

# International Shifts in Agricultural Debates and Practice: An Historical View of Analyses of Global Agriculture

Shelley Feldman and Stephen Biggs

**Abstract** This paper reviews the changing issues that shape understandings of agriculture, agroecology, rural landscapes, and food production over the course of the last 50 years. While we will highlight the specific changes that characterize the last two decades, we will situate current conditions and shifts against the longer backdrop of the post-World War II period. Providing a historical context for ongoing debates and practices will enable us to show how current debates respond to, challenge, extend, and at times, reproduce ideas and strategies of an earlier period. Thus, this review will have two interrelated goals: First, to outline the backdrop against which we can understand current shifts in agricultural debates and policy choices; and second, to show how these debates feature in contemporary understandings of the status of global agriculture.

We will suggest that while there has been continued growth in scientific expertise and specialization in the agricultural sciences, an expansion of the kinds of technology and innovation that characterize agricultural production, and broad changes in production and trade relations, food crises continue to pose a challenge to national and global agricultural policies.<sup>1</sup> We also will suggest that despite significant changes in crop production, consumption, and exchange notwithstanding, there has been a decline in open policy debates both across and within disciplinary boundaries.

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<sup>1</sup> We view this challenge as both an epistemic one – how we understand and interpret food crises, and a response to policy choices (Feldman and Biggs 2012). For historical accounts of food crises and famines see Dreze and Sen (2002), Greenough (1980, 1982), and Sen (1981).

S. Feldman (✉)

Department of Development Sociology and Director, Feminist, Gender,  
and Sexuality Studies, Cornell University, Uris Hall, Ithaca, NY 14853, USA  
e-mail: rf12@cornell.edu

S. Biggs

School of International Development, University of East Anglia,  
Norwich, Norfolk, UK NR4 7TJ  
e-mail: biggs.s@gmail.com

In some cases, this decline recalls an old debate about the relationship between science and policy, but also about the role of politics and policy choices and the different interests that constitute policy implementation and practice in relation to agricultural production choices. These, as we will show, help to explain the re-emergence, even if framed by a new discursive formation, of public-private partnerships over the past two decades and their link to questions of equity, sustainability, and climate change.

We suggest, too, that by not fully appreciating the long history of debate and analyses in the broad field of rural production and practice, land relations, and the relationships between non-farm and farm livelihoods, current food crises appear as unexpected or surprising rather than in relation to the policy choices that currently shape agricultural production and policy implementation. We thus examine some of the debates of the earlier period for what they can contribute to understanding these crises, current agricultural production practices and policy choices, global poverty, various forms of inequality, including that between individuals and households as well as between states, and food security and ecological sustainability. This means that our discussion is selective and does not seek to address all of the important issues within the broad arena of international shifts in agricultural debates and practice.

The arguments to follow will be based largely on secondary material. These materials include an understanding of global agricultural policy through analyses of the documents that guide global food production choices. Such choices are outlined by the contributions of the major international organizations including the Food and Agriculture Organization (FAO), the World Bank, the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), the United Nations Environment Program (UNEP), the Consultative Group on International Agricultural Research (CGIAR), and the global assessments that either directly address agriculture or one or more of its critical attributes. We also will examine meso- and micro-studies and policy documents that address the prospects and effects of such policy choices on the lived experiences of food producers and food consumers, and the ongoing debates that shape understanding food sovereignty, climate change, environmental degradation, equity and ecological sustainability.

**Keywords** Green and Gene Revolutions • Rural development • Global science assessments • Rural inequality • Rural and agricultural planning • Policy discourses • Policy practice • CGIAR • International agriculture • Food production • Gender relations • Global food crises • Food sovereignty • Global agriculture and food debates • Hunger and malnutrition • Bilateral and multilateral aid relations

## 1 Introduction: Drawing on the Past, Imagining the Future

In a review of the evolving themes and ideas that animate how we understand rural development, Ellis and Biggs (2001) periodize knowledge production and development practice to highlight the salience of linking narratives we hold about rural

development to how these narratives are articulated in policy formation and project implementation. Their approach provides a template for understanding shifts in agricultural debates and practices since both *rural* and *agricultural* are often used as synonymous concepts. Importantly, the shared meanings associated with the terms rural and agricultural are neither fixed nor neatly distinguishable temporally. Rather, the terms, and the development narratives of which they are a part, may overlap and sometimes even compete with each other. Together, they circulate and are popularized in ways that hold promise in helping to illuminate international shifts in agricultural debates and practice. For instance, as we will show, the overlapping meaning of rural and agricultural has been slowly changing in ways that signal important shifts in how we understand and value rural livelihoods and in what is included in the diversity of forms of agricultural production and relations of farm, off-farm, and non-farm work characterizing changing rural communities and landscapes.

Prior to the mid-1970s, for instance, when a large majority of people from countries in the South<sup>2</sup> depended on agriculture for subsistence, there was only scant research and policy attention focused on non-farm rural production and rural industrialization, as these latter sources of primary employment were significant for only a small proportion of rural households. Most rural dwellers, in fact, were peasant producers and small-scale farmholders whose lives and livelihoods depended on agricultural production for daily subsistence even if they were involved in other wage earning or in-kind labor exchanges. As a case in point, the agricultural population of West Africa fell from 80% of the total population in 1961 to less than 50% in 2005, with broad variation across the region. Today, in contrast, the rural environment is no longer primarily centered in agricultural production, and urban areas in parts of Africa continue to be used for peri-urban agriculture and livestock farming (OECD 2007). Such population shifts and complex agricultural settings signal important changes in the agricultural landscape and the key themes and foci of agricultural research and rural policy formation.

To capture these broad shifts in people's lives and the narratives that are deployed to both guide agricultural change and respond to it, we engage an historical template.<sup>3</sup> Such a template (see Fig. 1) marks key concepts that can assist in clarifying the kinds of changes that characterize shifts in agricultural production, the development policies that have shaped resource availability and strategies for growth and sustainability, and the kinds of projects and programs that have been used to promote particular production strategies.

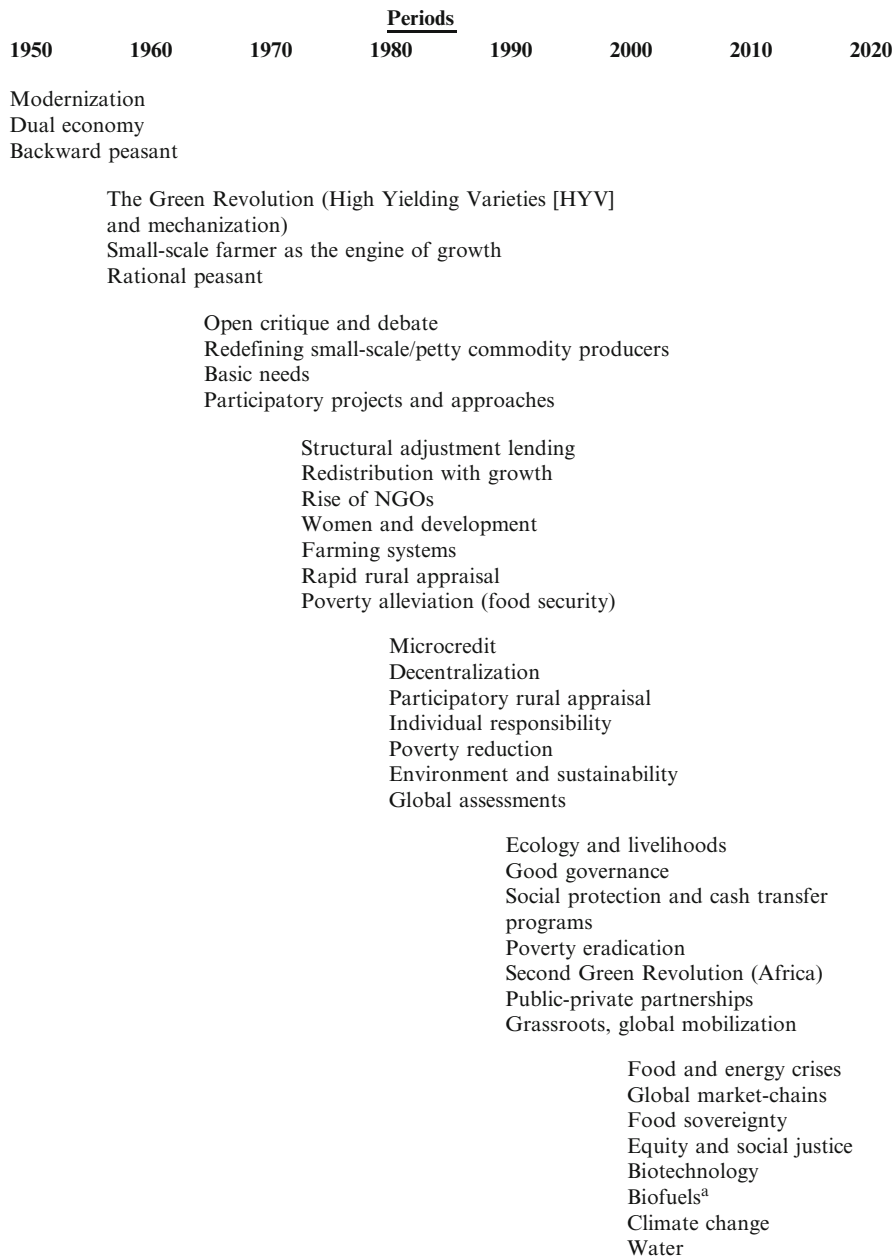
As Fig. 1 suggests, central to the Green Revolution and rural development approaches of the 1960s was the assumption that farmers were rational economic agents in the neoclassical sense of the term.<sup>4</sup> This meant that while small-scale farmers had few resources, they were efficient in the ways that they used them, and

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<sup>2</sup> We use the terms *countries from the South* or *Southern countries* to reference what in other circumstances may be noted as developing countries, the Third World, or peripheral economies.

<sup>3</sup> We offer this template with the same cautionary concerns emphasized by Ellis and Biggs (2001).

<sup>4</sup> See Winkelmann (1976), Lipton (1968), Hopper (1965), and Schultz (1964).



**Fig. 1** A history of discursive themes and concepts framing agricultural policies and practices (See the special issue of the Journal of Peasant Studies, 37, 4 (October) 2010)

even if they were poor, they, like larger-scale farmers, responded to economic incentives. Therefore, policies used in the West to influence the level and composition of agricultural production could be used equally well in developing countries. This, in turn, meant that agricultural production could be modernized (read as *increased*) using subsidized inputs, guaranteed commodity prices, the transfer of modern technologies, including policies to make fertilizer and irrigation available at subsidized rates, and training and exposure to new ideas and production practices through the enhancement of extension services to producers. Such an approach to agriculture was a challenge to prior assumptions about “backward and ‘lazy’ peasants” who were resistant to change.

As a window on the animating strategies that held sway at the time, Leys’ (1996: 7) assertion in relation to development could be read through the lens of agriculture: “It is not a great oversimplification to say that “development theory” (read as *agricultural policy formations*) was originally just theory (policy) about the best way for colonial, and then ex-colonial, states to accelerate national economic growth in this international environment. The goal of development was growth; the agent of development was the state and the means of development were these macroeconomic policies.”

## 2 The Red and Green Revolutions

These (new HYVs) and other developments in the field of agriculture contain the makings of a new revolution. It is not a violent Red Revolution like that of the Soviets, nor is it a White Revolution like that of the Shah of Iran. I call it the Green Revolution.

William S. Gaud, USAID 1968

In the context of the Cold War, efforts by the United States to win the hearts and minds of newly emerging independent states and their people included using development assistance to enhance agricultural production and extend new production techniques and technologies to small-scale farmholders. This Green Revolution, as part of the effort to incorporate new nations into the American political orbit, was premised on the belief that, with new agricultural technologies, states would be able to secure their independence by substantially increasing food production per unit of labor and land and, in so doing, contribute to reducing poverty. The success of such a revolutionary goal had two critical components: the first, to build the resources and technologies that would support this revolutionary goal, and the second, to extend these resources and technologies to producers in the South.

