

# Water and Agriculture

## Implications for Development and Growth

Essays from the CSIS and SAIS Year of Water Conference

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## 1

# WATER, AGRICULTURE, AND DEVELOPMENT

## THE QUALITY OF ADVICE?

John Briscoe

Much has been written over the past year about the food crisis. Institutions like the International Food Policy Research Institute and the World Bank<sup>1</sup> have done detailed global analyses of trends of demand and supply. It is not my pretension—nor my comparative advantage—to repeat or summarize these studies. Rather, I will give a personal view of the challenges of water, agriculture, and development, based in general on four decades of experience, but more particularly on three recent engagements.

The first recent engagement was leading a struggle to get the World Bank to reengage with infrastructure and the associated effort to make sure that the voices of developing countries—rather than the voices of the donor community and northern nongovernmental organizations (NGOs)—decide on priorities. The second recent engagement was in the field, with the daunting water and agriculture challenges faced by India, Pakistan, and Bangladesh. Recent engagement three was in Brazil, where as the World Bank's country director, *inter alia*, it was my fate to try to explain to the country in the world that has undoubtedly done the best in tropical agriculture over the last 30 years why the donors and NGOs who had failed the developing world in these areas were now confidently lecturing Brazil about how it should manage its agricultural matters.<sup>2</sup> Finally I pull together some of these strands, outlining some of the principal water and agriculture challenges facing the world and suggesting ways in which the sea changes in global economic balances might affect the responses to these challenges.

## Lessons Learned before Joining the World Bank

The “recent engagements” were preceded by decades of work on development. Of the many marks left by these prior engagements, two particularly affected the perspective I brought to policy and implementation debates in the World Bank.

The first of these came from my experience, in the late 1970s, working as a civil servant in the government of Samora Machel's newly independent Mozambique. I was one of a legion of Marx-

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1. World Bank, *World Development Report 2008: Agriculture for Development* (Washington, D.C.: World Bank, 2008), <http://www.worldbank.org/wdr2008>.

2. A personal note: During my years at the World Bank, one of the most galling of experiences was to listen to a series of ex-Bank managers and staffers give advice about how the Bank should change and reform, when they had said and done nothing on those issues while they were in the Bank. Although I fail many consistency tests, this is not one of them—the views I express in this chapter are consistent with those that I expressed, on these issues and on others including many more controversial, during my tenure in the Bank. In a few cases (Sebastian Mallaby, *The World's Banker: A Story of Failed States, Financial Crises, and the Wealth and Poverty of Nations* [New York: Penguin, 2006], and World Bank, *Brazil Country Partnership Strategy 2008–2011* [Washington, D.C.: World Bank, 2007]), my views made some difference.

ists who descended from all corners of the earth to help build the “new man” in Africa. We made many sacrifices—monetary and, for some, their families and lives—but were compensated by the heady prospect of molding the policies of a new and emblematic country in our image of what the world should be. The result was a disaster of what Lenin called “infantile leftism.” And when the price came to be paid, it was not we, with PhDs and passports in our pockets, who paid this price. It was the people of Mozambique, who suffered enormously. No one has searched his soul more deeply on such issues than the great Pakistani Akhter Hameed Khan. Reflecting on his role in the 1943 famine in Bengal, he noted:

Like most young men I was a pseudo-socialist and the prospect of puncturing bloated banias (merchants) pleased me. I considered it a great achievement when, in one fell swoop, I captured half a million maunds of rice from the banias of Bogra. . . . Shortly after, the price of rice rose from fifteen rupees to fifty rupees in the denuded Dacca markets. Thousands who lacked purchasing power perished. I understood that the Bogra operation, which had given me pleasure, was a crude blunder. It was childishly easy to destroy an old system. Subsequent experience proved that it was not so easy to build a new one.<sup>3</sup>

The second of these experiences was, coincidentally, in a part of Comilla District of Bangladesh where Akhter Hameed Khan had later developed his remarkable cooperative movement. Now it was I, another young pseudo-socialist, who railed against the proposed Asian Development Bank embankment around the island where I lived in the 1970s. The embankment would, my careful and objective analytics showed,<sup>4</sup> simply further strengthen the landed elite and impoverish the poor. Just as Akhter Hameed had lived to see things turn out otherwise, so too did I. When I returned to “my village” 20 years later,<sup>5</sup> I found that people’s lives were, indeed, transformed. Now there were flourishing markets where none had existed before, now there were three crops a year instead of one, and now a Bengali girl would expect to live 20 years longer than her mother just a generation earlier. And what, I asked the villagers whom I knew, were the reasons? No, not the much (and rightly) celebrated Grameen Bank and Bangladesh Rural Advancement Committee (BRAC) efforts, but infrastructure—roads and bridges and, above all, the embankment. Yes, it was true that the government had handled resettlement badly. Yes, it was true that the embankment had collapsed in the first year. Yes, it was true that there was a lot of corruption. But it was also true that this imperfect infrastructure had given large numbers of people the possibility of a productive life that had not existed before.

And what was the reaction of “the development community”? It included an energetic and colorful multimedia denunciation of the embankment by a major environmental NGO<sup>6</sup> and a politically correct poverty analysis by the World Bank,<sup>7</sup> the executive summary of which mentioned today’s development buzzwords (“education,” “health,” “microcredit,” and “NGOs”) 37 times, and infrastructure once.

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3. Akhter Hameed Khan, “A History of the Food Problem in East Pakistan,” Agricultural Development Council (New York: Agricultural Development Council, 1973).

4. John Briscoe, “Energy Use and Social Structure in a Bangladesh Village,” *Population and Development Review* 5, no. 4 (Population Council, December 1979), <http://www.jstor.org/pss/1971974>.

5. John Briscoe, “Two Decades of Change in a Bangladeshi Village,” *Economic and Political Weekly* (Bombay: Population Council, October 6, 2001).

6. Proshika, “In Quest of a Golden Dream,” 37-minute video (Dhaka, Bangladesh, 1992).

7. World Bank, *Bangladesh: From Counting the Poor to Making the Poor Count*, Report No. 17534-BD (Washington, D.C.: World Bank, 1998).

# Three Recent Engagements: Lessons Learned

## 1. Struggling to Put Infrastructure Back on the Development Agenda

“Development specialists” make a bewildering and constantly shifting array of recommendations for what developing countries need to do to grow their economies. A primary, primitive filter is seldom used: “Is the recommended path one that has been traveled by most countries that have developed?” The logical corollary follows: (1) if the recommended action is one taken by every country that has developed, then the burden of proof is fairly low, but (2) if the set of actions has never been taken by any country that has grown rich, then the burden of proof, presumably, should be set very high.

If one applied this filter to the dominant development agenda, at least two answers would emerge. First, consider the Millennium Development Goals (MDGs),<sup>8</sup> the lodestone of the development community for the last decade. The MDGs make no mention of employment, agriculture, infrastructure, or the rule of law but prioritize social goals that have historically been a consequence rather than a cause of economic development. One would imagine that the supporting proof for this “road never traveled before” would be extensive and persuasive. In fact, UN Declarations, emanating from the post-affluent perspective of the rich development donors, are offered as the substitute for analysis and proof.

Second, consider infrastructure. No country that is currently rich has become so without extensive investment in major infrastructure during its growth period. For this reason, the early focus of the World Bank was almost entirely on infrastructure. The uninitiated would imagine that there could never be a proposed development path that would not consider infrastructure to be a necessary (although certainly not sufficient) condition for growth. But the development world is often an Alice in Wonderland world. And thus it is perfectly normal for the development minister of, say, Norway or Switzerland (where industrialization was built on the back of cheap, renewable hydropower and where 80 percent of hydropower potential is long developed) to propound that she does not support the building of a hydropower plant in impoverished Ethiopia or Nepal, where development options are limited, where hydropower potential is vast and less than 1 percent developed. Or that she would support such investments only if they “met standards, such as the guidelines of the World Commission on Dams,” which were so stringent that they not only had never been met in the growth periods of currently rich countries, but could not be met, today, by any country, rich or poor.<sup>9</sup>

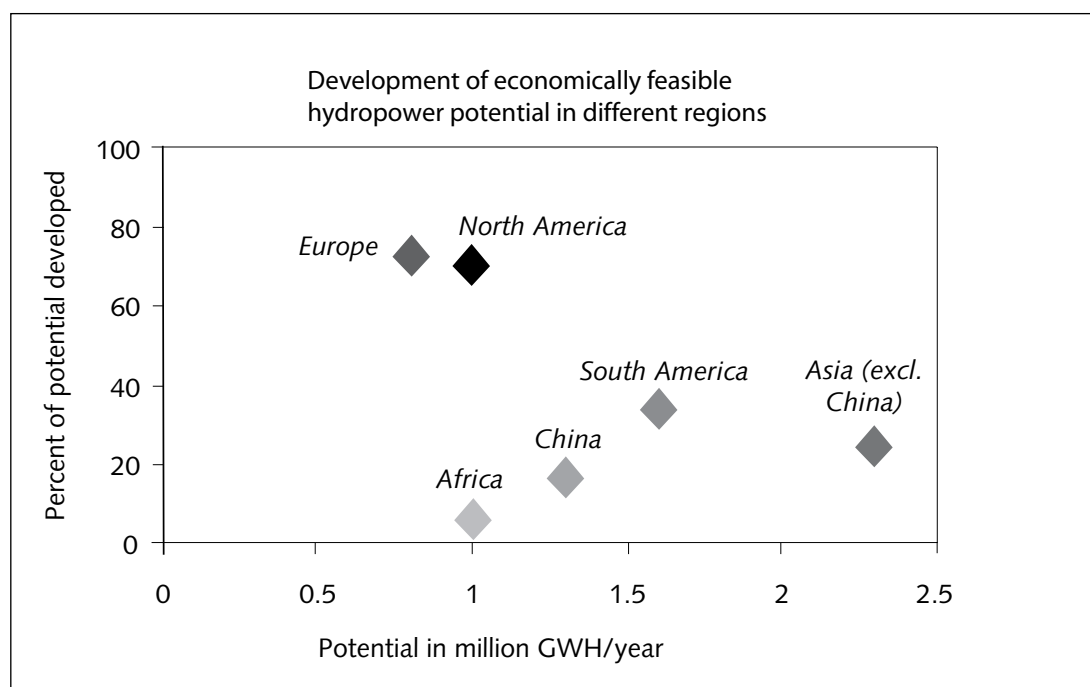
How did this surreal state of affairs come to pass? Basically because of two factors—first, the moral hazard inherent in the aid process and, second, the fact that single-issue, rich-country NGOs have become, in recent decades, a strident and prominent constituency in aid discussions. Within the World Bank—the bellwether institution for development philosophy—the consequences were dramatic. When he became World Bank president in 1995, James Wolfensohn wanted to

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8. United Nations (UN), *End Poverty 2015: Millennium Development Goals* (New York: UN, 2000), <http://www.un.org/millenniumgoals/bkgd.shtml>.

