DESCRIPTION

Scenario planning was used to explore the uncertainties surrounding Indian agriculture and identify the key decisions that would need to be taken to ensure that India's agricultural technology system was prepared for the future. The assessment included a wide range of stakeholders and enabled participants to develop a shared perspective on a future that was not necessarily a continuation of the past. The scenario development and analysis were conducted in parallel with the design of NAIP.

For these parallel efforts to succeed, they required the participation of high-level officials, farm leaders, senior leaders from the public and the private sectors, NGO leaders, donor representatives, experts on agricultural development, and some "remarkable people" (a term used in the scenario planning literature to describe lateral thinkers). The process was managed jointly by the regionally and centrally based staff of the World Bank's ARD. An Indian

co-leader was invited, and experienced scenario planning experts facilitated the process, which was organized around seven information-gathering and knowledge-sharing steps:

1. **Identify driving forces for future change**, taking into consideration political conditions, economic developments, social developments, environmental trends, and technological changes.
2. **Identify predetermined factors**. Which future developments will take place in any scenario?
3. **Identify critical uncertainties**—in other words, critical areas in which the future is uncertain.
4. **Develop scenario plots**. A scenario is defined by a combination of two critical uncertainties, drawn out and shown as axes on which the scenarios are plotted. Then a comprehensive description of how the future will look under this scenario is developed. These futures must be plausible.
5. **Consult with those having relevant expertise**. The scenarios are presented to a large number of people who have relevant expertise; their comments are collected and incorporated in the scenarios. Consultation helps to identify knowledge gaps and guides decisions on whether and what additional knowledge must be gathered.
6. **Assess the implications of different scenarios**. The best possible responses of the client organizations to each of the plausible future scenarios are assessed.
7. **Compare possible responses to the scenarios**. Two elements in the comparison require special attention. First, there are those actions that can be found in all responses and tend to be low risk. Second, there are the responses that differ strongly among scenarios. Responses in these

fields may require further assessment to understand how the impact of change on these variables can be managed.

As hoped, the scenario project co-evolved with the NAIP project (table 7.11), enabling NAIP to benefit from the understanding emerging through the scenario work. In this way, the NAIP model was tested in various “environmental” conditions specified by the scenarios—a process sometimes referred to as “wind tunneling.”

The main steps included the following:

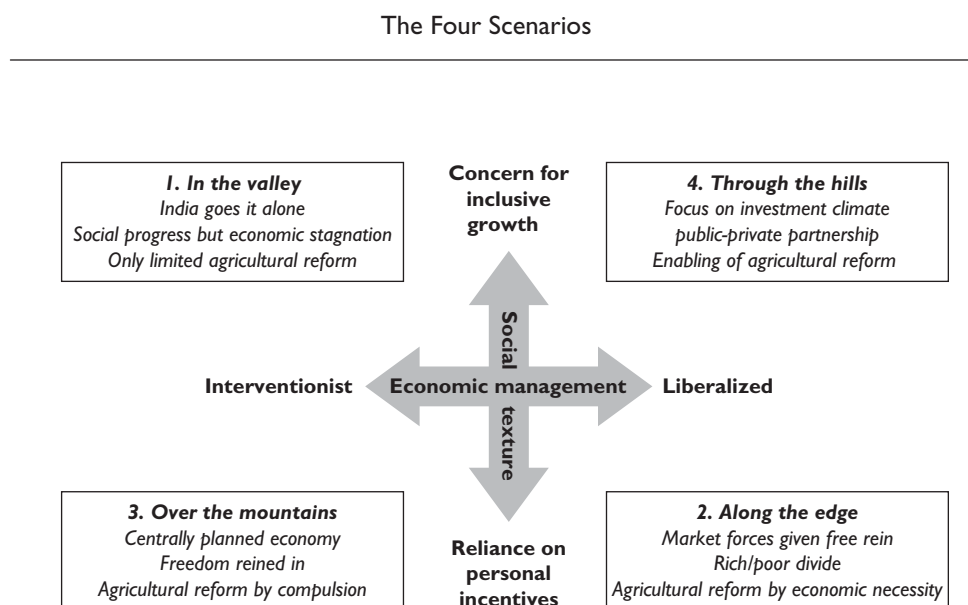
1. **An initial workshop** at World Bank headquarters in Washington, DC, to introduce the scenario planning concept and process and to receive wider buy-in among staff for the process that would unfold (figure 7.3).
2. **Interviews with “remarkable people”** to explore the issues and concerns for future agricultural development in India (van der Heijden 1996; box 7.24).
3. **A workshop** in India to launch the process and obtain input from participants.
4. **A scenario analysis and design workshop** to identify the key scenarios that would be developed (following the steps described earlier to identify the critical elements of each scenario: driving forces, predetermined factors, and main uncertainties). The scenario plots (figure 7.3) had two main dimensions. The first was *economic management*, which could be strongly market based and liberalized but also more government controlled and centrally led. The second was the *social fabric of the countryside and the country in general*, which

Table 7.11 Timing for Preparing the National Agricultural Innovation Project (NAIP) in Relation to Scenario Development

Timing	NAIP	Scenario project
September 2004		Internal planning workshop in the World Bank
April 2005	Start of project preparation	Scenario agenda workshop at Indian Council for Agricultural Research
July 2005	Draft Project Appraisal Document (PAD)	Scenario building workshop; development of first-generation scenarios
August 2005	Polished PAD	Research on the validity of first-generation scenarios
October 2005	Quality enhancement review	
December 2005	Project appraisal	
February 2006	Negotiations	Second-generation scenarios concluded and circulated for comments
April and June 2006	Board approval	Workshops in India and at the World Bank on the implications of the scenarios
July 2006	Project becomes effective and implementation begins	

Source: Rajalahti et al. 2006.