These goals were part of the task of rethinking development assistance and were built on substantial investments by the Rockefeller and Ford Foundations in agricultural research, mainly for high-yielding varieties of grain crops. Research began in the post-war 1940s with research in Mexico (International Maize and Wheat Improvement Center, CIMMYT) to develop disease resistant high-yield varieties of wheat, and subsequently, in 1962 in the Philippines, with the establishment of the

International Rice Research Institute (IRRI) at Los Banos. IRRI's focus was rice, a staple of Asian diets that was produced by 80% of those eating rice in the region. It was assumed that new HYV rice varieties would have an enormous impact on countries where yields were low, including India, Thailand, Pakistan, the Philippines, Cambodia, and Laos. The development of these new varieties was part of a package of inputs that would depend on three critical institutional changes.

The first change was recognition that relations between the advanced and, in the language of the time, developing countries, would be long-term, since it was known that the new varieties depended on attendant inputs, such as fertilizer, that was not produced in countries of the South but rather in the West. This dependence in turn created the need for loans to states to enable them to import fertilizer with development assistance that financed a significant proportion of these resources. As Gaud (1968) of the Agency for International Development (A.I.D.) would note, by 1968, India was "using the equivalent of one-fifth of its foreign exchange earnings to import fertilizer and raw materials to produce the stuff (food crops) ... [and] A.I.D. will finance \$200 million worth of fertilizer on a loan basis." Gaud would go on to state that by 1980, "the world demand for fertilizer will probably increase two and one-half times or more [and]... is rapidly becoming the largest single element in the A.I.D. program." Gaud's claims, made in efforts to secure United States Congressional support for international development, highlight the key role of development assistance, its integral relationship to the Green Revolution, and the benefits that would accrue to dependent and developed countries alike, relationships that entail support for American companies to establish fertilizer plants in countries that expand their food production using the Green Revolution strategy.<sup>5</sup> As we will show, such partnerships across countries and constituencies would undergird food production strategies over the next 50 years, even as particular foci or interventions would change during this period.<sup>6</sup> This strategic understanding of the nexus that sustains international development also, and importantly, presages current interests in public-private partnerships that may differ from earlier articulations of the interests and relations that characterize the Green Revolution, but similarly serve as important indicators of the long history of thinking about the development of a global agriculture that supports the private sector, and the issues, problems, and prospects identified in relation to its production worldwide.

The second change necessary for the successful implementation of the Green Revolution strategy entailed the building of adequate infrastructure to support the

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<sup>5</sup> As Gaud would also share in his address: the implementation of this strategy "is why the program which A.I.D. has proposed to Congress for FY 1969 emphasizes Development Loans and Alliance Loans to finance exports of American fertilizer: \$200 million to India, \$60 million to Pakistan, and lesser amounts to Brazil, Chile, Morocco, Tunisia, Indonesia, and Laos, among others."

<sup>6</sup> During the 1960s, development assistance was tied to policy reform. USAID, for instance, pressed Southern countries to expand their investments in agriculture, "introduce price incentives and other measures which favor and stimulate food production, ...shift fertilizer manufacture and distribution from public channels to more efficient private outlets, and ...liberalize import quotas on raw materials for fertilizer production." Such policy reforms are increasingly made a condition for receiving both food aid and A.I.D. program loans (Gaud 1968).

institutionalization of Green Revolution technologies and capacities in particular countries. Such capacity-building depended not only on increased access to and use of fertilizer, but also on the development of irrigation facilities, market infrastructure, an attitude that was able to risk “an untried and expensive investment” in the production of rice, and an increased dependence on farm credit (Gaud 1968). What was central to this effort was a focus on small-scale farmers who would need to be trained in new technologies and the use of new seed varieties and their production that, as Leaf (n.d.) would proclaim, “was not only a technological or agricultural revolution but a full-scale social revolution, a true democratic alternative to the centralizing “Red Revolution” promoted during the same period by the Soviet Union.” Importantly, and what was not part of the discourse at the time, was the loss of knowledge, biodiversity, and skills that would accompany establishing a general or universally applicable commercial agricultural production environment based on the development of new seed varieties and new requirements for their use.

Carrying out this institutional reform required a third change; massive public sector investment and intervention, complemented by foundation support such as Ford and Rockefeller, but also support from such institutions as the Agricultural Development Council (ADC)<sup>7</sup> whose aim was to support the social sciences (primarily agricultural economists) by strengthening the capacity of young scholars to respond to the economic and human problems of agriculture and rural development in Asia. Through fellowships for graduate education, the ADC trained a generation of researchers and academics to meet the broad challenges related to food production which would bring this new knowledge to bear on national policy formation in their respective countries. In part, this led to a devalorization of local forms of knowledge and an erosion of support for “traditional” practices, skills, and crop varieties. This initiative complemented parallel efforts to support the land grant mission of selected United States institutions of higher education and to transfer the Land Grant institutional model to the Indian subcontinent. Together, these institutional supports helped to solidify a policy environment that was initially to build a highly protected subsidized agricultural sector with provisions for cheap energy, water, inputs and guaranteed support prices for major food crops.

The success of this strategy also required the setting up of social safety nets and government ration shops in South Asia since the economic strategy that framed the institutional reforms that would enable realizing the goals of the Green Revolution was recognized to strengthen better-off farmers and regions through large subsidies for irrigation, transportation, the building of regional markets, and public sector research capacity. This meant that less well-off farmers would need alternative supports to meet their production and consumption needs. It also was recognized that there was every likelihood of increased inequality among classes of

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<sup>7</sup>The ADC, established by John D. Rockefeller III, was initially known as the Council on Economic and Cultural Affairs, Inc. (1953–1963). In 1985, the ADC merged with two other Rockefeller-related agricultural programs, the Winrock International Livestock Research and Training Center and the Rockefeller Foundation’s International Agricultural Development Service to create the Winrock International Institute for Agricultural Development.

farm households as the returns to successful large-scale farmers would increase disproportionately, and more rapidly, than returns to labor, even if total employment demand was envisioned to increase.

Ideally, this strategy was premised on a “trickle down” notion of benefits, as increased food production among large-scale producers was expected to reduce costs and make staple foods available more cheaply to poor and under-subsistence farmers. Among smaller-scale producers, the extension of fertilizer, seeds, credit and irrigation supports would be made available through marketing and distribution cooperatives or other forms of decentralized distribution which could serve as sites to disperse new technologies (seeds, fertilizers, and pesticides), offer training and extension services, and along with local government offices and large-scale farmers, provide land to locate “demonstration plots” to showcase the potential of the new Green Revolution strategy for development. For the landless and those who were unable to engage in this new form of production, they would benefit from the increased demand for labor that the implementation of such a strategy would require and also benefit from cheaper market prices for food.

This Norman Borlaug<sup>8</sup>-inspired Green Revolution was thus envisioned as a win-win opportunity for development assistance as it would nurture long-term development of the agricultural sector, contribute to decreasing local hunger, and contribute to reducing rural poverty in countries of the South, while simultaneously providing access to new sites of production and new markets for American industry. Together, this strategy responds to the presumed Malthusian threat of overpopulation and food shortages, since it assumes that without such changes in agricultural production, countries would be unable to meet the growing demand for food crops.<sup>9</sup>

## ***2.1 Open Debates: Critiques of the Green Revolution***

A hallmark of the early years of the Green Revolution and its institutionalization in various parts of Asia was the openness of debate and exchange among biological scientists. This openness included not only debates within disciplinary boundaries, which is not particularly unusual among agricultural scientists, but soon incorporated the challenges posed by the social science community, particularly by agricultural economists whose interests highlighted the social and economic benefits and costs of the introduction of new agricultural practices for farmers and farm households. These debates also included members of the CGIAR Centers

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<sup>8</sup>Norman Borlaug was a plant pathologist whose research on genetic mutation in plants and specific attention to crop varieties for regions of climatic extremes contributed to increases in wheat and rice production, especially in Mexico, Pakistan and India. He was awarded the Nobel Peace Prize in 1970 and often is credited as the father of the Green Revolution.

<sup>9</sup>This Malthusian logic was not limited to justifying agricultural policy reform but also served as the ground for population control policies of the United States and western European countries that also were central to western development assistance.



such as the International Rice Research Institute, the International Maize and Wheat Improvement Center, and the International Potato Center (Centro Internacional de la Papa, CIP) who had economists on staff and would eventually also hire anthropologists and gender specialists. The internal as well as cross-institution based discussions of the Green Revolution generally reconfirmed some of the assumptions held by researchers but, in other cases, assumptions and the behavior and choices of farmers opened to scrutiny some of the contradictions and complexities revealed in the production of rice and wheat HYVs.<sup>10</sup>

The Comilla model for agricultural change in light of the Green Revolution is a noteworthy example to share, primarily because it became the site for the diffusion of innovation through extension and training, and served as a key strategic intervention for enabling small-scale farmer access to new technologies. The Comilla cooperative model was an approach to rural development that began in 1959 at the Pakistan Academy for Rural Development (renamed in 1971 the Bangladesh Academy for Rural Development). Founded with United States technical assistance under the guidance of Akhter Hameed Khan, the Academy was a response to the failure of the Village Agricultural and Industrial Development (V-AID) program that emphasized the participation of village producers in programs to enhance productive agriculture. Central to the work of the Academy was combining the development of local infrastructure in combination with program maintenance and management by users that offered a form of cooperative capitalism that was able to include relatively small-scale and medium-sized farm households (Feldman and McCarthy 1984b; Raper 1970, Khan 1973).

The Comilla Project also included the development of a women's program to engage women in both family planning, a traditional rationale for including women in development initiatives, and as critical participants in household food production systems and beyond their roles in programs about nutrition and food preparation. Predating the emphasis on participation, credit and training, the Comilla program served as a model for the Integrated Rural Development Programs (IRDP)<sup>11</sup> that were reproduced in numerous countries of the South with World Bank and bilateral support from North America and Europe. This is but one example of what might be called epistemic openness that characterized the learning and exchange that attended to the early years of the Green Revolution, even if debate gave only limited attention to the contradictions posed by capitalizing agriculture which, while extensive in selected journals,<sup>12</sup> did not often engage biological and physical agricultural scientists.

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<sup>10</sup>The CGIAR held its inaugural meeting on 19 May 1971 with 19 industrialized country governments, the Asian Development Bank, FAO, Inter-American Development Bank, International Development Research Center, UNDP, the World Bank, and the Ford, W.K. Kellogg, and Rockefeller Foundations. IIRI and CIMMYT were founding members, and IFPRI joined in 1979. In 2009, CGIAR had 65 members (<http://www.cgiar.org/who/members/index.html>).

<sup>11</sup>Integrated rural development schemes revived an earlier mode of intervention, community development, which took as its starting point a holistic understanding of agriculture to include employment, health, nutrition, sanitation, family planning, informal education and skill development, as well as extension activities to promote knowledge about agriculture and new production practices.

<sup>12</sup>See, for example, such journals as the *Journal of Peasant Studies*, *Economic and Political Weekly*, and *Development and Change*.