9. World Bank, *Water Resources Sector Strategy* (Washington, D.C.: World Bank, 2003); Ryo Fujikura and Mikiyasu Nakayama, “Perception gaps among stakeholders regarding the WCD guidelines,” *International Environmental Agreements: Politics, Law and Economics* 3 (2003): 43–57; Michael Fink and Anne Cramer, “Towards Implementation of the WCD Recommendations: Experiences and Reflections after 5 Years,” *Water Politics and Development Cooperation*, ed. W. Scheumann, S. Neubert, and M. Kipping (New York: Springer, 2008), 33–54.

**Figure 1.1 Hydropower in the Rich and Poor Worlds**



Source: World Bank data.

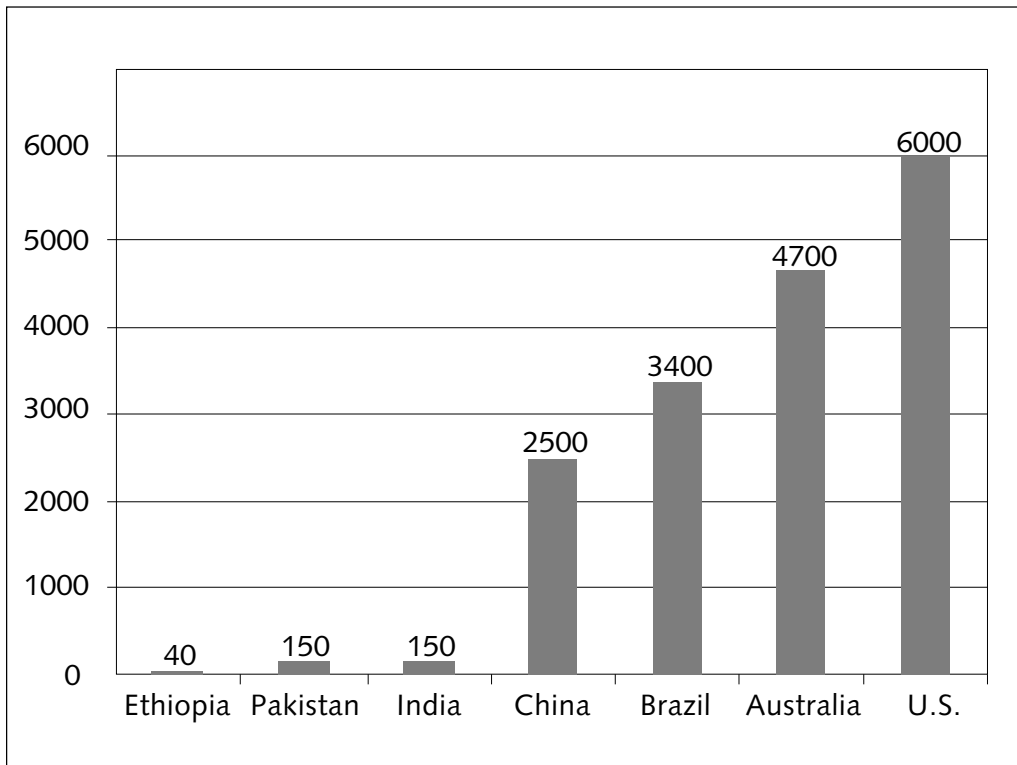
get the advocacy NGOs off his (and the Bank's) back. And thus one of his first major decisions was to abandon the Bank's commitment to the medium-sized Arun hydropower project in Nepal. For a poor mountainous country whose primary resources are gravity and water, this effectively meant abandoning the country to poverty. In the world of development, however, punishment is imposed only for sins of commission, not for sins of omission, and so there were no consequences for Bank management, even as Nepal sunk further into poverty and chaos.

In the late 1990s, as the Bank's senior water adviser, I was entrusted with responsibility to prepare a new water strategy for the World Bank Group. A starting point was obvious—the vast gap between infrastructure endowments in the rich and poor worlds, as illustrated for hydropower in figure 1.1 and water storage in figure 1.2.

The battle royal that was unleashed has been described in detail in chapter 13 of Sebastian Mallaby's landmark history *The World's Banker*.<sup>10</sup> For the purposes of this chapter, there are a few salient observations. First, there was hostility to the idea of Bank reengagement with major infrastructure from almost all Bank senior managers, including the president, and from virtually all of the rich owners of the Bank. Second, not once was the hostility presented as a disagreement on substance—always it was because of “political realities.” Third, “political realities” meant that the rich countries, pressured by single-issue NGOs, used blackmail when necessary. In one indicative instance, after a board meeting where developing countries had strongly supported Bank reengagement with dams, the representative of one of the Bank's biggest shareholders, who had not said a word in open session, telephoned the responsible vice president and explained that “if this is the position taken by the Bank, you should realize that it will be very difficult for our govern-

10. Mallaby, *The World's Banker*.

**Figure 1.2 Water Storage Capacity in the Rich and Poor Worlds (cubic meters per capita)**



Source: World Bank data.

ment to support the next round of IDA.” The IDA, or International Development Association, is the Bank’s soft-loan window that depends on donations from rich countries and underwrites, together with donor-directed trust funds, a major portion of the Bank’s budget. As Devesh Kapur has documented,<sup>11</sup> the Bank has become addicted to the constantly-under-negotiation overhead associated with its soft-loan window—the soft-loan IDA tail has come to wag the hard-loan IBRD (International Bank for Reconstruction and Development) dog. Fourth, recently the political balance of power has changed as the rapidly growing middle income countries (MICs)—including China, India, and Brazil—finally decided (emboldened by their economic success and massive foreign exchange reserves) that enough was enough. “Infrastructure is essential for development and the Bank must reengage” was the message in an unprecedented joint message from the Chinese and Indian executive directors, in the board discussion of the water strategy, in 2003.<sup>12</sup>

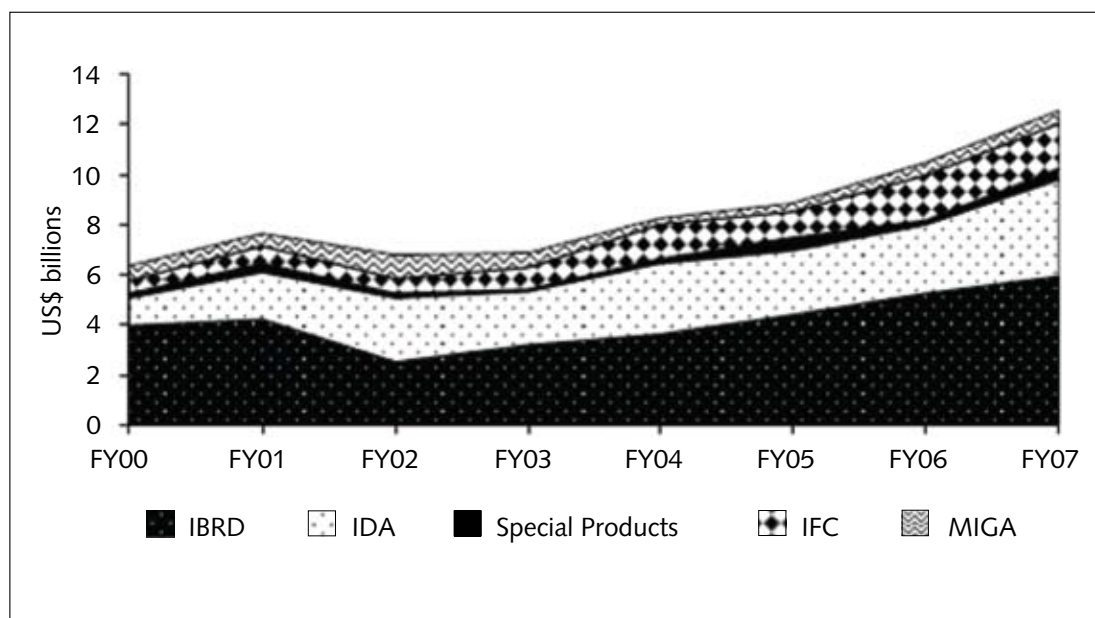
And so the Bank has wiggled toward reengagement with infrastructure (figure 1.3). “Wiggled” is the operative word because nothing has been done to dismantle the ever-expanding set of “safeguards” and “operational policies” that, when taken in their entirety, make virtually any practical operation of any complexity and controversy impossible.

11. Devesh Kapur, *Do as I Say, Not as I Do: A Critique of G-7 Proposals on Reforming the MDBs*, Center for Global Development Working Paper Number 16 (Washington, D.C.: Center for Global Development, 2002).

12. World Bank, Statement by Chander Mohan Vasudev and Guangyao Zhu (executive directors for India and China), *Infrastructure Business: Key Trends and Issues* (World Bank, 2003).



**Figure 1.3 World Bank Reengagement with Infrastructure**



Source: World Bank data.

Devesh Kapur has argued that the much greater density of mandatory safeguard policies in the World Bank (compared with other development banks, as shown in table 1.1)<sup>13</sup> is a direct result of the dependence of the World Bank budget on IDA and thus the whims of the Bank’s rich country owners. This dense fabric of mandatory “safeguards” gives single-issue NGOs (supported by many donors, who, as discussed in more detail later, share many of their views, and by the internal Bank groups who live to protect “their safeguard”) easy targets in any project they do not like, because they can invoke the specter of the “Inspection Panel,” which has the mandate to investigate any project where there is an allegation of violation of an operational policy. Vice presidents and country directors have necessarily developed antennae that tell them which types of projects are likely to lead to engagement of the Inspection Panel, a draconian institution without effective oversight and riddled with conflicts of interests that rides roughshod over due process and national law and that imposes huge monetary and reputational costs on Bank operations.<sup>14</sup>

In this environment, the Bank’s clients divide into two distinct groups. First are the middle-income “countries with choices” that have adequate resources to do the big things themselves and thus refuse to incur the enormous uncertainty and costs that come with “following Bank procedures.” The perspective of the Brazilian deputy minister of finance—“I would much rather pay a couple more percentage points of interest than have to incur the lack of predictability and transactions costs emanating from the Bank’s rules on a controversial infrastructure project”—is universal. There have been endless analyses of “the cost of doing business” with the Bank,<sup>15</sup> but not one of the “safeguard” and other operational policies that underlie these costs have been repealed. Second is the more difficult case of the poorer “countries without choices,” who live at the whim

13. Kapur, *Do as I Say, Not as I Do*.

14. Robert Wade, “Accountability Gone Wrong: The World Bank, NGOs and the U.S. Government in a Fight over China,” *New Political Economy* 14, no. 1 (2009).

15. World Bank, *Cost of Doing Business Report* (Washington, D.C.: World Bank, 2000).

**Table 1.1 World Bank and Other Multilateral Development Bank Policies**

Safeguard Area	AfDB	AsDB	EBRD	IDB	IBRD/IDA
Environmental assessment	Guideline	Policy	Policy	Guideline	Policy
Forestry	Policy	Policy	NR	Policy	Policy
Involuntary resettlement	NR	Policy	NR	Policy	Policy
Indigenous peoples	Policy	Policy	NR	Guideline	Policy
International waterways	NR	NR	NR	NR	Policy
Dam safety	Guideline	Guideline	NR	NR	Policy
Natural habitats	NR	Guideline	NR	NR	Policy
Pest management	Guideline	NR	NR	NR	Policy
Cultural resources	Guideline	Guideline	NR	NR	OPN
Projects in disputed areas	NR	NR	NR	NR	Policy

Note: NR: no requirement; OPN: operational policy note (in process of being converted into a policy).