Figure 7.3 Final Scenario Plots Developed during the Scenario Design and Consultation Processes



Source: Rajalahti et al. 2006.

could be strong, with rural people well organized in villages that are able to take care of their problems, or weak, in which case the poor would be more marginalized. Using these two dimensions as the axes of a 2 x 2 matrix, 4 combinations emerged that can serve as perspectives on the future of Indian development. One of the combinations introduced a third dimension of rapid global warming.

5. **Finalization and presentation of the scenario storylines**, including the development of full scenario stories (see Rajalahti et al. 2006) and their validation.
6. **Scenario analysis results workshops** were organized to define the way forward in relation to NAIP and ICAR. The specific goal was to identify how the scenarios could help to identify which critical decisions needed to be made to maximize the future role and impact of India's technology system.

INNOVATIVE ELEMENT

Scenario planning was done to build consensus and elicit outside-the-box thinking among diverse stakeholders that traditionally did not engage with each other in science and policy discussions. The results were used for designing a long-term investment project in science and technology.

BENEFITS TO NAIP AND IMPLICATIONS FOR SCIENCE, TECHNOLOGY, AND INNOVATION

Scenario analysis contributed to the design of NAIP in many ways. The process truly engaged people in thinking outside their everyday domains and resulted in four very different but plausible scenarios. The process led ICAR to think about the issues beyond its own technical competence and to strengthen the realization that the world it serves requires new approaches, including social organization and institutional innovation.

The scenarios were considered very useful for envisioning long-term science and technology needs. Scenario development clearly revealed two major needs: to work on institutional arrangements for R&D (farmer organizations, sector boards, cooperatives) and fully explore the potential of nonfarm rural employment.

The scenario process also helped the project design team to define the scope of NAIP's components, particularly the institutional development needed for the AIS to evolve. It highlighted the importance of enhancing the capacity for dialogue and interacting with other stakeholders in the innovation system. Flexibility, rather than the pursuit of one reform strategy, was considered a key trait for a successful organization in a rapidly changing world.

The client organizations used the national scenarios to strengthen their visioning capacity and strategy development

Box 7.24 Key Issues Raised by “Remarkable People”—Including Opinion Leaders and Policy Makers—in the Scenario Development Process, India

The key question posed to the interviewees was, “When thinking of the future of Indian agriculture, what keeps you awake at night?” Four main themes emerged from these interviews:

- Will there be enough water for future generations? How can water be managed sustainably?
- What will drive Indian agriculture in the future: government or the market? What is the right balance?
- How will rural communities change? How fast will rural–urban migration proceed, and what is the future of small-scale farming?
- How can rural stakeholders voice their views—women, farmers, the private sector?

Source: Rajalahti et al. 2006.

at the level of specific regions and products, such as rice, dairy products, and medicinal plants. For this purpose, groups of stakeholders were asked to develop the national scenarios for the product or region of their interest.

The national competitive fund for research consortiums, managed by ICAR, subsequently was aligned with the issues identified by the scenarios. These consortiums have been the main means of reforming India’s agricultural research system and enabling it to move toward a more demand-driven, multistakeholder approach in addressing innovation needs. See module 4, IAP 2.

LESSONS LEARNED AND ISSUES FOR WIDER APPLICATION

Scenarios provided a neutral space for building consensus about critical decisions surrounding the future role and impact of India’s technology system. The following recommendations, suggested adjustments, and limitations should be kept in mind by those engaged in a similar exercise:

- **Adapt scenario analysis to specific planning tasks**, such as the development of a country assistance strategy, sector strategy, project, or regional plans. Applying the analysis to larger, global issues is far more challenging.
- **Implement the scenario process ahead of project preparation** because scenario analysis requires a significant time commitment, particularly for consultation and validation.
- **Allocate sufficient time and resources** for clients to understand and come to own the process.
- **Form a multidisciplinary scenario team, led by an experienced scenario leader(s).**
- **Draw participants from many disciplines and representing a range of views** (India’s scenario-building process, for example, included people from outside the agricultural sector). It is also essential to include participants representing the groups that the process aims to influence.
- **Pay close attention to the following:** the need for a full-time manager to oversee the process; the availability of research capacity with adequate resources; the need to manage and guide research performed by third-party institutes; the coordination required to operate a virtual team over long distances; and managing political sensitivities.