The Comilla cooperative approach which began in East Pakistan, now Bangladesh, was a critical site for debate at the time. As Bose (1974) would note, the extension of new technology through a system of farmer service cooperatives led to the conclusion that it was possible to overcome large farm biases in the distribution of new agricultural resources. It was believed that cooperatives could help promote small farmer adoption of new technologies and thus help to avoid the adverse distribution effects that were already associated with the Green Revolution. The early success of this initiative – through the cooperativization of resource distribution to provide small-scale farmers with access to Green Revolution technologies and practices, led the Bangladesh Government to note that the new approach also would “reduce rural poverty and promote equality of income distribution” (Planning Commission 1973, in Bose 1974: 21). This was based on the assumption that both direct benefits in terms of increased yields to producers, and indirect benefits in the form of increased opportunities for wage work and low food prices for agricultural laborers would help to reduce poverty and promote equality of income. As we have already noted, income inequality may indeed increase, but the security of income could, in theory, reduce extreme poverty even though, as Cain (1983: 149) would remind us, “[a]n appreciable worsening of the current distribution of land is likely to render the wage employment created through agricultural growth wholly inadequate.”

Importantly, however, the Comilla cooperatives were not introduced in response to landlessness<sup>13</sup> since the focus of attention was on crop production and the target population was small- and medium-scaled farmers.<sup>14</sup> In a country like Bangladesh, with high rates of land-poor or under-subsistence producers, it was assumed that they could benefit from the diffusion of new agricultural technologies as these were expected to raise per-acre labor requirements brought about by the intensification of production from one, to as many as three crops per year. As Huq would report, an acre of high-yielding rice varieties under irrigated conditions is estimated to require between 30% and 90% more labor than the native varieties, although it would be significantly lower since not all land across all seasons is planted in HYV rice (in Bose 1974, footnote 21). Moreover, and crucially, the increased use of family labor will far outweigh the increased use of agricultural wage labor (Bose 1974: 27).<sup>15</sup> Thus, while the Green Revolution was focused on

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<sup>13</sup> Landlessness, it was argued at the time, was primarily a response to increasing population.

<sup>14</sup> Interestingly, data on farm size usually did not go above 7 or more acres in Bangladesh, indicating a curiously low large-scale threshold. But the data also indicates the relatively small number of agricultural producers who actually owned what, in other parts of South Asia, would be considered small- and medium-scaled farms. Moreover, it would not be until the 1980s, and disillusionment with the development models of the time, that questions of landlessness and the meeting of basic needs would emerge. Noteworthy, is that the initial focus for agricultural intervention and extension was the farmer (read as *male*) rather than the farm household and the different contributions of each of its members. Women’s agricultural labor, whether in production or processing, would not be recognized until the late 1970s.

<sup>15</sup> This insight is central to understanding the resources that would eventually support the development of the IRDP Women’s Program but also early recognition of the importance of women in agricultural production (Feldman and McCarthy 1984a; Feldman et al. 1980; Harriss 1977; McCarthy 1977, 1978, 1980, 1981).

farm households rather than agricultural laboring households, it was already recognized that there would be significant and presumed positive consequences for labor. Extremely suggestive at the time are the words of Akhter Hameed Khan, the visionary behind the Comilla approach:

[Comilla] was by no means a panacea for the misery of the landless. Nor was it ... an attempt at [the] redistribution of incomes. ... In fact, better drainage, link roads and irrigation substantially enhanced the value of land and its rent. The unearned increment of the landowners was a hundred times more than the wages earned by the labourers (Khan 1973, in Bose footnote 22).

Clearly, this signals increases in income inequality among rural dwellers, even as efforts to enhance production contributed to raising the returns and incomes of some rural households. While the focus was on differences among small-, medium-, and larger-scale producers, research did focus on what might be viewed as the unintended consequences of the Green Revolution for the livelihoods of others, including the increased pressure on women who would bear part of the increased demand for labor attendant to the introduction of HYV production.<sup>16</sup>

To be sure, many (Khan 1971, 1973, 1979; Blair 1978; Bose 1974) recognized that the Comilla approach was not without its problems – dominant groups eclipsing the benefits of small-scale producers, an increased dependence on new technologies and credit without sufficient resources to sustain the full complement of those required by the introduction of the Green Revolution, and greater income inequality across social groups. Some of these concerns were framed in terms of the specificity of Bangladesh and the need to transform the institutional environment in order to bring it in line with the needs of the Green Revolution, but debate about these constraints would reveal their consequences for other contexts as well. As Bose (1974: 28) would make clear,

Within the technological limitations set by climatic conditions, the spread of the Green Revolution will be determined largely by the development of appropriate organizations of farmers and effective policies for the mobilization and distribution of resources. The organizational form of the Comilla system would come in handy in this regard. If the political will and administrative capacity can be mustered to remove some of the major deficiencies of the Comilla system - to broaden membership and democratize the organization of the co-operative and to ensure financial discipline - and to adopt progressive taxation on agricultural income or land, the prospects of the Green Revolution would be much better than otherwise. These, in addition to some special measures to help the rural poor, would make possible a more equitable pattern of rural development than elsewhere in South Asia.

What Bose' conclusion suggests is that in some countries the constraints imposed by, for example, climate change, are inherent limitations and not something to be addressed by those who envision the Green Revolution as a vehicle to develop and expand agricultural production. For others excited by the prospects of such development, the negative consequences associated with the Comilla approach are technical and

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<sup>16</sup> While a focus on women was not sufficiently sustained in the debates that ensued, what is clear is that proletarianization, increased landlessness, and increased demands for wage labor without the probability of such laborers ever earning enough to join the ranks of the small-scale farmer were significant foci of debates on the larger Green Revolution (Glaeser 1987; Pearse 1977, 1980b; Cleaver 1972).

managerial and assumed to be resolved by changes in implementation and training or political will. To be sure, some constraints are indeed technical and managerial and can be resolved by improvements in organizational capacity and technical knowledge. But, what this conclusion does not address are the effects of institutionalizing the extension of capitalist relations and commercial agriculture and what these changes could portend for the environment, communities, and producers. For this, it is suggestive to turn to the work of critics who have identified the ecological costs of this new system, its transformation of rural economies, social relations, and production regimes, as well as the socioeconomic constraints that may indeed be better managed and, in some cases, even overcome, with a technical or organizational fix. Crucially, these critics also identify the contradictions posed by this new system that are not likely to respond to such fixes, since they are inherent attributes of the strategy itself (Oasa 1987; Pearse 1977; Cleaver 1972).

In an important volume that takes as its point of departure an essay by Oasa (1987) that reviewed the Consultative Group on International Agricultural Research (CGIAR), Glaeser (1987: 1–9) continued critical debate about the Green Revolution. Two issues framed his critique: The first responded to the dependence of the Green Revolution on the availability of particular growing conditions: irrigation facilities, intensive use of fertilizers, and monocultures for the use of machinery and equipment, pest control with chemical pesticides, as well as favorable soils and sufficient resources to purchase necessary inputs. The second examined the framework that set the ground for the first, that is, what the expansion of commercial agriculture might mean for both producers and countries. What is most significant for the argument here is the importance of critical debate in these essays and the conclusions that were drawn from these exchanges. Oasa's challenge reaffirmed the CGIAR focus on specific commodities and cropping system research, but also recommended that "the international centres reassess priority areas within the context of stronger national programmes," and "the possibility of phasing out work on some of the existing commodities, thus releasing resources for other work" (CGIAR 1981 in Oasa 1987: 19).<sup>17</sup>

Also identified as a concern of the Green Revolution was Pearse' (1977 in Oasa 1987: 20) recognition that "the main principles of the strategy adopted for introducing the technology are inadequate for the development needs of the mainly rural countries concerned and harbor a potential for increased pauperization and social conflict." What is noteworthy in Pearse' conclusion is the link he draws between technical and social conditions and consequences and his early appreciation for the potential conflict between the institutionalization of the HYV package of inputs, and the long-term interests of a majority of rural producers. This tension also was expressed in the connection drawn between broad-based development goals that focused on economic growth and its agricultural parallel, the Green Revolution strategy.

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<sup>17</sup> Oasa (1987: 19) also points out the importance of the attention to unstable environments (less fertile and more acidic soils, rainfall versus irrigation, and a dominance of 'small, resource-poor farmer[s]) which yielded cumulative rather than incremental change'.

This strategy was adopted in order to increase food production, and, significantly, it was recognized early on that poverty reduction would not automatically follow from this growth. Said differently, pauperization and social conflict were not assumed as untended consequences of the commercialization of agriculture and the deployment of new technologies, but, rather, were understood as the very conditions of its institutionalization. As Oasa (1987: 22) would remark at the time, these processes of impoverishment would extend, but also create, new social relations and practices that would unfold simultaneously with “the internationalization of science-based agricultural research.”<sup>18</sup>

Also animating Glaeser’s (1987: 3) concerns were the negative environmental “side” effects (negative externalities) and health hazards that attend to intensive fertilization<sup>19</sup> (excess nitrogen which causes eutrophication of freshwater streams and lakes), the health consequences of the inappropriate use of pesticides, and the amount of energy necessary for the production of nitrogen-based fertilizer required to operate new agricultural machinery. His conclusion is the need for a viable alternative, an *ecodevelopment* strategy able to orient toward filling the basic needs of the poor, promoting agriculture, and striving for environmental compatibility in production methods (Glaeser 1987: 5).<sup>20</sup> What Glaeser’s account offers is a window on the issues that would be central to debates 25 years later.

As we build toward understanding agricultural production as it is presently undertaken and imagined to change, our argument will emphasize three key themes that emerge from these early debates. The first is the foresight of these debates in the immediate post-Green Revolution moment that highlights issues that are critical today – environmental sustainability, social and livelihood sustainability, food security and sovereignty, poverty reduction, the equitable distribution of resources, and rising inequality and growing tensions between social classes. The second is the significance of ongoing debate and discussion that were part of the CGIAR institutional environment, but also engaged academics and scientists not employed by member institutions of the CGIAR. These exchanges proved invaluable in helping agricultural institutions and researchers address complex problems that arose with the spread of Green Revolution technologies and practices, and were part of an intellectual context that valued and productively debated different interpretations, claims, and research findings. For example, in the challenge posed by those who noted that the Centers were not adequately accounting for unstable environments in the development of HYV irrigation dependent agriculture, the CGIAR developed the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) site in India to address issues that emerge in arid regions. In other cases, however, where the issues were not of a technical or managerial kind,

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<sup>18</sup> See also Byres (1981) for the link between new technological and class formation in India.

<sup>19</sup> By the late 1970s, Dahlberg (1979: 81 in Oasa 1987: 2) had already noted that “applications of fertilizer have reached a point of diminishing returns.” Oasa also acknowledges the extinction of valuable germplasm with the introduction of crop monocultures.

<sup>20</sup> This brief summary is critical precisely because it highlights the long horizon that has shaped current debates on sustainability, eco-development, equity, and justice.

new interventions proved more problematic, if not impossible, to implement or, in some cases, even to acknowledge.

The third theme, and critical for the discussion to follow, is the distinction Oasa (1987) draws between understanding and “careful[ly] scrutiny[izing]” policy statements that address the core of Green Revolution policy, and “those minor deficiencies or shortcomings that could otherwise be attributed to faulty implementation of policy.”<sup>21</sup> What Oasa (1987) reveals explicitly here is that, “the general misery of the poor tends to increase, and class lines and conflicts tend to sharpen as a result of *inherent contradictions*”<sup>22</sup> in [Consultative Group] CG<sup>23</sup> policies and the politically neutral stance that the Group has adopted ...” where the latter is generally explained as problems to be managed by the inadequacies of individual states. For Oasa (1987: 16 *italics added*) this *inherent contradiction* is “the social organization of capitalist agriculture” and the widening social polarities that attend to this organizational form and its social relations of production. This is important because, as Oasa acknowledges, “it is not happenstance that research’s assessment is incomplete [because] it is a politically bound assessment and one that corresponds to a ‘neutral’ relationship with the state” (Ibid). Critical to this understanding is recognition that science practice embodies political interests in ways that shape both research findings and policy intervention (Jasanoff 1987).