AfDB = African Development Bank; AsDB = Asian Development Bank; EBRD = European Bank for Reconstruction and Development; IDB = International Development Bank; and IBRD/IDA = International Bank for Reconstruction and Development/International Development Association.

Source: Devesh Kapur, *Do as I Say, Not as I Do: A Critique of G-7 Proposals on Reforming the MDBs*, Center for Global Development Working Paper Number 16 (Washington, D.C.: Center for Global Development, 2002), 8.

of the donors and who have to basically take what they are given. A few controversial projects have, indeed, recently been approved by the Bank, and this is a good thing. But this approval has been after processes of mind-boggling complexity and duration. The two “poster cases” for Bank reengagement are the Nam Theun hydropower project in Laos, where *The Economist*<sup>16</sup> reported that one villager had been interviewed by 14 different independent “Bank missions” to solicit his views, and the Bujagali hydropower project in Uganda, which took more than a decade before the Bank was able to make a decision and which led President Yoweri Museveni to bemoan, “I am ashamed to even come here . . . all this hullabaloo has been a waste of time and a lack of seriousness . . . this was a circus.”<sup>17</sup>

The good news is that just as the political reality on the board at the Bank has now changed, so too the situation in the poor countries is changing. The big MICs have massive resources. (Brazil’s National Development Bank, for example, disburses about \$70 billion a year,<sup>18</sup> more than twice the size of all disbursements by the World Bank.) Now the MICs are offering new lines of financing to poor countries, lines that are a boon to poor countries, because they do not impose impossible-to-meet conditions and bring results in reasonable periods of time. The major positive result is that developing countries now have ways of financing key development needs; a secondary value is the recognition that the World Bank and others risk becoming irrelevant unless they change their ways.<sup>19</sup> The current global crisis has shown how the shoe is now on the other foot: “Who would have imagined that the IMF would come to Brazil, begging for a loan,” noted Brazilian president Lula.

16. “Laos: Damned If You Do,” *The Economist*, November 29, 2003, [http://www.economist.com/world/asia/displaystory.cfm?story\\_id=2251859](http://www.economist.com/world/asia/displaystory.cfm?story_id=2251859).

17. Reuters, “Peeved Museveni launches \$550 million Uganda dam,” January 24, 2002.

18. Valor Economico, “BNDES preve desembolsar ate Rs 130 bi este ano” (Sao Paulo: Valor Economico, January 26, 2009).

19. “Istanbul: Sin Aqua Non—Dams Are Making a Comeback,” *The Economist*, March 21, 2009, [http://www.economist.com/world/international/displaystory.cfm?story\\_id=13349220](http://www.economist.com/world/international/displaystory.cfm?story_id=13349220).

## 2. Addressing the Daunting Challenges of Agriculture and Water in South Asia

After succeeding in putting infrastructure—albeit imperfectly—back on the Bank’s agenda, I wanted to help translate the new water policy into action. So I spent the next few years living in South Asia and focusing on the water challenges (and associated agricultural and energy challenges) of India and Pakistan. Working closely with local experts and with the governments, and supported by the Bank’s vice president for South Asia (one of the few senior Bank officials willing to swim against the current), we produced a new approach, published in two Oxford University Press books: *India’s Water Economy: Facing a Turbulent Future*<sup>20</sup> and *Pakistan’s Water Economy: Running Dry*.<sup>21</sup>

The books were welcomed by the countries’ leaders—for example, in India<sup>22</sup> and in Pakistan<sup>23</sup>—not least because they meant a reengagement of the Bank as a full-service partner and meant that the Bank recognized the need for “high-risk/high-reward” projects. The India and Pakistan reports, which have had some role in motivating the large and absolutely essential investments in infrastructure in both countries, also played a role in initiating fundamental reforms in the vital issue of water entitlements in the Punjab in Pakistan<sup>24</sup> and Maharashtra in India.<sup>25</sup>

Two points in this discussion on water, agriculture, and development deserve elaboration.

- Lesson One: The Need for Major Infrastructure

Large water projects became unpopular with the donor community in part because of the NGO critique that “they benefit the rich and not the poor.” At first glance this accusation is irrefutable—for example, water from the Bhakra-Beas complex in Northwest India, which underpins irrigation in the breadbasket states of Punjab and Haryana, goes to those who have land.<sup>26</sup> And those who have land are the rich. Therefore, Bhakra-Beas is an anti-poor project. A deeper dig shows some interesting findings: irrigated districts have poverty rates of 26 percent and unirrigated districts poverty rates of 69 percent;<sup>27</sup> the returns to education in irrigated districts are 32 percent and in unirrigated districts 0 percent.<sup>28</sup> A recent study by Ramesh Bhatia and colleagues shows why this is so.<sup>29</sup> The study uses a computerized general equilibrium model to estimate the

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20. John Briscoe and R.P.S. Malik, *India’s Water Economy: Facing a Turbulent Future* (New Delhi: Oxford University Press, 2006).

21. John Briscoe and Usman Qamar, *Pakistan’s Water Economy: Running Dry* (Karachi: Oxford University Press, 2005).

22. Shankar Acharya, “India’s Water Troubles,” *Business Standard*, New Delhi, October 25, 2005, <http://www.business-standard.com/india/news/shankar-acharya-india%5Cs-water-troubles/226837/>.

23. Pervez Musharraf, “Full text of President Musharraf’s address to the nation,” BBC, January 18, 2006.

24. Irrigation and Power Department of the Government of the Punjab, <http://irrigation.punjab.gov.pk/entitlement.aspx> entitlements.

25. Maharashtra Water Resources Regulatory Authority (MWRRA), <http://www.mwrra.org/>.

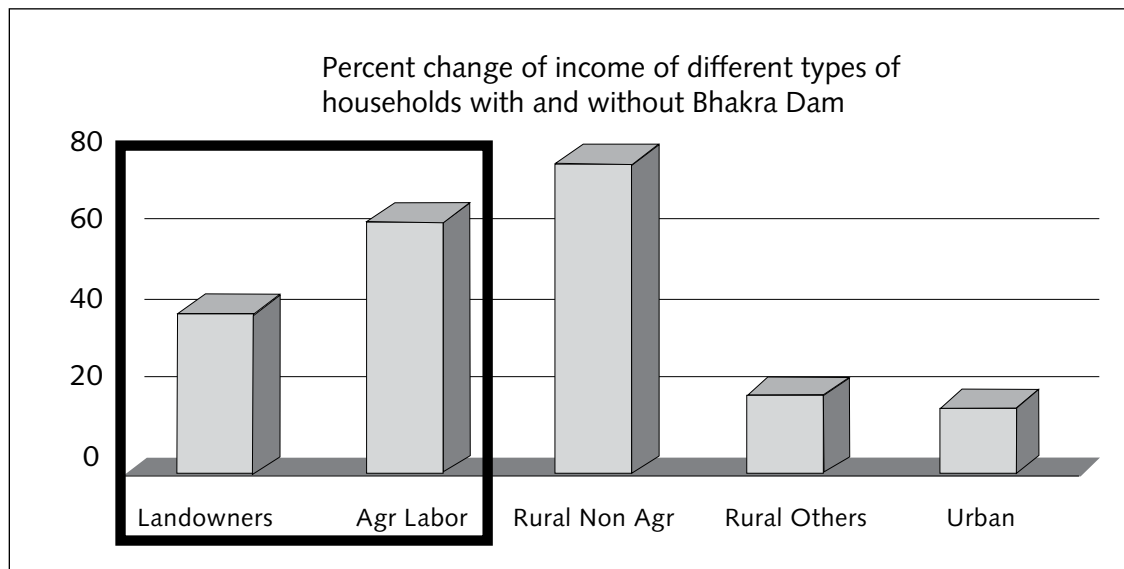
26. Shripad Dharmadhikary, *Unravelling Bhakra: Assessing the temple of resurgent India* (Madhya Pradesh, India: Manthan, 2005).

27. World Bank, *India Irrigation Sector Review* (Washington, D.C.: World Bank, 1991).

28. Lant Pritchett, “Where Has All the Education Gone?” *World Bank Economic Review* 15 (Oxford University Press, 2001), 367–391.

29. Ramesh Bhatia and R.P.S. Malik, “Bhakra Multipurpose Dam System,” in *Indirect Economic Impacts of Dams: Case Studies from India, Egypt and Brazil* (New Delhi: Academic Foundation and World Bank, 2008), 133–192.

**Figure 1.4 The Benefits of Bhakra Dam**



Source: Ramesh Bhatia and R.P.S. Malik, "Bhakra Multipurpose Dam System," in *Indirect Economic Impacts of Dams: Case Studies from India, Egypt and Brazil* (New Delhi: Academic Foundation and World Bank, 2008).

multipliers (arising both from backward linkages, such as to those providing agricultural inputs, and forward linkages, such as food processing industries) and a social accounting matrix to tease out how different socioeconomic groups benefit from both these indirect effects. The conclusion is remarkable—indirect benefits are as large as the direct benefits (a finding consistent for similar studies in Malaysia,<sup>30</sup> Egypt,<sup>31</sup> the United States,<sup>32</sup> and Brazil<sup>33</sup>); and, as illustrated in figure 1.4, it is actually the poor who are the greatest beneficiaries of such projects because of the massive increase in the demand for labor. No wonder those who built such projects in India—Sir Arthur Cotton and K.L. Rao in the Krishna Delta and Mr. Pennyquick in Tamil Nadu—have been turned, by the local population, into de facto saints! No wonder Nehru described such projects as “the temples of modern India.”

But why, the informed reader will reasonably ask, is the Sardar Sarovar Project on the Narmada so deeply unpopular? The answer is complex, but goes to the heart of the argument. First, there is no question that government at various levels in India has done a poor job on the complex task of resettlement in a densely populated country. Second, as shown in a study by the University

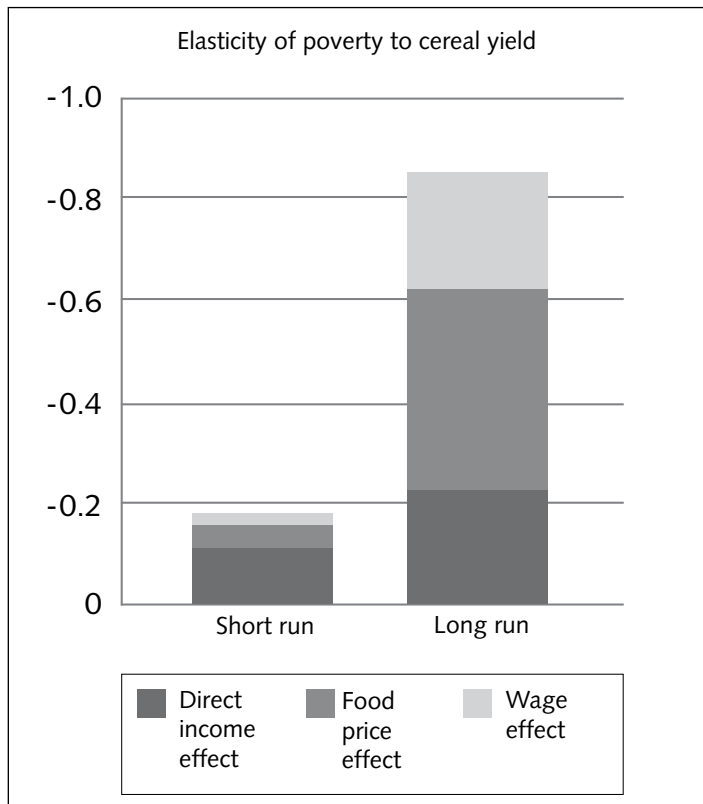
30. Clive Bell, Peter Hazell, Roger Slade, and Shantayanan Devarajan, *Project Evaluation in Regional Perspective—A Study of an Irrigation Project in Northwest Malaysia* (Baltimore: Johns Hopkins University Press, 1982).