Three other issues are important to highlight from these debates that are especially useful for the discussion to follow. One is that the debate engaged researchers not only within and across disciplines, but also from different epistemic communities and interest groups. Such an engagement provided productive opportunities for learning, even as ongoing political differences may have contributed to constraining the institutionalization of alternative practices, given the interests of the large donors in the post-liberation of many countries in the global South. Second, the logic of agricultural interventions were understood to address improvements in the production of food and, in some meaningful way, could be understood as separable from other sectors of the economy. As deployed at the time, justifications

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<sup>21</sup> This distinction is important because it can be used to set the parameters of intellectual debate. The distinction is especially important in understanding how and why various constituencies have either engaged or ignored the IAASTD Reports.

<sup>22</sup> To respond to these contradictions it is noteworthy that Akhter Hamid Khan, the founder of the Comilla approach, used the term ‘cooperative capitalism’ to describe the effort. As Khan has noted, “cooperation did not extend to the mobilization of the latent productive resources... or to any kind of pooling of private productive resources for joint productive activities”... See also Feldman and McCarthy (1984b) and Khan (1979: 413).

<sup>23</sup> The Consultative Group on International Agricultural Research (CGIAR) is a global partnership that unites organizations engaged in research for sustainable development with the funders of this work. The funders include developing and industrialized country governments, foundations, and international and regional organizations. The work they support is carried out by 15 members of the Consortium of International Agricultural Research Centers, in close collaboration with hundreds of partner organizations, including national and regional research institutes, civil society organizations, academia, and the private sector (see website <http://www.cgiar.org/who/index.html>, Who we are) (accessed October 30, 2011).

for improved agriculture built on the Malthusian assumption of population growth increasing more rapidly than food production, thus supporting the need to intervene in ways that were presumed to increase food production but also to generate programs that would control population growth. As evident today, such an assumption was, and continues to be, contentious, since it avoids questions of distribution and the ecological costs of supporting particular production regimes. The result is that crises of sustainability are either underestimated or ignored, as are inequalities in food access, the uneven development of food quality, and the twin outcomes of under-consumption and obesity. The third theme is the substantive recognition that the Green Revolution was a class project that presumed a trickle-down notion of change that would, in the long-term, improve the conditions of the poor by increasing the availability of staple commodities. Proponents of the Green Revolution were not preoccupied with the rising incomes and security of large-scale producers or, eventually, of corporate agriculture, since it was presumed, overall, that everyone would benefit, however unevenly.

In sum, the period 1960 through much of the 1970s was an important watershed in extending the Green Revolution to parts of Asia and, in a more limited way, to other parts of the world. Research on the extension of new agricultural practices, the introduction of new technologies, and the transformation of social relations in rural communities was part of an ongoing engagement of CGIAR researchers, national research institutions, and the academy that would eventually lead to the commercialization and industrialization of agricultural production, the erosion of strategies to realize national food self-sufficiency, and growing landlessness and continuing poverty and inequality. The Comilla approach – and there are others – provided a particular arena for sustained debate and questioning that drew the attention of government bureaucrats, academics, policy personnel, and farmers. In some very important ways, the period witnessed sustained debate on the agricultural, environmental, ecological, social, and human security impacts of the Green Revolution. Recognizing these contributions, we argue, can prove informative for our understanding of agriculture over the last two decades.

### **3 The 1980s Turn: Toward a More Holistic Approach**

The early 1980s continued critical engagement with the ideas and implementation of the Green Revolution that held center stage in the 1970s. What emerged as a complement and eventual focus of these debates was the rise of nongovernmental organizations (NGOs) and the challenges they posed to a top-down approach to agricultural development and, as we shall see, for a relatively narrow focus on production agriculture. NGOs drew attention to the limits of agricultural policy discourses and introduced a focus on micro-enterprises, micro-credit, gender training, and the social and environmental impacts of rural projects on rural people and places. New agricultural approaches by donors also gained significance during this period. For example, farming systems research and participatory



approaches to agriculture flourished – innovations of the demonstration plots<sup>24</sup> and cooperatives – and generated a host of partnerships between academic researchers, national agricultural institutes, and international donor support (FAO 1992; Gilbert et al. 1980; Norman 1978). The challenge they raised was how to serve the majority of small-scale farmers, how to build integrated and holistic approaches to farming systems, and how to appreciate the need for site-specific research teams (Chambers and Jiggins 1987; Norman 1978) while not challenging their commitment to improving yields on all farms.<sup>25</sup>

In practice this meant that the challenge facing agricultural science was how to enable resource-poor farmers to produce more. The transfer-of-technology (TOT) model of agricultural research continued to be central to this effort and part of the professionalism of agricultural scientists. In the TOT model, scientists largely determined research priorities, developed technologies in controlled conditions, and then handed them over to agricultural extension services within countries to transfer the new technologies to farmers. Although strong structures and incentives sustained this approach to enhance the productive capacity of small-scale farmers, many now recognize its problematic fit with the complex and diverse needs and conditions of hundreds of millions of resource-poor farm families. In response to this problematic fit, the TOT model has been adapted and extended through multi-disciplinary Farming Systems Research (FSR) and on-farm trials that, under a Training and Visit (T&V) scheme, became the dominant World Bank approach at this time. While both the TOT and FSR approaches retained decision-making for agricultural reform in the hands of scientists, farmers were acknowledged as providing the information to be processed and analyzed by professional scientists in order to identify what might be good for small-scale producers.<sup>26</sup> But, here too, the contradictions that were unfolding in the implementation of these approaches – sustained poverty and inequality in access to resources among producers – were not addressed in analyses of these initiatives.

During this period as well, research within the CGIAR Centers and the practices that attended to the farming systems approach, had a pro-poor and, importantly, a gender orientation (Feldstein and Jiggins 1994; Feldstein and Poats 1989; Feldstein et al. 1988; Poats et al. 1988). There also was a growing interest in rural non-farm

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<sup>24</sup> The idea of demonstrating new varieties and new fertilizers go back to the late 1950s when FAO had a program to introduce fertilizer use in developing countries. Many HYV wheat varieties spread from these on-farm demonstrations because the improved yields were better than local varieties, under any input conditions. This success led Mexican wheat varieties to be viewed as “magic bullets,” but the history of rice is very different.

<sup>25</sup> It also was a way to incorporate producers, however small, within the field of industrial agriculture and not address the contradictions identified by Oasa (1987).

<sup>26</sup> A missing element in the TOT approach were methods that encouraged and enabled resource-poor farmers themselves to meet and work out what they needed and wanted. By the 1980s, this concern recognized that many types of partnerships could support agricultural research systems and that “participation” and “participatory research” could take many forms. One classification had four modes: contract, consultative, collaborative and collegiate (Biggs 1989). Other classification systems also emerged at the time (White 1996; Pretty 1995).



economic activities, particularly among those focused on Intermediate and Appropriate Technology Organizations, and in rural small-scale enterprises (Haggblade et al. 1990). These shifts resulted in complementing investments in agriculture with micro-enterprise development and NGO investments in non-farm activities, including those for women (handicrafts using agricultural commodities) that were driven by government programs with World Bank and bilateral support. Such investments paralleled those in agriculture as they increased credit access, but also indebtedness, and helped to capitalize the rural economy. This capitalization led to women losing forms of income earning as, for example, with the mechanization of rice processing, since the employment generated in rice mills was given almost exclusively to men. The introduction of rice mills, moreover, worked against some small-scale farm households given the costs of transport and a loss of access to the by-products of rice milling, such as rice bran, which provided animal feed in traditional farming systems contexts (Harriss 1977) and to employment especially for poor women who were able to secure work as household laborers during the rice processing season (McCarthy 1980, 1981). The contradiction here is that farming systems were envisioned to include some relations in the farming system, but also to exclude other aspects of production, with particularly negative consequences for the loss of ownership and control of resources among some small-scale under-subsistence agricultural producing households. These gender questions were central to debates within the CGIAR institutions, but especially outside them.<sup>27</sup>

As well, the major reviews of farming systems, and participatory projects generally, acknowledged the significance of institutional, economic, and political contexts as central to understanding how and why pro-poor goals were necessary and how such goals could be realized. One of these studies was undertaken by a CGIAR center (ISNAR) to assess the outcomes of pro-poor farming systems research projects in more than 30 locations in nine countries. The Overseas Development Institute, London, had a number of networks concerned with agriculture, irrigation, and forestry and their publically available discussion documents dealt directly with theory and contemporary practice in these areas. Other bilateral and multilateral agencies were similarly attentive or provided resources to assess issues related to small-scale farmer households. As Norman (1978: 813) summarized it at the time,

Over the last two or three decades our thinking has evolved through four successive states: (a) believing the extractive philosophy of colonial times; (b) knowing what was best for the LDCs, resulting in transfer of technology from the high income countries; (c) developing technology within the LDCs...and, recently, (d) supplementing this “top-down” approach, but not replacing it, by a “bottom-up” approach which provides a foundation for the so-called farming systems approach.

Importantly, the focus on farming systems could readily make invisible the multiple roles of foreign assistance during this period. What is evident, especially in Latin and Central America, for instance, is that it is precisely during this period that United States geopolitical interventions were coupled with the dominant neoliberal

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<sup>27</sup> They were also important in discussions of Food for Works programs and in advocating for NGO extensions of non-farm activities.

policy regime that was deployed to actively undermine peasant movements as well as state-sponsored agrarian reform programs (Boyer 2010). But, for purposes of the present discussion, what is critical is that even as debate created an important space to air ideas and challenges to the Green Revolution as an agricultural development strategy, in its implementation, and in its effects, the basic tenets of the shift to industrial agriculture were generally left intact, as was the power attached to who and how decisions were made, and toward what end or for whose benefit.

The focus on social context, however, was not limited only to administrative concerns, such as those that were shaped directly by particular forms of donor support, but also highlighted the way local contexts posed specific structural constraints for producers that limited their returns to labor. Johnson (1996), for example, in a study of Honduran maize producers, cautioned about the importance of accounting for relations of production and exchange if the benefits of state sponsored programs were to enhance the security of the poor and sustain and improve their productive capacities in the long term. Others played a critical role in situating agriculture in a broader macro-economic and trade policy framework – features that were largely absent or assumed by the agricultural growth linkage model that was promoted earlier (Stewart et al. 1992; Stewart 1987). Important to emphasize from these discussions is its implicit challenge to universal claims or a one-size-fits-all approach to agricultural change.

Paralleling an interest in more holistic approaches to meet the needs of a range of rural producers, NGOs also began to work in partnership with an increasingly interested donor community. For the latter, the partnership was premised on their need to extend their reach to rural communities where NGOs had already begun to establish strong ties and build rural infrastructural capacity.<sup>28</sup> Thus, what had begun earlier as a contentious relationship between donors and NGOs turned into a relation of mutual benefit, even with some costs for some NGOs. For NGOs who partner with donors, partnerships make available resources for program development and extension and provide employment for a host of urban educated youth who, at the time of NGO expansion and slowly growing urban employment found few alternative employment opportunities.<sup>29</sup> For donors, the partnership provided access to communities heretofore unreachable so that NGOs became the most efficient vehicle for access to the rural poor.<sup>30</sup> But with the institutionalization of NGOs<sup>31</sup> as partners in the development project, a number of changes transformed both their

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<sup>28</sup> This process also entailed the cooptation of opposition through the institutionalization of civil society into increasingly formalized organizations that would, over time, become dependent on the resources available to them. These new dependencies served to structure new programs to meet the needs of donors. See the large literature on this process that we are unable to elaborate here; e.g. the journal *Development in Practice*.

<sup>29</sup> This was a period when under- and unemployment among educated youth had begun to expand significantly.

<sup>30</sup> Here it is important to distinguish between the poor and the ultra- or very poor who generally do not gain access to a majority of national and international NGO initiatives.