31. Sherman Robinson, Ken Strzepek, Moataz El-Said, and Hans Lofgren, “The Aswan High Dam,” in *Indirect Economic Impacts of Dams: Case Studies from India, Egypt and Brazil* (New Delhi: Academic Foundation and World Bank, 2008), 227–274.

32. Leonard Ortolano and Katherine Kao Cushing, “Grand Coulee Dam 70 Years Later: What Can We Learn,” *Water Resources Development* 18, no. 3 (Routledge, 2002): 373–390.

33. Monica Scatasta, “Sobradinho Dam and the Cascade of Reservoirs on the Sub-Medio Sao Francisco River, Brazil,” in *Indirect Economic Impacts of Dams: Case Studies from India, Egypt and Brazil* (New Delhi: Academic Foundation and World Bank, 2008), 275–350.

**Figure 1.5 The Impact of Productivity on Poverty in India, 1958–1994**



Source: World Bank, *World Development Report 2008: Agriculture for Development*.

the development of their countries. Meanwhile, support for transformational projects such as the Narmada dams—warts and all, just like the embankment in Bangladesh—is so widespread that it is inconceivable that any politician who opposed the Narmada projects could be elected governor of Gujarat or Madhya Pradesh.

The limitations of the narrow, “is it getting to the poor?” approach favored by donors is similarly fallacious in the related area of agricultural productivity. As documented in the World Bank’s *World Development Report 2008: Agriculture for Development*,<sup>38</sup> the poor only benefit modestly from the direct, short-term income effect of productivity gains. But the long-run gains to the poor, acting mostly through the (indirect) price and wage effects, are huge (figure 1.5).

of Sussex on the media and development,<sup>34</sup> opposition to the Narmada projects is almost universal in the English-language media in India but support almost universal in the vernacular-language media (which constitutes 95 percent of all readership in the country). Third is the issue of who can legitimately claim to be “the voice of the people.” The leading anti-Narmada NGO campaigners have sometimes hinted that they will run for election,<sup>35</sup> and at other times they have said that electoral politics is not a personal option.<sup>36</sup> What is clear is that most activists and activist organizations have chosen to not submit their ideas for a vote by the people whom they claim to represent. These (often very eloquent) activists eulogize leaders such as Mandela and Lula when they are in opposition and then—as in the case of Arundhati Roy<sup>37</sup>—trash the same leaders once they take office and have to assume responsibility for

34. Graham Chapman et al., *Environmentalism and the Mass Media: The North-South Divide*, Indian Institute of Advanced Study (London: Routledge, 1997).

35. “Medha Patkar calls for political movement,” *The Hindu*, February 4, 2003, and “Q & A: Medha Patkar,” *The Hindu*, March 28, 2004.

36. J.M. Athyal, “Her Life Is Her Message,” Medha Patkar at MIT, March 23, 2009, [http://www.aidboston.org/medhapatkar2009/medha\\_patkar\\_indeptharticle\\_mar232009.pdf](http://www.aidboston.org/medhapatkar2009/medha_patkar_indeptharticle_mar232009.pdf).

37. Arundhati Roy, “The New American Century,” *The Nation*, February 9, 2004, [http://www.thirdworldtraveler.com/Arundhati\\_Roy/NewAmericanCentury\\_ARoy.html](http://www.thirdworldtraveler.com/Arundhati_Roy/NewAmericanCentury_ARoy.html).

38. World Bank, *World Development Report 2008: Agriculture for Development*.

- Lesson Two: The Desperate Need for a Revitalized State

The foundation for water-driven agricultural growth in the Indian subcontinent was laid down in the extensive canal networks built by the British in the nineteenth century. The contiguous irrigated area of Pakistan is 22 million hectares—10 times the size of the state of Massachusetts. Along with the infrastructure, the British built institutions for distributing and sharing the water—each canal had its allocation, and each farmer, through the famed warabandi system, had an assigned time to water his crops.

In the early decades after Partition, India and, even more, Pakistan faced massive challenges. The first challenge was a consequence of Sir Cyril Radcliffe’s hasty scratch on the map, defining what would be India and what would be Pakistan. The line went right across the Ravi, Beas, Sutlej, Chenab, Jhelum, and Indus rivers, leaving the major irrigated areas in Pakistan and the headwaters in India. Fortunately that was the heroic era of the World Bank,<sup>39</sup> where more attention was paid to the sins of omission than those of commission. After ten years, the Indus Waters Treaty was signed in Karachi by Nehru, Ayub Khan, and the representative of the World Bank. The heart of the investment program that stitched “Pakistan’s rivers” (the Chenab, Jhelum, and Indus) to its major irrigated areas (in the basins of “India’s rivers”—the Ravi, Beas and Sutlej) was a series of massive link canals and two major dams, Mangla and Tarbela (figure 1.6). These “replacement works” were funded by donors, by Pakistan (including via a World Bank loan), and, most remarkably, by India. The Indus Waters Treaty, which has held over the subsequent six decades, is widely considered to be one of the great achievements of the World Bank. (It has often been remarked, and correctly so, that the contemporary World Bank, hamstrung by a spaghetti of internal regulations and focusing on sins of commission, could not possibly engage in such a heroic enterprise.)

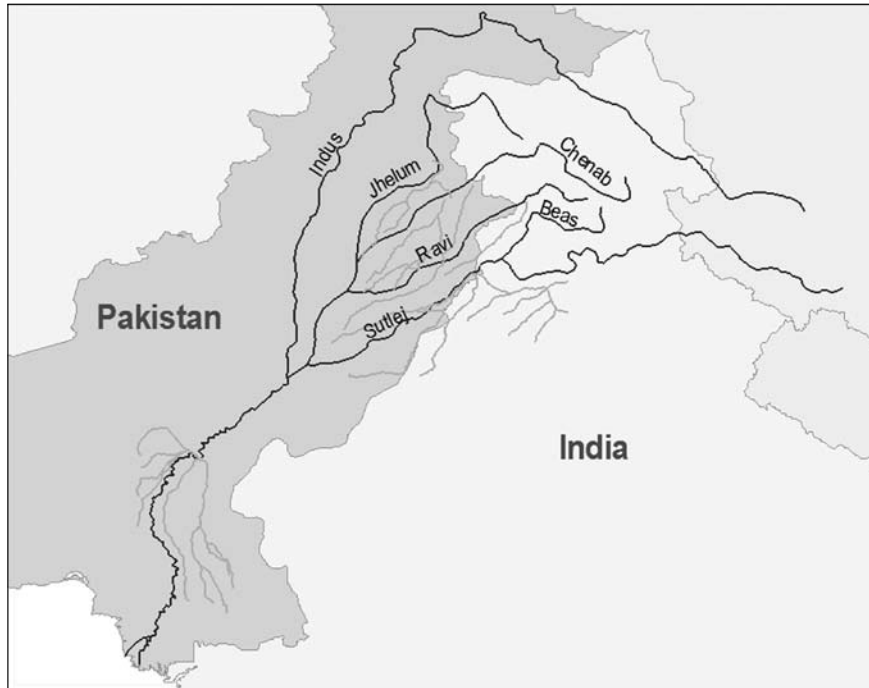
The second great challenge in the subcontinent was a consequence of the technologies of distribution (leaky earth-lined canals) and irrigation (flooded fields). Over decades there were massive accumulations of water that leaked into the aquifers of Punjab and Sindh. By the early 1960s (figure 1.7), the water table intersected with the land in many areas rendered uncultivable by the combination of waterlogging and salt accumulation in the root zone. And so when President John Kennedy asked President Ayub Khan, “What can the United States do for Pakistan?” it was help with this daunting problem that was requested. And there started another round of true development cooperation, again facing squarely the disastrous consequences of doing nothing or of being overly cautious. A team of innovative hydrologists, agronomists, and economists from Harvard (where else?) studied the problem with their world-class Pakistani counterparts.<sup>40</sup> They concluded that the obvious “solution” (“line the canals to stem the leakage”) was the wrong one and advocated a counterintuitive response—think of the canals as recharge structures as much as delivery structures, let them leak, and then intensify the circulation of the groundwater for irrigation. They advocated that this “increased circulation” be done through batteries of large, government-run tube wells that would pump water into the canal system. The technical solution was brilliantly correct; the institutional one was a failure, primarily because at just that time there was a technological revolution in the form of the availability of the humble low-cost submersible pump, powered initially by diesel generators and later by electricity. Over the next 40 years the number of pump sets in Pakistan increased from close to zero to more than 700,000 (figure 1.8).

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39. Shri N.D. Gulhati, *Indus Waters Treaty: An Exercise in International Mediation* (New Delhi: Allied Publishers, 1973).

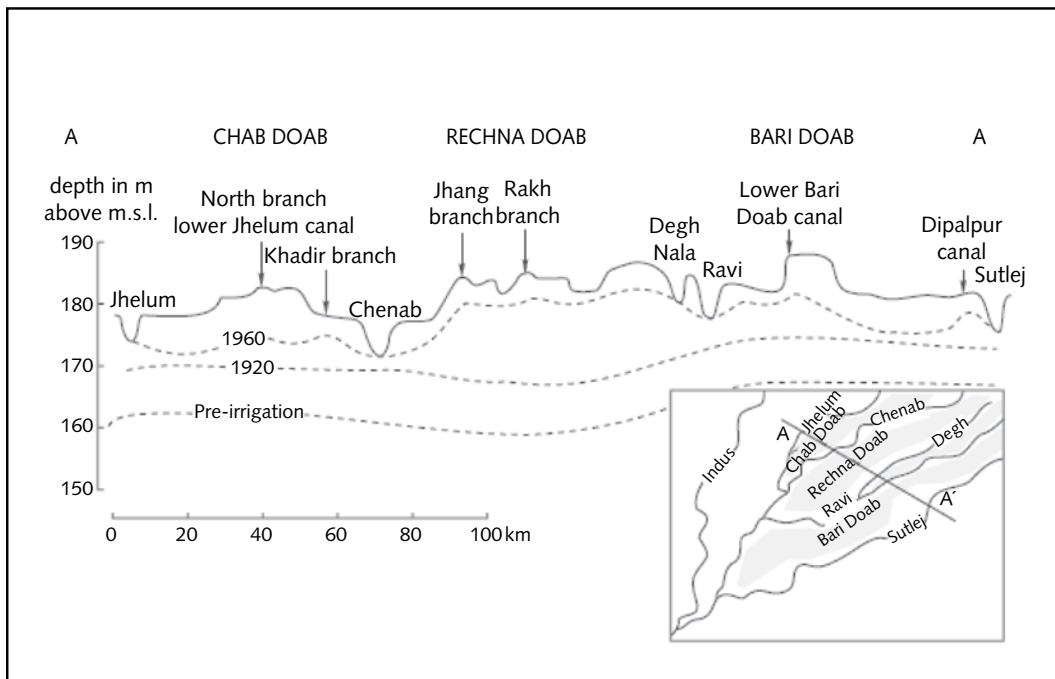
40. Aloys A. Michel, *The Indus Rivers: Study of the Effects of Partition* (New Haven: Yale University Press, 1967).

**Figure 1.6 Partition and the Indus Basin**



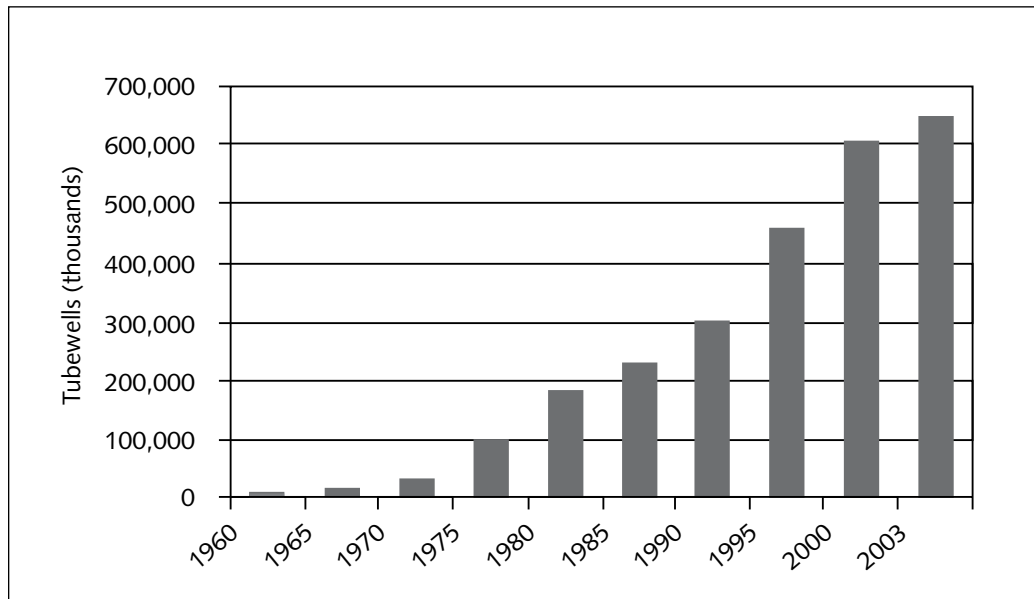
Source: John Briscoe and Usman Qamar, *Pakistan's Water Economy: Running Dry* (Karachi: Oxford University Press, 2005).

**Figure 1.7 Rising Water Table in Punjab over Last 100 Years**



Source: Briscoe and Qamar, *Pakistan's Water Economy*.

**Figure 1.8 Number of Pump Sets in Pakistan**



Source: Briscoe and Qamar, *Pakistan's Water Economy*.

The results were spectacular, in both agricultural and environmental terms. More than 70 percent of production (figure 1.9) now came from groundwater irrigation (controlled by the farmer and available just when needed). Canal irrigation slipped into a subsidiary role and the institutions for managing them descended into corruption and inefficiency. And with increased leaching the groundwater fell—today the area seriously affected by waterlogging and salinity is just 20 percent of the area in the 1960s.<sup>41</sup>

But water management is not a linear but a dialectic process—every success gives rise to a new set of challenges. (In the words of David Blackbourn's history of water and land management in Germany, "the state of art is always provisional—something that historians know well, but hydrological engineers found it hard to accept.")<sup>42</sup> Now the major challenge facing irrigated agriculture in both India and Pakistan is the falling water table (figure 1.10). In India, where the response of governments has been to subsidize electricity for pumping, accelerating the vicious cycle, the situation has reached catastrophic proportions throughout the breadbasket of Northwest and Western India. It is estimated that about 10 percent of India's foodgrains come from unsustainable groundwater use.<sup>43</sup> In Rajasthan over the past decade, the percentage of blocks where groundwater is overexploited has grown from 17 percent to 60 percent.<sup>44</sup> Pakistan, to its credit, has not subsidized electricity and thus not entered into this Faustian bargain.<sup>45</sup>

41. Briscoe and Qamar, *Pakistan's Water Economy*.

42. David Blackbourn, *The Conquest of Nature: Water, Landscape, and the Making of Modern Germany* (New York: W.W. Norton, 2007).

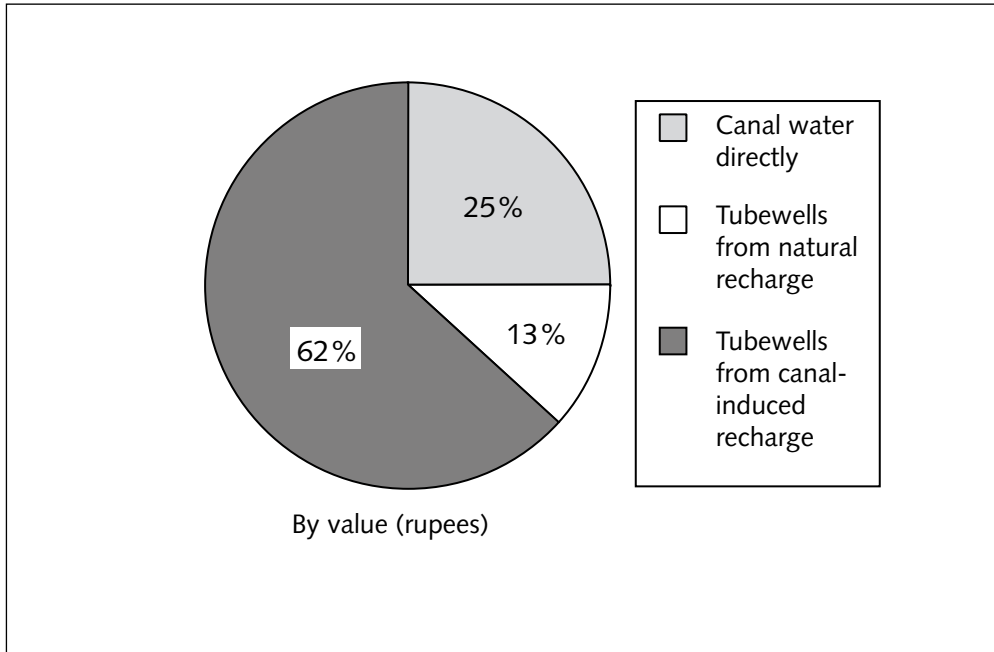
43. Briscoe and Qamar, *Pakistan's Water Economy*.

44. Briscoe and Malik, *India's Water Economy*.

45. Briscoe and Qamar, *Pakistan's Water Economy*.

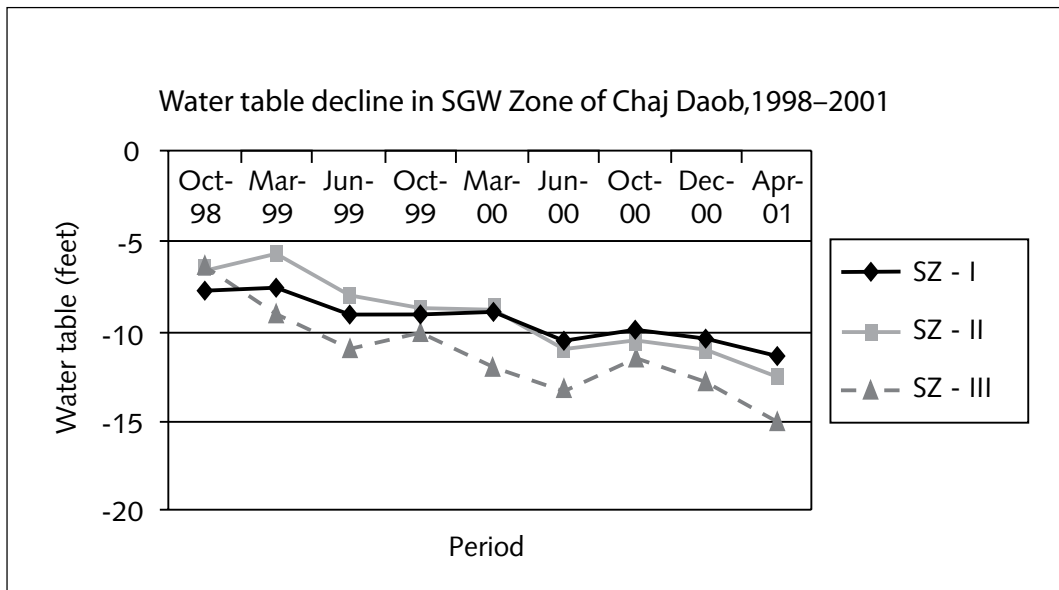


**Figure 1.9 Water Source and Production in the Punjab**



Source: Briscoe and Qamar, *Pakistan's Water Economy*.

**Figure 1.10 Declining Water Table in the Pakistan Punjab**



Source: Briscoe and Qamar, *Pakistan's Water Economy*.

For the past four decades the “exit” option, in Albert Hirschman’s terms,<sup>46</sup> has worked brilliantly for the people of South Asia. But as is always the case with water management, processes are dialectic, and solutions are provisional. The countries of the region face a set of new challenges: they have to simultaneously reinvigorate the public networked surface water supply institutions and develop instruments and policies for restoring groundwater equilibrium. What is clear is that the core of these tasks is the reconstruction of a modern, accountable set of public water management institutions for regulating and providing networked services.

There is a growing understanding of the seriousness of these problems at the highest levels of government—by Pervez Musharraf<sup>47</sup> when he was president of Pakistan, and by the deputy chairman of the Planning Commission in India.<sup>48</sup> And there have been two important initial reform efforts—focusing on the central issue of water entitlements—in the Pakistan state of Punjab<sup>49</sup> and the Indian state of Maharashtra.<sup>50</sup> Acknowledging that every journey begins with the first steps, it is an open question whether the scale and pace of response will be fast enough, deep enough, or sustained enough to meet the daunting challenge of sustainable agricultural water management in South Asia.