<sup>31</sup> Feldman (2003), Eade (2000), Pieterse (1997), Hadenius and Ugglå (1996), Elliot (1987).

form and content, as well as the general character of agricultural production and development processes generally. These changes include a growing NGO dependence on foreign assistance for both large and small civil society organizations,<sup>32</sup> a new cadre of employees with the creation of a constituency of young professionals, and a curtailment of the openness and risk-taking that characterized early NGO efforts whose initial impulse was more characteristic of social movements than of formal organizations. But, important for this discussion is that these changes made evident the critical role of rural NGOs in meeting the training and credit needs of non-farm rural workers.

Such collaborative efforts also began to focus broadly on the agricultural context, that is, less on agricultural production *per se* and more on the conditions that shaped the capacities of producers and laborers, including examining non-farm activities, particularly among the poor. This signals an important shift in agricultural debates and practice. Such a shift drew attention to the complex relations that shaped rural life, where households and multiple and complex forms of income earning – including but also extending an earlier focus on share-cropping and other forms of land lease, rent, and grabbing arrangements – characterize rural labor relations and social sustenance.<sup>33</sup> While issues of land reform and land security, such as titling, continued to be of concern, the non-farm sector grew in importance and focus, solidifying the costs of land consolidation, insufficient employment generation in agriculture, and declining security among small agricultural producers (Deere and León de Leal 2001a, b; Griffin 1974, see also Agarwal 1994, 2003).

The 1980s also witnessed critical discussions of the theory and practice of the “agricultural growth linkage model” that underpinned the Green Revolution policy rhetoric (Hart 1993; Hazell and Ramasamy 1991; Ranis and Stewart 1987; Harris and Harris 1984). The model presumed that agriculture could serve as an engine for broad-based rural economic growth (Johnston and Clark 1982; Johnston and Mellor 1961). This opened to scrutiny the tensions identified by those who highlighted the shift from small-scale farm production to agricultural wage labor that accompanied increasing landlessness, or what might be called distress sales and sharecropping on one’s own land, a practice by those able to hold on to their landed property, but unable to secure the resources necessary for sustained production.

Discussions of the Integrated Rural Development Programs (IRDPs) that had been such a major part of agricultural and rural development programs in the 1970s and early 1980s also came under critical review. One finding was the entrenchment and collaboration between large land owners and the rural bureaucratic elite which led to talking more directly about rural power structures (Lewis and Hossain 2008; BRAC 1980). Together, the interests they fostered led to their control of inputs and

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<sup>32</sup> Both national and international NGOs are implicated in this shift, although small and usually nationally organized NGOs have either been excluded from access to donor resources or have chosen to remain independent from them.

<sup>33</sup> See also Farrington and Bebbington (1993), and Edwards and Hulme (1992) who identify the difficulties that attend to implementing pro-poor agendas and partnering with government and the private sector.

resources within the agricultural sector, often precluding small-scale farmer access to these and other resources. Such power differentials were expressed in forms of corruption and violence for the control of landed property, including land grabs by local elites and, in some areas, by government bureaucrats. Also, with donor support, the IRDP was extended across many regions of the South and, in some cases, encouraged stand-alone district level plans and programs. As findings suggest, such stand-alone programs, representing varied bilateral funding streams, were often highly bureaucratic with few linkages to national economic and trade relationships and resulted in a balkanization of agricultural development in some countries (Birgegard 1988; Conyers et al. 1988). In India, the IRDPs tended to be more concerned with the distribution of rural credit (Dreze 1990), while in Bangladesh the centralized planning of the rural women's cooperatives led to inappropriate extension of resources, training, services, and inputs in some districts (Feldman et al. 1980) and the lack of adequate monitoring to secure credit repayment among male cooperative members, particularly from the largest landowners where repayment rates were extremely low.

Significant too, during this period was the work of the Women in Development (WID), Women and Development (WAD), and Gender and Development (GAD)<sup>34</sup> movements that drew important linkages between the sexual division of labor and women's subordination, attention to the peasant household as a critical analytic unit, and the importance of including intra-household gender relations as well as non-wage work in measuring rural women's workload (Agarwal 1997; Sen 1990). Together, these contributions provided a way to make women's work visible, but also to show how the reproduction of the peasant household crucially depended on the contributions of female household members as domestic as well as farm laborers, whether for subsistence or for sale (Dixon-Mueller and Anker 1988; Dixon 1982). At this time, too, it was women's work in crop processing, livestock and poultry rearing, and as off-farm laborers that became a cornerstone of debates on the multiple income-generating activities that characterized social subsistence among peasant households.

In brief, the 1980s saw the salience of NGOs in the development process, first as social movements challenging those who supported processes that entailed the commercialization of agriculture at the cost of the lives and livelihoods of small-scale producer households and, subsequently, as partners in development. Other areas of discussion and debate addressed increased landlessness in the absence of alternative sources of remuneration sufficient to meet household needs, and the growing participation of women in paid and in-kind labor exchanges, including as sources of cheap labor in food for works programs. These shifts dealt a deathblow to any ideology that sustained the notion of a male breadwinner or a family wage.

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<sup>34</sup> This is not the place to appreciate and critique their contributions, but each movement played a key role in raising issues that sought to transform agricultural relations of both production and consumption in ways that were attentive to women and the poor. These movements also were instrumental in working to secure women's access to land as well as to non-farm resources and formal employment.

In some countries, this led to an enormous expansion in credit available to rural dwellers, from micro-enterprise development to women's credit through such emergent institutions as the Grameen Bank<sup>35</sup> in Bangladesh, and its replication elsewhere, that provided non-collateral loans to the poor, but primarily to women. Also important was the rise of skills training and literacy to rural women, programs that proved crucial for their participation in emerging industrial sectors, including garment manufacturing for export. This shift toward credit and independent entrepreneurship would become the cornerstone of the declining welfare state both as practice and as ideology.

As we can see, the introduction of the Green Revolution and the research and extension efforts that characterized its early years included ongoing debate and strategic interventions and changes. Not only did researchers examine the complex processes and the changing social and economic relations, costs, and benefits that we associate with the Green Revolution, but they also, and importantly, were part of wide debate on the contributions of modern agricultural production for expanding production and contributing to poverty reduction. Some critics – as often from within, as from outside the major agricultural institutions – helped to identify strategic changes in practice to enhance production and/or limit the negative consequences of the new HYV production. Critics were research scientists at development and agricultural institutes, the CGIAR, or the bilateral and multilateral donor community and they proved instrumental in suggesting strategic shifts in the practice and implementation of HYV production. While the institutionalization of some of the identified costs of the Green Revolution furthered rather than challenged efforts to industrialize agriculture, the practices we associate with the Green Revolution also were subject to challenges by civil society organizations and social movements who offered alternative approaches to agriculture and rural development. These critics were important in challenging what would eventually be referred to as a 'business as usual' approach to food production, agrarian reform, and the changing rural context. What is important to conclude from the exchange of ideas and practices during this period, however, was that it helped to center rural poverty and inequality, changes in land relations and control, and food security as public concerns that would eventually become central features of efforts by social movements to challenge the shift toward global industrial agriculture in the late 1990s.

In the following section we will argue that such open and broad debates have not been sustained in ways that inform the concerns of the 1990s onward; the end of the Cold War, the period of neoliberal reform, and the full implementation of structural adjustment programs. Rather, the openness and breadth of policy debates that addressed agriculture, food security, labor relations, and poverty reduction would narrow in ways that would try to bring debate in conformity with the "Washington Consensus," along with a deprioritization of the agricultural sector. This is so,

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<sup>35</sup>The Grameen Bank is now part of a global phenomenon with micro-finance projects across world regions, including the United States. Micro-finance projects are often non-agricultural, can create new market dependencies, and often exclude the ultra-poor.

despite the fact that new areas of science have flourished and specializations have grown in a tradition of open discussion and debate. Paradoxically, recent debates in and among members of the academy, agricultural research institutes, and civil society organizations often pit one set of ideas against another, a polarization that, more often than not, leads to ignoring the critical issues that are being raised in the policy documents promoting the Green Revolution over the long term. Framing informed debate as an opposition rather than as productive engagement is most clearly expressed in the social movement activities that currently animate discussions of alternative agriculture and a failure of the substance of these debates to be openly addressed in policy arenas.<sup>36</sup>

#### **4 The Changing Rural and Discursive Landscape of the 1990s and Moving Forward**

The deprioritization of agriculture, the rise of export production in low-income countries, and a dependence on foreign currency earnings to meet debt repayment requirements led to significant changes in the focus of agricultural debates and practices within countries, and in the global institutions that support agriculture, including the World Bank, the Food and Agricultural Organization (FAO), and the International Food Policy Research Institute (IFPRI). In some countries, this led to discussions about denationalization of industries that supply inputs to agriculture in relation to agricultural policy proscriptions, the increasing importance of the non-farm sector and its varied expressions, the role of NGOs in their support of both agriculture and non-farm employment, and the place of new technologies in sustaining production. Also important was attention to the environment, agroecological practices, and natural resource management, a growing interest in eco-development, and concerns about new infrastructural needs such as dams, land reform, and strategies to ensure food security and in efforts to reduce poverty. Coterminous with these issues and recognized shifts was a more extensive and deep set of trade relations that, by this time, had already witnessed the institutionalization of structural adjustment programs that removed most state supports for small-scale agriculture. In short, the 1990s focused discussions in agriculture on the largely privatized distribution system that was part of the denationalization process, including for the production of agricultural inputs, a shift that was already intimated in the framing of USAID lending in 1968.

Broad shifts in the role of trade and markets and a growing role for the private sector, and away from a largely state subsidized and small-scale agriculture, are often discussed in the name of globalization or neoliberal reform. Agricultural liberalization

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<sup>36</sup> As the experience of the IAASTD has shown, not all critical engagement between scientists of different views is discouraged, but it is noteworthy that the FAO and World Bank reports, subsequent to the IAASTD report, did not engage with its findings nor address its policy options.

refers most broadly to a series of policy changes that include the elimination of marketing boards and the strengthening of private markets for cash and non-cash crops; open-market prices paid to farmers for their produce; the withdrawal of subsidized agricultural inputs, particularly for fertilizer and water; and a shift away from state banks as financiers of crop production to commercial ones. For small and under-subsistence producers, financing agricultural production was increasingly supported through the decentralization of credit made available by a growing NGO sector where the latter would eventually extend non-collateral loans to producers, but not at subsidized rates. For large-scale producers with access to larger loans and more competitive rates, their repayment rates continue to be considerably lower than those extended by NGO programs.

Neoliberal reforms also included rethinking the strategy of import substitution and food self-sufficiency (which today finds its parallel in the food sovereignty movement) and toward greater interdependence on global production. This shift supported efforts to earn foreign currency to repay prior debt, but also reduced the production of crops for local consumption, and contributed to reducing crop diversity and introducing niche market, and high value crops that did not necessarily support local food needs as they were often grown primarily for export. Farmers able to compete in these exchanges contributed to furthering distinctions among producers while, in other cases, they sold land for more lucrative practices, particularly in peri-urban areas where land values were increasing dramatically and interest was expanding for the building of industrial establishment or housing units. While these sites extended urban sprawl and increased pollution, they also reduced land in production and for having agricultural crops locally available for a growing urban market.

Together, privatizing resources for agricultural inputs and for systems of distribution led to changes in the viability and security of many small-scale agricultural producers in the South.<sup>37</sup> It also led to recognition – by a growing NGO community as well as national programs – that peasant households could no longer be imagined, for the purpose of strategic planning and policy formation, as peasant producers in the narrow sense that were guided by sufficient returns from subsistence production to secure their social reproduction. Rather, small-scale producers were recognized as pursuing diversified livelihood strategies to secure their subsistence and that such strategies often included non-agricultural activities performed by multiple household members. Such recognition, interestingly, forced researchers to acknowledge that such engagements were not new, but rather that complex labor relations had always played a significant role in the reproduction of rural life. As noted earlier, the WID/WAD/GAD movements were important in shedding light on this multiplicity and led to a series of studies that were undertaken by independent researchers, policy advocates, and institutions of the CGIAR highlighting the work of women in agriculture and in paid and unpaid labor that was expended in reproducing the farm household.

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<sup>37</sup>This is not to ignore a rise, particularly in Europe and North America, of niche market production of high-value, artisan crops for a small elite market.



What is new, however, is that women's unpaid as well as paid employment increased as the family wage, whether from subsistence agriculture or male labor force participation, was even less able to ensure a family's social and economic security. This provided the context for an increasingly individualized understanding of social reproduction, as each adult was assumed to hold responsibility for her own survival. Debates about women's access to credit and of strategies to empower women, in other words, are contradictory in their import as they signal important gains in relation to questions of equity and justice, but also feed a new development logic that moves away from the potential collective imaginings of earlier development approaches.

At the level of strategic policy and planning, these changes entailed a discursive shift away from an agrarian, peasant-centered perspective to a rurally-focused frame that was becoming central in transforming debates and shifts in and about agriculture. But, what is important for the analysis here is that globalization, specifically as expressed in contemporary agricultural debates, did not create these changes; rather, a globalization discourse gave these rural relations greater significance. Nor were non-farm livelihoods simply a response to globalization; instead, the importance of non-farm work was accentuated as increasing numbers of rural as well as urban, often migrant, households were recognized as dependent on multiple income earning streams to secure their subsistence. Globalization, in other words was also created through both discursive and substantive changes that came to make sense, even taken for granted, as the logic that shapes the end of the twentieth century planning and policy forecasts.

#### ***4.1 Land Reform, Titling, and Large-Scale Development Infrastructure***

Throughout the 1990s and 2000s, there was a decreased commitment to distributive land reform even though movements to support land titling continued, as did land transfers of both public and private land in some countries, a point we return to below.<sup>38</sup> As Berry (2011: 638) claims, “[i]t is widely believed in many policy circles that land reform, if it ever was an important aspect of policy in developing countries, is so no longer. It is not happening and there is no need for it to happen.” Berry's claim challenges earlier demands for land reform<sup>39</sup> that were premised on a commitment to small-holder agriculture under the assumption of an inverse relationship between farm size and land productivity and the predominance of small-holder agriculture during the mid-twentieth century. However, Berry's claim also could be

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<sup>38</sup> Also important about the distinction between land reform and agrarian reform is that for the latter to have substantive benefits for small-scale producers it would need to entail changes in access to credit, agricultural extension services, and policy reforms that would alter the conditions and relations of production.

<sup>39</sup> See Lipton (2009) for a complex and historically specific discussion of land reform debates and their changing political contexts, but also their continued significance for discussions of agrarian change today.



read as implicit support for land consolidation under the assumption that it would create increased wage employment to echo earlier Green Revolution interpretations. It also could be read as providing legitimacy for efforts to shift from small and medium-sized farms and local food systems to a global system of comparative advantage and industrial agricultural production.

Yet, Berry's claim also signals a shift from earlier assumptions that framed discussions in the agricultural sector and suggests that the commitment to small-holder production is no longer central to agricultural policy reform. Read against the current policy dialogue, the claim contributes to the discursive shift that promotes the privatization and industrialization of agriculture that is presumed to provide low-cost food to rural and urban workers. In his rendering, opposition to land reform supports a transformation of household food consumption practices with likely consequences for family nutrition and health. In fact, a key donor strategy in support of privatization was their land-titling program that, despite claims it would increase tenure security, actually provides an institutional environment that tends to privatize and individualize ownership in ways that likely undermine forms of collective ownership and traditional tenurial relations. As well, titling programs for women have indicated that for "the vast majority of women small-holders, landless agricultural laborers and those doing different forms of informal work, market mechanisms are not likely to provide a channel for inclusion" (Razavi 2009; Lastarria-Cornhiel 1997).

Said differently, a history of land expropriation, privatization, and voluntary land transfers, including distress land sales that often contribute to land consolidation, are processes entailed in land exchanges that do not lead to the redistribution effects that often are associated with the land reform discourses that were envisioned to empower the poor. While the centrality of land reform programs during this period declined in agriculture and development discourses and debates in most countries,<sup>40</sup> there has been a continued focus on proposals that introduce land ceilings or titling among owners (Deere and León de Leal 2001a, b). However, evidence of the effectiveness of land titling in reducing poverty and enhancing economic security is mixed, as land titles are embedded in complex relations of power and inequality that condition actual control of tenure. Moreover, the institutionalization of individualized titles can undermine forms of customary and collective land ownership making it more difficult to engage in multiple forms of production.<sup>41</sup>

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<sup>40</sup> This summary is not meant to underestimate the broad range of property rights regimes that are part of arrangements among producers, paralleling the diversity of agroecologies (defined here as multiple approaches to agroecology) and livelihood relations.

<sup>41</sup> "Whitehead and Tsikata's (2003) comprehensive review of the gender and land literature for sub-Saharan Africa, namely that in 'the development of private property regimes of any kind, sub-Saharan African women tend to lose the rights they once had ... either because their opportunities to buy land are very limited, or because local-level authorities practice gender discrimination' (2003: 79) is sobering [and has]...become even more important ... given the extent to which policy documents across the political spectrum advocate a blanket policy mix of private property rights and land-titling not only as a mechanism to encourage capital investment and foster a more efficient land market, but also as a solution to women's weak and tenuous place within land tenure institutions" (World Bank 2003, in Razavi 2009: 213).

Moreover, the implementation of land reform and titling policies has often failed and is generally assumed to be in response to entrenched rural elite interests in collaboration with those of government bureaucrats. Today, land grabs by transnational firms and individual countries have become new features of contemporary debate and represent agreements between government bureaucrats, such as those between China and South Africa, or between sovereign governments and multinational corporations. Such land grabs will likely accelerate the development of industrial farming that produces for a world market, further marginalizing small-scale producers, and transforming forms of subsistence and production for local markets. Moreover, land grabs by urban real estate dealers remove land from productive agriculture, particularly in peri-urban areas, which contribute to altering urban diets and access to food.

Yet, while Berry may represent one aspect of current agricultural debates, and while discussions of land grabs reveal other sites of contestation, the commitment to small-scale production continues to be of interest to both local and global social movements that will become important in framing discussions of land ownership and property relations in the 2000s. These movements, as we will suggest, also inform debates over questions of food sovereignty and food quality, including debates over genetically modified crops and pesticide use (<http://www.panna.org>).

However, during the mid-1990s onward, new mechanical technologies for pumping water, cultivation, and harvesting spread rapidly in some regions. Distinctive to agricultural mechanization was the great diversity in the patterns of mechanization. For example, while dramatic pictures showed combined harvesters and large tractors plowing great tracts of land in Brazil, much of the intensification and growth of agriculture in South Asia has come about, not by the spread of large-scale equipment, but rather by the spread of small-scale diesel engines (up to 15 horse power), particularly low-cost Chinese engines used to power irrigation pumps, two wheel tractors, and a variety of harvesting and processing equipment. In Bangladesh and Sri Lanka, for example, with the introduction of small tractors, over 80% of the work of land preparation is now mechanized (Biggs et al. 2011). During this period as well, struggles over the privatization of water became a significant point of contention between government, the private sector, and the farm community. Like other agricultural resources extended to enhance production under the first Green Revolution strategy, the expansion of cheap irrigation water and energy, usually to large-scale commercial farmers but with some spread to others, previously benefited from subsidized rates. Along with the removal of subsidies, debates over water now emphasize its scarcity, the relationship between water and climate change, and concerns over water quality.

At this time as well, debates over large dam projects to serve the growing energy (and irrigation) needs of industry and a growing middle class would ensue as would tensions over the placement and building of new dams with particularly grave consequences for poorer rural households. The Narmada Dam and the Andolan (the movement against its construction) in India and the Three Gorges Dam in China are sites of long-term social movements that seek to secure land ownership for

producers, many of whom had lived for generations on the plots that were appropriated by the state for dam construction. In these cases, compensation to agricultural households was usually inadequate in terms of the amount and quality of land (generally uncleared and not ready for production) to those displaced by the project, and forced those whose land had been expropriated to resettle in areas often distant from their original holdings. In many cases this led to disenfranchisement, and the loss of family and kin networks that were especially important for sustaining production among small-scale producers. Discussions of refugees and resettlement thus became important aspects of debates about agriculture that also included the destruction of agricultural communities and rural social networks as well as the changing aspirations of usually the sons of small-scale agricultural families who no longer see a future in agriculture and seek instead to secure non-farm employment or migrate to emerging towns and global cities.

## ***4.2 Rural Livelihoods, Off-Farm Work, and the Reshaping of the Rural Landscape<sup>42</sup>***

While historically the demand for labor in the food system has been in its production as owner cultivators, renters, sharecroppers, and family and wage laborers, trends that began in the 1970s continue to reveal the displacement of family farmers and farm laborers. This is so notwithstanding an expectation that with the implementation of Green Revolution technologies, increasing yields, and a growing number of crops produced each year, demands for primarily wage labor, but also family, and in-kind labor exchanges would rise dramatically, as would the demand for extension services and credit. Instead, labor-substituting practices have expanded which have further displaced small-scale family farms by larger agricultural holdings. Despite this displacement, agriculture still accounts for approximately 40% of the world's employment, even if most is at subsistence or below subsistence level, and the value of food production in 2000 remained at only about 3% of gross world product. Under these circumstances, the agricultural labor force "accounts for approximately 22% of the world's population, and 24% of GDP in countries with *per capita* incomes of less than \$765, the low-income developing countries, as defined by the World Bank" (Halweil 2000, Millennium Ecosystem Assessment 2005, in Lang 2010: 93). While this characterizes the low wages and increasingly

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<sup>42</sup> Rural poverty incidence in the Philippines, for example, is much more pronounced than urban poverty incidence, but the number of urban poor families also is increasing. The very high rural poverty incidence (47% of families in 2000) has remained virtually unchanged since 1988 (46.3% of families). The urban poverty incidence fell from 30.1% of families in 1988 to 19.9% in 2000. However, the absolute number or the magnitude of urban poor families grew by nearly 11% nationwide between 1997 and 2000 (Schelzig 2005: xiii). This example is important because it is replicated elsewhere and signals what we need to consider as we guesstimate the opportunities to be garnered by a second green revolution.

part-time rather than full-time employment that is available to agricultural workers in the countries of the South, in industrialized Northern countries, agriculture faces a similar movement as new generations of farm families move out of agriculture and into non-farm rural employment or urban migration.<sup>43</sup>

The emergence of new policy dialogues that address the increasing role of non-farm work in relation to agriculture is noteworthy, particularly among agencies that have had limited prior collaboration such as the FAO and the International Labour Organization (ILO). The FAO commitment to reducing the number of those who are hungry and poor, and creating the sustainable management and use of natural resources – land, water, air, climate, and genetic resources, coupled with those of the International Fund for Agricultural Development (IFAD) to empower the poor from developing countries to achieve higher incomes and improved food security<sup>44</sup> have recently collaborated with the ILO to directly address issues of employment as part of how they envision the rural and agricultural economy (FAO/ILO/IFAD 2010).