### 3. Learning from Brazil, an Agricultural Superpower

Brazilian agriculture is a remarkable development success story. Agricultural output in Brazil today is four times its level of 30 years ago.<sup>51</sup> Brazil, which exports more than \$20 billion a year in agricultural products, is now the world’s largest exporter of beef, coffee, orange juice, sugar, and ethanol and is closing fast on the leaders in soya, poultry, and pork. It is, in the words of *The Economist*, “an agriculture superpower.”<sup>52</sup> Equally remarkable (figure 1.11), increased inputs of land, capital, and labor account for only 10 percent of growth in output—90 percent is from increased productivity. The key is not (as the environmental and development NGOs would suggest) “cutting down the Amazon.” Rather, this extraordinary, prolonged success has two main ingredients. First was large and sustained public (see figure 1.12) and private investment in agricultural research. It is widely acknowledged that Brazil’s EMBRAPA is without peer in tropical agricultural technology. Second was the adoption of an agricultural model that invested in technology, knowledge, economies of scale, and integration of small farmers with agribusiness.

Without this Brazilian success story and without these high levels of Brazilian exports, the global price increases in 2008 would obviously have been worse.

So what, then, did the aid community—rich country donors, the World Bank and the regional development banks, and the advocacy NGOs—do for agriculture over the past several decades? Figure 1.12 showed how Brazil had maintained a large and consistent level of investment in agricultural research. Over the same period, in the words of the World Bank’s *World Development Re-*

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46. Albert Hirschman, *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States* (Cambridge: Harvard University Press, 1970).

47. Pervez Musharraf, “Full text of President Musharraf’s address to the nation,” BBC, January 18, 2006.

48. “Ahluwalia for Imposing Cess on Groundwater Resources,” *The Hindu*, November 15, 2006.

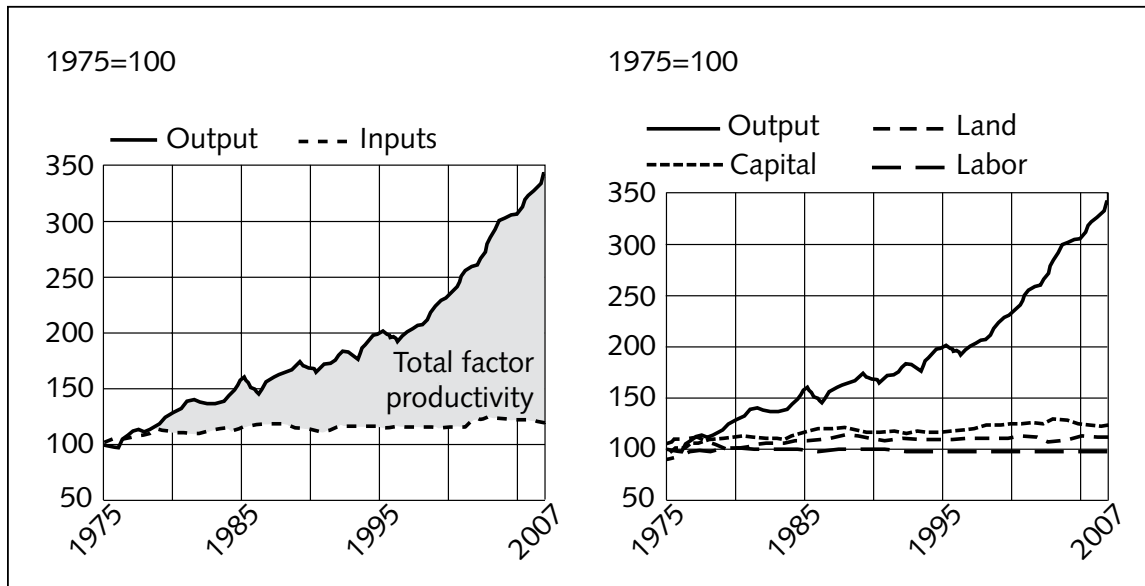
49. Irrigation and Power Department of the Government of the Punjab, entitlements, <http://irrigation.punjab.gov.pk/entitlement.aspx>.

50. Maharashtra Water Resources Regulatory Authority (MWRRA), <http://www.mwrroa.org/>.

51. Delphin Netto, “Vivas a Produtividade” (Sao Paulo: Valor Economico, May 20, 2008).

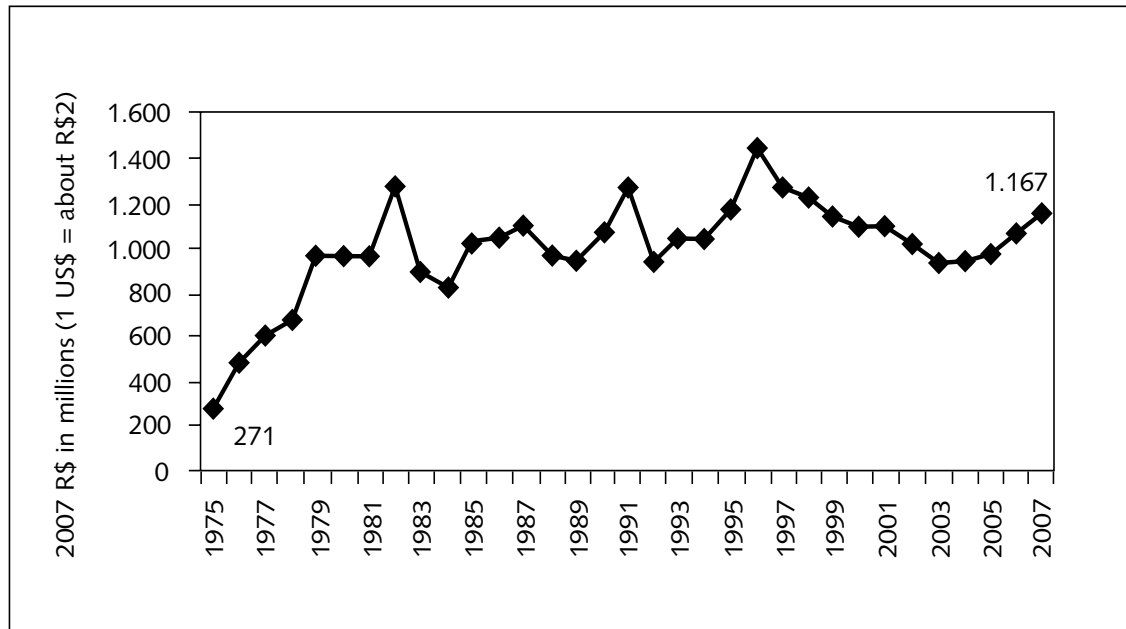
52. “Brazilian Agriculture: The Harnessing of Nature’s Bounty,” *The Economist*, November 3, 2005, [http://www.economist.com/displaystory.cfm?story\\_id=5107849](http://www.economist.com/displaystory.cfm?story_id=5107849).

**Figure 1.11 Productivity Growth in Brazilian Agriculture, 1975–2007**



Source: Delphin Netto, "Vivas a Produtividade" (Sao Paulo: Valor Economico, May 20, 2008).

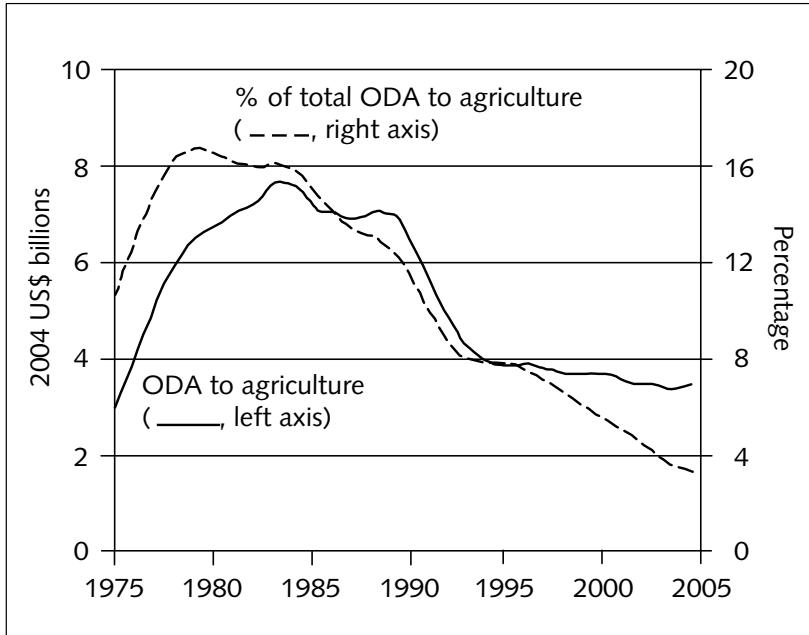
**Figure 1.12 Federal Expenditures on Agricultural Research in Brazil**



Note: R\$ = reais.

Source: Netto, "Vivas a Produtividade."

**Figure 1.13 How Donors Abandoned Agriculture**



Source: World Bank, *World Development Report 2008: Agriculture for Development*.

port 2008,<sup>53</sup> “The share of agriculture in Official Development Assistance (ODA) declined sharply from a high of about 18 percent in 1979 to 3.5 percent in 2004 [figure 1.13],” with “a bigger decline from the World Bank.”

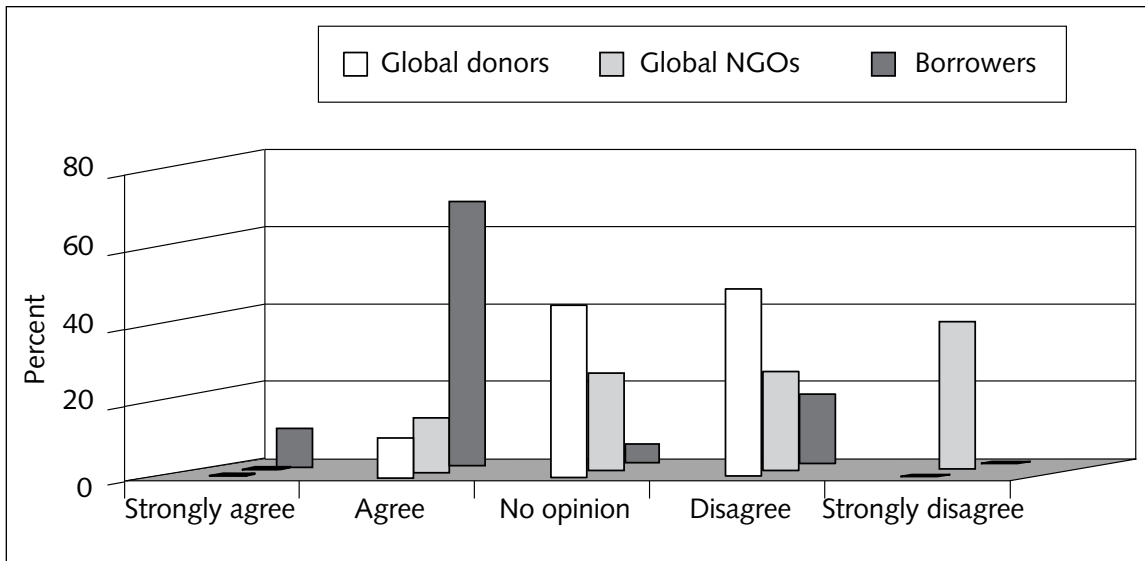
The *World Development Report*, in examining the reasons for this decline, includes “increased competition for ODA, especially from social sectors . . . and opposition from environmental groups that saw agriculture as a contributor to natural resource destruction and environmental pollution.” On matters like these, the views of aid officials are (see figure 1.14) closely aligned with those of rich-country NGOs and are quite different from those of developing country governments, developing country academics, and developing country NGOs.<sup>54</sup> In short, northern NGOs and like-minded aid officials from rich countries have driven the World Bank and other development agencies away from engagement with “the basics” such as infrastructure and agriculture. The same groups prevented some of the poorest countries of the world from using water, pesticide, and fertilizer-saving GMOs (genetically modified organisms).<sup>55</sup> The more pragmatic and self-determined MICs, no longer dependent on the charity of the rich world—like the major rich-country agricultural producers—showed no such compunction (figure 1.15).