Recognizing the complex relations that shape subsistence incomes among small and medium-sized producers acknowledges that accompanying the institutionalization of the Green Revolution were broad shifts in on-farm, off-farm, including sharecropping and agricultural wage labor, and non-farm work as constitutive of household livelihood strategies, a point noted in the 1970s, but now a key concern in agricultural research. An early publication that signaled the emergence of non-farm work as crucial to household survival strategies, and appreciated by the agricultural research community, was that of Chambers and Conway (1992). They argued that rural households, especially poor rural households, were always multi-tasking, and were never just concerned with crop production activities in a farm management sense. Instead, social sustenance depended on domestic activities, non-farm production activities such as food processing, whether paid or not, and also off-farm employment as laborers, whether daily or seasonal, who secure employment in near as well as far away places.<sup>45</sup> A recent UNRISD report on rural Latin America indicates that there is a feminization of agriculture because women are a growing part of seasonal laborers working in non-traditional agricultural exports and constitute the majority of workers employed in packing plants associated with these global industries, and, given migration patterns among male

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<sup>43</sup> An emergent research interest has begun to examine a declining interest in remaining in agriculture among small and medium-sized farm families, especially during times of inter-generational transfer. When coupled with declines in the amount of productive agricultural land held by such producers, potential rural labor shortages, and low and insecure agricultural employment in some countries, these conditions may partially explain why aspirations among the children of farm families are showing increased reluctance to remain in agriculture. Also significant is that access to urban resources, increased education and training, and opportunities to imagine life without the expectations associated with farm production can create disinterest among those in a new generation of farmers in continuing to earn their primary income from agriculture.

<sup>44</sup> <http://www.ifad.org/governance/index.htm>

<sup>45</sup> Observation of their significance for policy planning has been well documented for many years in development circles. For example see Breman (1996), White (1980).

household members, are becoming key decision-makers in farming households (Deere 2005).

Crucial to understanding the shifts in rural, and particularly agricultural, production relations and their consequences for the debates and practices that characterize contemporary global agriculture are the research and policy initiatives that are centered on the role of women in agriculture, intra-household gender relations, and the changing relations of women's domestic labor and non-farm employment.<sup>46</sup> As we will elaborate below, this research has transformed what is known about rural family production relations, the place of NGOs as part of the complex of institutions that shape agricultural and non-farm interventions, the role of livestock and poultry rearing as part of the productive capacities of agricultural households, and the synergies that shape forms of production, including the indigenous knowledge that characterizes agricultural communities. Also raised by the debates and practices addressed by gender and development researchers in the 1980s and 1990s was attention to the importance of examining water and fuel collection practices and consumption needs, the place of forest products in agriculture, and the meanings that attend to resource ownership and the shift to measuring assets rather than land as an adequate gauge of household resources (Kelkar 2009; Doss et al. 2008).<sup>47</sup> These represent critical issues that are now presumed to be part of ongoing debates in global agriculture and will be explored in the next section.<sup>48</sup>

For example, in response to recognizing the complex relations that comprise household incomes and the invisible work of women, NGOs came to play an increasingly important role in the rural economy. They did so either to complement the contributions of state institutions, or, in some instances, as parastatals, by replacing the initiatives of national institutions where the latter had neither the capacity nor resources to meet a growing demand for non-farm employment, training, or education. As NGOs grew in prominence, they signaled the shift to the growing importance of public-private partnerships and the decentralization of input and resource distribution. Among small- and under-subsistence producing households, NGOs became important resources for education and training in agriculture, particularly in support of small-scale animal husbandry and poultry rearing for women in Asia, and also for training in non-agricultural activities for the rural poor. By the latter part of the decade, NGOs would also offer extensive urban programs, often for migrants who as individuals or families were forced out of agriculture and who brought with them few skills outside of agricultural production.

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<sup>46</sup> There is an enormous literature in this broad field which is not appropriate to reproduce here given the purpose of this review.

<sup>47</sup> Exploring measures of wealth and assets was largely in response to feminist development research; also see Moser and Felton (2010), Schelzig (2005), Agarwal (1990, 1995) and Folbre (1986). For a different approach see Carter and Barrett (2006) and Haddad et al. (1997).

<sup>48</sup> See Fontana and Paciello (2009) effort to address gender relations in rural areas within the context of agriculture and non-farm employment.

Health care, nutrition, and education training, and means to subsidize poor families through cash-transfer programs were the core of their rural as well as urban programs that either built on or complemented donor support for national budget items in these areas (Ahmed and del Ninno 2002). Yet, importantly, these programs helped to acknowledge that the pattern of migration to which families were responding was permanent for individual households and unlikely to be reversed as a development strategy. In these ways, debates in agriculture became increasingly attentive to the importance of non-agricultural conditions and relations in shaping and understanding what, for some, continues to remain an autonomous economic sector. Ironically perhaps, some discussions of agriculture, primarily among agricultural economists continue to treat these issues as externalities, despite evidence to the contrary.

Moreover, while agricultural and rural development preoccupations remained focused “on the farm” and its changing relationship to non-farm activities, debates were increasingly attentive to other issues that were arising at a macro- and global scale that were transforming agricultural production over the longer-term. These included, among other things, environmental concerns that were highlighted by the work of the International Panel on Climate Change (IPCC), a policy document that would generate interest among those addressing agricultural issues, but also signal the salience of climate change well beyond the concerns of agricultural production. This broad view of climate change has served as an important vehicle for educating increasing numbers of people to explanations of agricultural production that attend to its embeddedness in complex social arrangements and institutions that are temporally and spatially specific, and also to some of the features of the industrial production of food crops that is best understood as similarly situated. This new knowledge, as we will elaborate below, has been important in mobilizing for alternative agricultural strategies and practices.

Of particular importance for understanding shifts in current agricultural debates is that the issues raised by the IPCC were beyond the analytical policy framework of the agricultural growth linkage model and the notion that the agricultural sector could be treated as a sector meaningfully “independent” of other sectors. This was because the IPCC acknowledged how agricultural producers were subsidized and protected, but not held accountable, for the rise of negative externalities associated with climate change and, in this way, showed the analytic interdependence of these processes, thereby making it increasingly difficult to explain agricultural processes as if they could be sectorally separate from other environmental, ecological, and social processes. Other macro- and global issues that arose during this period included the consequences that attend to the mining of groundwater,<sup>49</sup> the over-use

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<sup>49</sup> An important article by Byerlee (1992), an economist close to the Green Revolution, lists many of the negative externalities arising from irrigation-based agricultural growth strategies in South India.

of fertilizers, and the negative effects of large dams for irrigation. While these issues, too, would become central to debates at the turn of the century, the prevailing neoliberal policies<sup>50</sup> at the time interpreted these concerns as minor problems that attend to structural adjustment policies that were assumed to work themselves out through global markets.

In this context, neoliberalism provided the political ideology that emphasized the importance of economic growth as the primary, if not sole goal of agricultural production strategies and presumed, in response to concerns raised by the emergent food movements, that social justice could be best realized by minimal government interference and free market forces. Arguably, the emergent crises (e.g., food and environmental) that have ensued over the past years would suggest otherwise and, as global social movements also would reveal, the most egregious cost of such policies – whether they referred to particular interventions such as the building of dams (Narmada Dam, India), or the industrial production of food (Battle in Seattle and Via Campesina) – would have long-term global consequences for economic security and ecological sustainability.<sup>51</sup> As Lang (2010: 95) frames it, “[t]he crisis in the 2005–8 was not a blip, but creeping normality.” Recognizing a new normal moves toward addressing the ways in which the context and conditions of agricultural production have changed as have the costs and risks that may attend to a business as usual approach. It is precisely these concerns that feature in some of the debates between social movements and the global institutions – in relation to questions of research as well as policy options – toward the end of 1990 and into the twenty-first century. Yet, by assuming a new normal rather than interrogating the conditions of a globalized agriculture, we accept globalization as a natural state of affairs rather than a social process and product about which we can intervene through policy reform founded on evidence-based research.

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<sup>50</sup> Neoliberalism, as it has shaped conversations about agriculture and agricultural change, can be said to have emerged in the early 1970s and has been part of both academic debates and a characteristic of contemporary life; witness Harvey’s notion that we live in an “age of neoliberalism” (Harvey 2005). Neoliberalism can thus be said to serve as “the most powerful ideological and political project in global governance to arise in the wake of Keynesianism, a status conveyed by triumphalist phrases such as “the Washington consensus” and the “end of history”. (McCarthy and Prudham 2004: 275).

<sup>51</sup> Important about the anti-globalization movement against the WTO Ministerial Conference held in Seattle in 1999 was its resonance among a broad array of actors that included farmers from across world communities, people concerned with the environmental and the ecological costs of global food production, and members of developing countries whose interests were felt to be inadequately represented at the meeting. Despite the coalescence of these interests and its continuation as part of a global food movement, some interpret the experience of Seattle as a technical problem of not adequately safeguarding and distancing opposition from the proceedings (Vidal 1999). See also the WTO History Project (<http://depts.washington.edu/wtohist/>).



## 5 Global Assessments

### 5.1 *Poverty, Environment, and Climate Change Assessments*

Key global institutions, including various UN agencies, FAO and UNEP, IFPRI, and the World Bank also recognized these crises. This is suggested by the emergence in the late 1980s and early 1990s of global assessments that examined and suggested policy reforms in relation to environmental and global public goods.<sup>52</sup> The World Meteorological Organization/UNDP Ozone Assessment, for example, led to the Montreal Protocol in the late 1980s that was designed to protect the ozone layer by phasing out the production of numerous substances believed to be responsible for ozone depletion. The Protocol was signed by 196 countries. Our Common Future, better known as the Brundtland Report (1987), of the United Nations World Commission on Environment and Development, helped to focus attention on global environmental and sustainability issues. Its substantive focus presages the issues that take center stage today in debates on agriculture. Gro Harlem Brundtland, as Chair of the Report,<sup>53</sup> noted at the time the eight themes that framed the initiative: To revive growth, change the quality of growth, conserve and enhance the resource base, ensure a stable level of population, reorient technology and management risks, integrate environment and economics in decision-making, reform international economic relations, and strengthen international cooperation.

Interestingly, too, in a keynote speech in 2007, Volker Hauff, Chair of the German Council on Sustainable Development, shared his ideas in a talk entitled, “Brundtland Report: A 20 Years Update.” He restated the challenge posed by the earlier report: to meet “the needs of present generations without compromising the ability of future generations to meet their needs [as] was moulded by the Commission into the concept of sustainable development.” This general principle, he suggests, confirms the significance of four key ideas: the notion of equity and justice within and between generations; the clear idea of developing a shared understanding of the long-term goals for human life on earth; the idea of new governance instruments and of building collective action; and the resoluteness with which we advocated the need for leadership and building trust with others.<sup>54</sup> Together, these documents reveal the longevity and continued salience of these ideas, since they recur in current debates about the needs, merits, and costs of the industrialization of global agriculture, even as they did not call for recasting the policy or research framework that constituted debate in the 1990s.

<sup>52</sup> See Haas (1992) and others in the special edition of International Organization on international assessments and policy coordination.

<sup>53</sup> ([http://www.regjeringen.no/upload/SMK/Vedlegg/Taler%20og%20artikler%20av%20tidligere%20statsministre/Gro%20Harlem%20Brundtland/1987/Address\\_at\\_Eighth\\_WCED\\_Meeting.pdf](http://www.regjeringen.no/upload/SMK/Vedlegg/Taler%20og%20artikler%20av%20tidligere%20statsministre/Gro%20Harlem%20Brundtland/1987/Address_at_Eighth_WCED_Meeting.pdf)) (accessed April 12, 2011).

<sup>54</sup> ([http://www.sd-network.eu/pdf/doc\\_berlin/ESB07\\_Plenary\\_Hauff.pdf](http://www.sd-network.eu/pdf/doc_berlin/ESB07_Plenary_Hauff.pdf)) (accessed April 12, 2011).