53. World Bank, *Agriculture for Development: World Development Report 2008*, <http://www.worldbank.org/wdr2008.pdf>.

54. World Bank, “External Views on the World Bank Group’s Draft Water Resources Sector Strategy: How They Were Elicited, What They Are, and How They Will be Addressed” (Washington, D.C.: World Bank, 2002), [http://siteresources.worldbank.org/EXTWAT/Resources/4602122-1209139051098/WBG\\_Water\\_Resources\\_Sector\\_Strategy\\_External\\_Views\\_Main\\_Report.pdf](http://siteresources.worldbank.org/EXTWAT/Resources/4602122-1209139051098/WBG_Water_Resources_Sector_Strategy_External_Views_Main_Report.pdf).

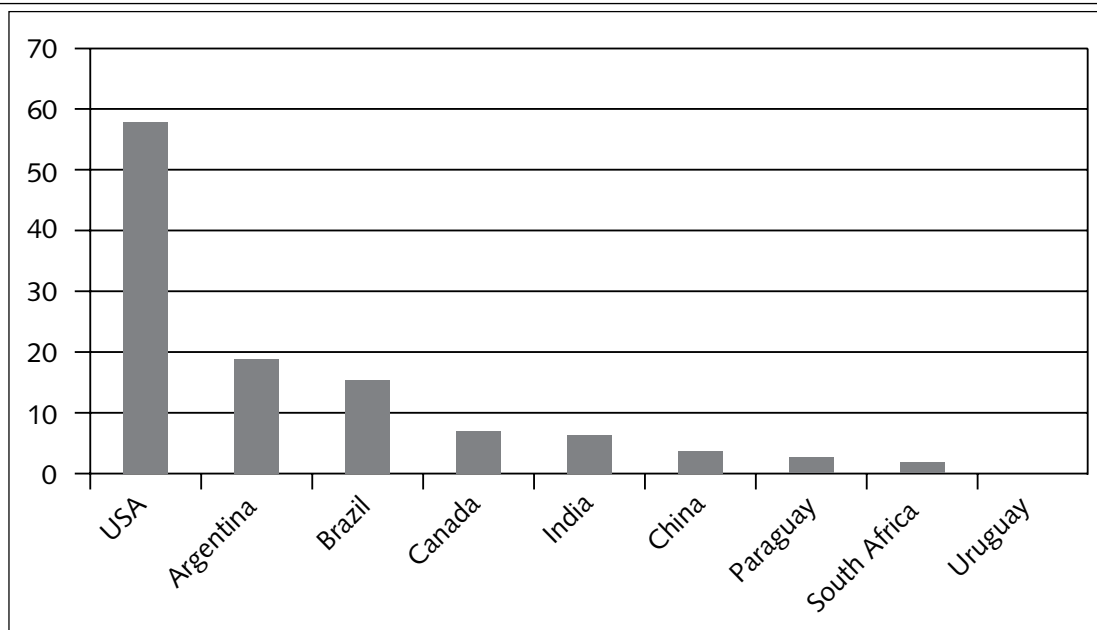
55. Paul Collier, “Comments on Martin Wolf: Food crisis is a chance to reform global agriculture,” *Financial Times*, May 9, 2008.

**Figure 1.14 How Views of Donors Align with Views of Rich Country NGOs and Differ from Views of Developing Country Borrowers**



Source: World Bank data.

**Figure 1.15 Eight of the Top Ten Users of GMOs Are Middle Income Countries**  
(millions of hectares)



Source: Clive James, *Global Status of Commercialized Biotech/GM Crops 2008*, International Service for the Acquisition of Agri-Biotech Applications (ISAAA), <http://www.isaaa.org>.

One would have expected the global community, then, when confronted with the food price crisis of 2008, to have asked two questions—first, what role have we played in the evolution of this crisis, and, second, what can we learn from others, such as Brazil—who had greater foresight?

What actually happened—as so often in the Humpty Dumpty world of development polemic—was just the opposite. The loudest voices proscribing “recipes” for dealing with the latest crisis (as they do for all other crises) comes from the aid agencies, the development banks, and the advocacy NGOs. And what did they say? A massive, multi-agency World Bank–managed effort, the “International Assessment of Agricultural Knowledge, Science and Technology for Development,”<sup>56</sup> condemned biotechnology, excoriated the Brazilian model of new technology and scale, and urged developing countries to pursue a “small and organic is beautiful” path to happiness. (So extreme was the position on this multimillion-dollar effort that scientists from the biotech companies withdrew, the United States and China formally objected to “the lack of balance” on the issue of biotechnology, the major food-exporting countries refused to sign the overall report, and independent scientists<sup>57</sup> lamented the report’s “negative attitude toward technology, compounded by a visceral dislike of international capitalism.” Reputable journals—including *Nature*<sup>58</sup> and *Science*<sup>59</sup>—similarly decried the lack of objectivity of the report.) “And what,” I asked Washington, “do I tell the irate Brazilian Minister of Agriculture?” who had asked me to explain how the Bank could have produced such a report. “Tell him it was not the Bank’s report” was the helpful reply from Washington!

A similarly bizarre air permeates the discussion of biofuels and food. As an integral part of its agricultural innovation, Brazil has become by far the world’s lowest-cost producer of sugar cane and ethanol. And as part of associated industrial innovation Brazilian engineers invented the flex-fuel car. For a marginal cost of a few hundred dollars, cars can use either gasoline or ethanol, or any combination of the two. Flex-fuel cars now comprise 80 percent of the new fleet in Brazil, and over 50 percent of transportation fuel is clean, climate-friendly ethanol.<sup>60</sup> While developing country officials and companies have flooded Brazil to study this remarkable success, the attitude of the rich countries has been quite different. Again with advocacy environmental NGOs defining the debate, the cry has been that Brazil ethanol is coming at the expense of food production and deforestation in the Amazon. As so often in the development business, assertions have little factual basis.

Fact one is that Brazil’s ethanol industry has arisen in parallel with, and from the same roots as, the rest of the Brazilian agriculture industry. Fact two is that the total area under sugar cane in Brazil comprises just 3 percent of the country’s arable land and that practically no sugar cane is grown in the Amazon, nor is a single ethanol plant. Fact three is that Brazil could provide all of the ethanol for the whole world—see figure 1.16—without infringing on the Amazon.<sup>61</sup>

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56. International Assessment of Agricultural Knowledge, Science and Technology for Development, <http://www.agassessment.org/> International Assessment of Agricultural Knowledge, Science and Technology for Development.

57. J.A. Heinemann, “Editorial: Off the Rails or on the Mark?” *Nature Biotechnology* 26, no. 5 (2008): 499–500.

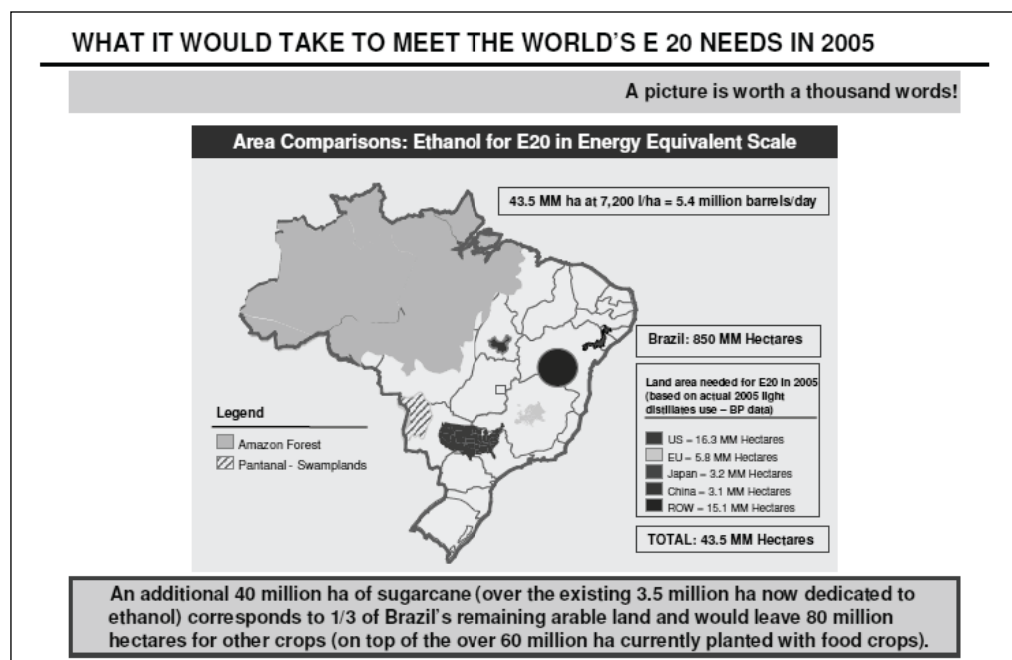
58. *Ibid.*

59. Erik Stokstad, “Dueling Visions for a Hungry World,” *Science* 319, no. 5869 (March 14, 2008): 1474–1476.

60. John Briscoe, “Brazil Is Part of the Solution to the Crisis” (Rio de Janeiro: O Globo, May 1, 2008).

61. Gordian Bioenergy, “Biofuels: Great Expectations or Much Ado about Nothing?” October 2007.

**Figure 1.16 Area Required If Brazil Alone Supplied the World's Entire Demand for Ethanol**



Note: E20, the fuel mixture used in Brazil, contains 20 percent ethanol.

Source: Diomedes Christodoulou, “Biofuels: Great Expectations or Much Ado about Nothing?” *Gordian Bioenergy*, October 2007.

It was my privilege to have to address this strange interface between development ideology and fact as the World Bank’s country director for Brazil for the last three years. Fortunately I was often able to temper the “make them do it!” enthusiasm emanating from Washington, London, and Berlin by pointing out that while Brazil was, indeed, the largest hard-currency borrower from the World Bank, our \$2 billion a year did not really give us much leverage in a country where the Brazilian Development Bank, the BNDES, lends around \$70 billion a year.<sup>62</sup> It was also fortunate that the Bank presidents were not always aware of the silliness of many of these messages and, during my time in Brazil, gave sensible messages to the government of Brazil on the sensitive issues of climate change and energy (in the case of Paul Wolfowitz)<sup>63</sup> and biofuels (in the case of Robert Zoellick).<sup>64</sup>

During the past decade there has also been a seismic shift in the world’s economic geography. The current financial crisis will accelerate this process, for it is now the BRICs (Brazil, Russia, India, and China) who have their fiscal houses in order, who have massive reserves, and who have greatly improved their position in the real economy.

The consequences of these changes are now being felt in institutions like the World Bank. Executive directors from China, India, and other developing countries took the lead in changing—against the wishes of many of the rich country owners of the Bank and most World Bank senior

62. Valor Economico, “BNDES preve desembolsar ate Rs 130 bi este ano” (Sao Paulo, January 26, 2009).

63. Paul Wolfowitz, “Environment and Development: Reaching for a Double Dividend,” at the Special Session of the Sao Paulo Forum on Climate Change, Sao Paulo, Brazil (Sao Paulo: World Bank Group, December 20, 2005), <http://siteresources.worldbank.org/ESSDNETWORK/Resources/EnvironmentandDevelopmentReachingforaDoubleDividend.pdf>.

64. Robert Zoellick, “Remarks to Brazil Climate Change Forum” (Brasilia: World Bank Group, February 21, 2008), <http://www.docstoc.com/docs/1002799/World-Bank-President--Video-Message>.

managers—the absurd position that infrastructure was not necessary for development.<sup>65</sup> And the Brazil Country *Partnership Strategy* (not *Country Assistance Strategy*, as had been the paternalistic norm) lays out principles—acclaimed by the executive directors of other developing countries—that, *inter alia*, defined the Bank’s niche in Brazil as follows:<sup>66</sup>

- “The Bank Group should not be engaging in areas where Brazil has the knowledge and capacity to manage by itself;
- The Bank Group cannot act as though it is a “shadow government” in Brazil, attempting to respond to every challenge that Brazil faces;
- The Bank Group should be engaging primarily with the long-run, path-setting challenges where Brazil has not yet devised solutions and where international experience can be of particular value.”

## Water, Agriculture, and Development: Conclusions for Developing Countries

Developing countries face major challenges in managing their water resources so that they can provide their people with the energy and food essential for a better life. Developing country leaders should be careful to avoid the following myths on water and agriculture:

- *Myth 1: Agriculture can solve the problem of rural poverty.* There is a fundamental arithmetic inconsistency between the notion that (1) agricultural productivity can be high and (2) 80 percent of the population of a country can depend on agriculture. Every country that has become rich has urbanized and industrialized. The striking contemporary example is China, which has focused on creating productive nonagricultural jobs and helping people get out of the brutal job of traditional, low-productivity agriculture.
- *Myth 2: Small is beautiful.* A modern, productive agriculture is one that necessarily depends on information, technology, and sophisticated management. It is inconceivable that autonomous, small, poor farmers can compete effectively in such an economy. In some cases—and again Brazil provides some interesting examples both in the Southeast and Northeast—smaller farmers can flourish in close cooperation with, and “in the wake of,” larger farmers who are able to solve the credit, technology, information, and market challenges. The water dimension of this challenge is well illustrated by the example of Mexico, where the number of jobs produced per unit of water by modern farmers is twice that of the traditional *ejido* farmers.<sup>67</sup>
- *Myth 3: Developing countries should not use GMOs.* New varieties of crops that use water and land more effectively and are resistant to changing temperatures, seasons, and incidence of drought have a central role to play in addressing diminishing water supplies and climate change.<sup>68</sup> There is abundant evidence (see figure 1.17) that GMO crops use smaller inputs of

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65. Mallaby, *The World’s Banker*.

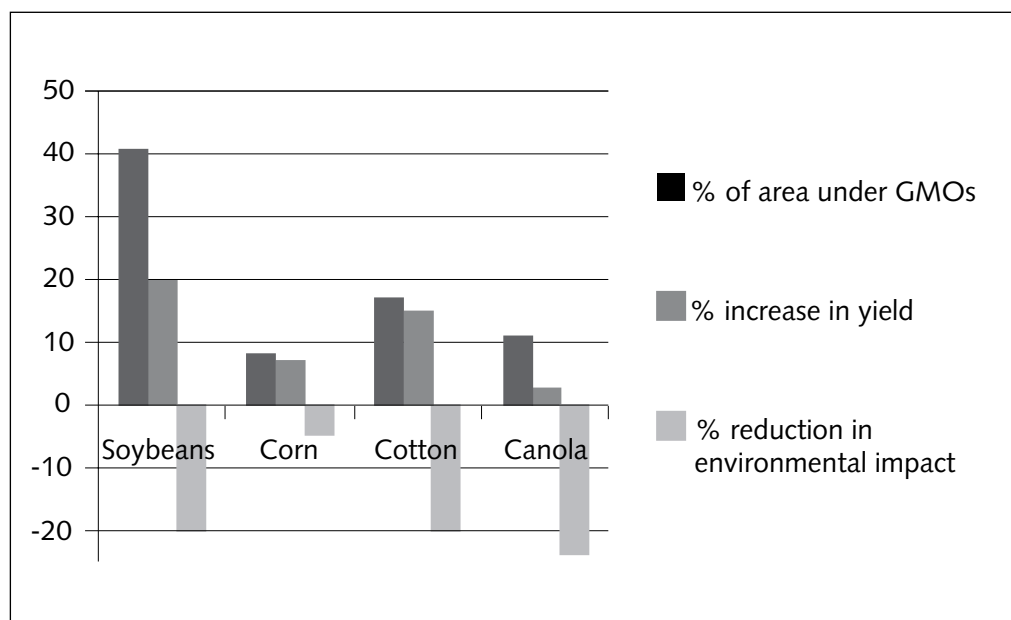
66. World Bank, *Country Partnership Strategy Brazil 2008–2011*, 10.

67. World Bank, “Mexico: Policy Options for Aquifer Stabilization” (Washington, D.C.: World Bank, 1999).

68. Chris Somerville and John Briscoe, “Genetic Engineering and Water,” *Science* 292, no. 5525 (June 22, 2001): 2217, <http://www.sciencemag.org/cgi/content/long/292/5525/2217>.



**Figure 1.17 Market Share and Yield and Environmental Impact of Major GMOs**



Source: Graham Brookes and Peter Barfoot, "Global impact of biotech crops: Socio-economic and environmental effects, 1996–2006," *AgBioForum* 11, no. 1 (2008).

water, fertilizer, and pesticides and are thus beneficial for the environment.<sup>69</sup> Developing countries "with choices" (the MICs) have understood this and account for 8 of the 10 major GMO-using countries. Developing countries "with fewer choices" would be well advised to listen more to China and Brazil and less to Prince Charles and Greenpeace (and the aid agencies who find that logic similarly compelling).

- *Myth 4: Research and higher education are luxuries that are not for developing countries.* Developing countries that have successful agricultural systems have done so because they have invested in higher education and in research (as illustrated for the case of EMBRAPA in Brazil). Developing countries have, indeed, to develop better basic education systems, but they also have to develop scientists and scientific institutions to address their challenges.
- *Myth 5: Poor countries do not need infrastructure and should follow "the soft path."* In recent decades, aid agencies and development agencies largely withdrew from financing major infrastructure in developing countries. Dams, highways, irrigation systems all became branded as "bad" by the development community, despite abundant evidence to the contrary.<sup>70</sup> Once again, MICs never fell for this line and continued to invest (with those investing most doing best). Poor, aid-dependent countries suffered most. They had no choice but to accept recipes such as the "Millennium Development Goals," which put the social cart before the development horse. The MDGs, which make no mention of employment, agriculture, industry, energy, transportation, or infrastructure, implicitly assume that the priorities of post-affluent societies

69. Graham Brookes and Peter Barfoot, "Global impact of biotech crops: Socio-economic and environmental effects, 1996–2006," *AgBioForum* 11, no. 1 (2008): 21–38.

70. Peter Hazell and C. Ramasamy, eds., *The Green Revolution Reconsidered: The Impact of High-Yielding Rice Varieties in South India* (Baltimore: Johns Hopkins University Press, 1991).

were those that would (without one iota of evidence) lead to economic development and poverty reduction. What is now painfully obvious is that almost all of the gains in reducing poverty were reaped in countries that essentially ignored the MDG path.

- *Myth 6: Treat water as a social, not economic, resource.* Water is becoming a scarce resource in much of the developing world and looming as a constraint to human well-being in many countries. Although there are variations across the globe, it is clear that climate change is going to exacerbate water scarcity in many countries.<sup>71</sup> Water-scarce regions of all rich countries (the western United States, Australia, Spain) have water rights systems that ensure that scarce water is voluntarily reallocated from low-value to high-value uses. These systems have shown that economic productivity can be maintained in the face of major reductions in water availability.<sup>72</sup> Southeastern Australia provides a salutary example. An active and well-regulated water trading system has meant that although water entitlements have declined by more than 70 percent as a result of an unprecedented, decade-long drought, the aggregate value of agricultural production has changed very little.<sup>73</sup> Some developing areas (Chile, for nearly 30 years,<sup>74</sup> Mexico for the past 15 years, and now Punjab in Pakistan<sup>75</sup> and Maharashtra in India<sup>76</sup>) are starting to put in place similar systems to motivate more crops, more rupees, and more jobs per drop of water.
- *Myth 7: Follow the agenda set by the rich countries.* Development is not a business for the impatient. And yet the priorities of development agencies are highly unstable, lurching—as described for agriculture in this paper—from one “flavor-of-the-month” to next, with little attention to prioritizing and sequencing. One encouraging reality is the emergence of development financing agencies from the BRICs—including China, Brazil, and India—which recognize that developing countries need infrastructure and need it fast and which are not tied down by long lists of “operational policies” that make development institutions such unreliable and costly partners for developing countries. A second encouraging sign is that developing countries, led by the BRICs, are playing a much more affirmative role in the governance of global institutions like the World Bank. They are saying “enough is enough” and insisting that there be more consistent support and more reasonable standards for building agriculture, infrastructure, and other time-tested, basic building blocks.

There are encouraging signs that the World Bank could, again, become (in the words of a partner in Brazil) “the indispensable partner” to developing countries. The MICs are appropriately pushing for major changes in an outdated governance structure (in which Belgium and Switzerland have the same voice as China). If the countries that are successfully grappling with the

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71. “IPCC: Summary for Policymakers,” in *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, and C.E. Hanson (Cambridge: Cambridge University Press, 2007), 7–22.

72. Richard Howitt, “Initiating Option and Spot Price Water Markets: Some Examples from California,” University of California at Davis, 1996.

73. Wendy Craick, Don Blackmore, and John Langford, personal communication, 2008.

74. Robert R. Hearne and K. William Easter, *Water Allocation and Water Markets: An Analysis of Gains-from-Trade in Chile*, World Bank Technical Paper Number 315 (Washington, D.C., World Bank, 1995).

75. Irrigation and Power Department of the Government of the Punjab, entitlements, <http://irrigation.punjab.gov.pk/entitlement.aspx>.

76. Maharashtra Water Resources Regulatory Authority (MWRRA), <http://www.mwrra.org/>.

problem of economic growth and poverty can also reorder the priorities and processes,<sup>77</sup> then the World Bank's still-formidable human and reputational assets can again make it (in the words of a Brazilian official) "the indispensable development partner."

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77. John Briscoe, "Reforming the World Bank: Not So Easy," *Business Standard*, New Delhi (June 10, 2009).