Animating the Brundtland Report were the links between poverty, inequality, and environmental degradation, themes consistent with those undergirding the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), that was completed 25 years later, and to which we return below. What is critical to highlight here, however, is that while sustainable development continues to animate current discussions as well as popular rhetoric, we will show that the conditions and relationships that frame debates on the links between poverty, inequality, and environmental degradation have yet to move beyond, or take seriously, what is entailed in challenging what Robert Watson,<sup>55</sup> chair of the IAASTD, referred to as “business as usual,” and what Oasa claimed were the inherent contradictions of capitalist agriculture (see also Pearse 1980b). Central to the discussion to follow is the salience of these debates for understanding ongoing crises within or related to agricultural production, but also the significance of ignoring the issues that frame such debates as some seek to promote the benefits of a new green revolution. In some ways, efforts to extend and sustain a new green revolution, especially in Africa and centered on modern gene technologies, is modeled on the ideal model and promise, rather than the practice, associated with the earlier revolution. Yet also, and crucially, calls for a second green revolution fail to address the social, environmental, and ecological conditions that acknowledge that the gene revolution is unfolding in a dramatically different global political economy than the conditions and relations that were influential in the 1960s.

## 5.2 *Assessments as Planning and Policy Instruments*

Before elaborating on the significance and substantive focus of the assessments that have been carried out since 1987, it is important to consider the place of assessments as planning and policy instruments, as well as for what they suggest about the new thinking that characterizes notions of public goods. Global assessments are research and policy exercises that recast how to think about national planning given that individual nations or states are now envisioned to be part of a large public arena where borders and national boundaries no longer mark the singular space of responsibility.<sup>56</sup> Whether the referent is climate change, water and energy use, or land degradation, ozone depletion or carbon emissions, food shortages or famines, national space no longer provides the outer limit of understanding. With new “fluid borders,” the flow of resources and capital, the costs of ecological changes, as well

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<sup>55</sup> Interview with Watson, May 2010. See also numerous press releases about the IAASTD and his Testimony to the Financial Services Committee of the United States House of Representatives during 2008 and 2009.

<sup>56</sup> This conceptual shift moved the intellectual map from “underdevelopment” and a world system of first-, second-, and third-worlds, to a global arena. With this shift, the politics associated with colonialism and its contemporary features also have been displaced in popular debate.

as movements of people alter how we imagine and offer policy options in shaping agriculture's future.

This new global "unit of analysis" has become instantiated over time, but these early assessments helped to create a more complex understanding of production (initially idealized in the distinction between food self-sufficiency versus comparative advantage) and new arenas and forms of participation (from top-down state-driven initiatives to forms of collective action and grass-roots mobilization) in the policy-making process. To reflect some of these changes in the assessment process, it is noteworthy that early assessments generally built on the technical expertise of specialists who were drawn from a narrow band of institutions. Today, in contrast, assessments include multi-stakeholder participation that draws on the expertise of social as well as technical scientists who employ a global framework to assess individual national contexts, and explore relations between countries and between a growing global corporate sector and agricultural producers, including, among the latter, those who speak on their behalf (social movements and NGOs).<sup>57</sup>

Global assessments are part of this transition from nation-based models of agriculture to global models and future scenarios of world food production, but they also are important sites of contestation. One of the more controversial assessments during the 1990s was the World Commission on Dams' Report, *Dams and Development: A New Framework for Decision-Making*, which was completed in 2000. This was an ambitious study where the assessment involved scientists from civil society organizations, members of representative governments, and the corporate private sector, and served as an early experiment in multi-stakeholder exchange. The controversies concerning the environmental, economic and equity dimensions of dams were identified then, and continue today, as reflected in a recent review (Moore et al. 2010). What Moore et al. (2010: 8) suggest in their reflections on the initial document is that "[despite] the World Commission on Dams efforts to find mutual agreement about the development effectiveness of dams and to assemble a comprehensive knowledge base that remains unrivalled in its scope 10 years later, fundamental disagreements remain about the costs and benefits of large dams, and about who reaps the benefits and who suffers the burdens of the costs. The question remains: are dams a useful technology to advance sustainable development or a destructive technology that only in rare cases can be managed successfully to avoid social and environmental devastations and produce real economic benefits?" Their conclusion appreciates the role of assessments in analyses of changing agricultural production strategies: it is important to engage diverse perspectives across a range of topics; recognize the changing drivers of development, including climate change and its significance for the development of approaches to food production, water storage, and energy production, as well as the relationship among diverse technologies, whether these include groundwater and wetlands management, water harvesting, and renewable energies like solar, wind, and geothermal, or the use and effect of new technologies including tractors.

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<sup>57</sup> See, for example, Via Campesina or the various NGOs that participated in the IAASTD.

Friedmann (1982), writing at the time of the inauguration of global assessments, draws our attention to the importance of examining agriculture as a global commodity – the framing of a global food regime – that offers a window on international relations, but also on national policy formation, new forms of agricultural production, and new food consumption practices. For Friedmann (1982: 248), a food regime is “a stable set of complementary state policies whose implicit coordination creates specific prices relative to other prices, a specific pattern of specialization and resulting patterns of consumption and trade.” Three crucial processes constitute a food regime: (1) the commodification of food as a critical aspect of proletarianization and a key factor in global accumulation, (2) recognizing family farms and simple commodity producers as important contributors to the production of food for a world market, and (3) recognition that national structures initially contribute to the policies constituting an international economic order, but then are dominated by it, producing different effects within nations as well as among them. In this way, food production creates particular patterns of global integration and dependency, national policy environments and formations, divisions of labor, how and what people produce and eat around the world, and where accumulation and profit are centered.<sup>58</sup> Global assessments confirm this empirical shift to global planning and policy formation. As Friedmann notes, the essence of the United States food regime was a system of trade protections and farm subsidies that yielded agricultural surpluses that provided food aid, built on United States Public Law 480 (PL 480), that guided the flow of the grain trade by sending surplus agricultural commodities to poorer nations below market cost (Friedmann 1993, see also Gaud 1968).<sup>59</sup>

### ***5.3 Poverty, Food, Environment, Climate Change, and Agricultural Assessments***

Assessments that highlight the global character of production and the problems that producers, whether large or small, face have continued through and after the turn of the century. The Millennium Ecosystem Assessment (MEA) was completed in 2005.

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<sup>58</sup> This is an uneven and competitive arena where social movements are critical in creating and responding to the diverse demands of the corporate sector, aid policies, and producers. The WTO Ministerial Conference of 1999, held in Seattle, Washington, to launch a new millennial round of trade negotiations was quickly overshadowed by controversial street protest as part of the United States anti-globalization movement against the WTO, the World Bank and the International Monetary Fund. As Friedmann (2005) also notes, if food retailers and agro-food corporations consolidate, “the new food regime promises to shift the historical balance between public and private regulation, and to widen the gap between privileged and poor consumers as it deepens commodification and marginalizes existing peasants. Social movements are already regrouping and consolidation of the regime remains uncertain.”

<sup>59</sup> Food aid was an important aspect of the debates at the time and was recognized to have contradictory consequences for producers and for global agriculture generally. See, for example, Clay (1986, 2003), Clay et al. (1998), Clay and Stokke (1991).

Its conclusions are critically important in understanding and planning for agricultural development in the coming years and include recognition that, over the past 50 years people “have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, freshwater, timber, fiber and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.”<sup>60</sup> The Assessment goes on to suggest that the “changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty for some groups of people.... [Moreover,]...the degradation of ecosystem services could grow significantly worse during the first half of this century and is a barrier to achieving the Millennium Development Goals” (Ibid.). Noteworthy about this report is that “the data and information that [were available to them were] generally related to either the characteristics of the ecological system or the characteristics of the social system, not to the all-important interactions between these systems” (Ibid. x).

The MEA process was rooted in a particular set of disciplines – the biological sciences, ecology, and economics – despite the experience and achievements of, for example, the Dams’ Assessment which showcased the benefits of multi-stakeholder exchange. As the introduction to the Millennium Ecosystem Assessment makes clear, “the data and information that are available [for the assessment] are generally related to either the characteristics of the ecological system or the characteristics of the social system, not to the all-important interactions between these systems” (MEA 2005: x). To the extent that the MEA offered an epistemic challenge to earlier thinking, it was to invite cross-disciplinary exchange and thus served as an important precursor to the International Assessment of Agricultural Knowledge, Science and Technology for Development which would build on some of the findings and the organizational strategies used in the MEA.

Two other global activities that changed the landscape for the analysis of agriculture were the failure of the WTO negotiations to come to agreement, due mainly to the intransigence of the OECD countries to reduce the protections and the subsidies given to their agricultural and food industries. These interventions gave rise to two important reference points for food and agricultural analysis. First, they revealed that the neoliberal global market policies advocated by the World Bank were not universally implemented when lobbying and interest groups were sufficiently powerful to resist such measures. Also, the fear of food scarcity has led some countries to restrict exports of food gains, and similar to the OECD countries, while agreements to “free, open global markets” has been a policy to support, in the face of potential emergencies or, in the case of the OECD countries, powerful commercial interest groups, policy practice is determined not by principle but by a broad range of political and economic considerations where

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<sup>60</sup> (<http://www.millenniumassessment.org/en/About.aspx#2>) (accessed April 12, 2011).

unequal power relations and participation in decision-making shaped how and which policies were implemented.<sup>61</sup>

The second activity was the establishment of the Millennium Development Goals in the early 2000s which identified the crises of hunger that continues to plague the lives of rural people across world regions,<sup>62</sup> despite, in some cases, national economic growth. For example, India's recent economic growth and global trading successes can be put in context against the undisputed figures that over 30% of Indian children are undernourished. Here it is evident that benefits of agricultural and, more remarkably, national economic growth have not trickled down as advocates of neoliberal theories often promise. Despite this disjuncture, the arrival of the MDGs has been significant precisely because they provide a reference point in international discourses for an agreed upon concern with poverty reduction.

These activities build on the increased public concern with food production and poverty reduction and the mobilization of people across world communities to address these concerns. Sometimes mobilization unites people who wish to collectively address specific issues and help to create synergies in recognition of shared interests that were not common or possible earlier. The World Social Forum, Via Campesina, and the Zapatista Army of National Liberation each raise issues that are of concern to those preoccupied with current food and agricultural practices and policy decisions. Like global assessments, global social movements alter the ways in which debate about agriculture and food unfold.

The World Social Forum (WSF) is an annual coming together of members of civil society organizations, usually in January at the time of the World Economic Forum in Davos, Switzerland. The Forum offers a vehicle for the democratic exchange of ideas, proposals, experiences, and activities. It represents a broad cross-section of people who are committed to issues of justice and equity, and concerned with social and ecological sustainability. Importantly, the WSF offers alternatives to the neoliberal assessment of the future of food production and consumption. Via Campesina and the Zapatista Army of National Liberation center their concerns within the broad landscape of agricultural production and highlight

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<sup>61</sup> Social movements organized around questions of agriculture's future would expose the importance of participation in the decision-making process, as efforts to be heard were part of the strategic stance of the various global food movements, as was the role of the NGO community in their discussions with the World Bank and the establishment of the IAASTD process (Feldman et al. 2010).

<sup>62</sup> While the Millennium Development Goals (MDG) have important implications for agriculture, where it is estimated that 70% of the world's poorest live in rural areas, its primary focus is poverty reduction and thus is not essential to advancing our argument here. MDGs include: to eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), malaria, and other diseases; ensure environmental sustainability; and develop a global partnership for development (<http://reliefweb.int/sites/reliefweb.int/files/resources/F7FC8E4FA7224D3DC125717100507EE1-ifpri-gen-may06.pdf>) (<http://www.ifpri.org/publication/agriculture-and-achieving-millennium-development-goals>).

the significance of local resource control that can be achieved through agrarian changes, including land reform, to give producers control of productive resources. La Via Campesina also raises concerns about corporate-driven agriculture and transnational companies for what they contribute to the loss of resource control by local communities (Wield et al. 2010).<sup>63</sup> What is distinctive about these initiatives is that they give public voice to those who previously were excluded from participation in these debates by “bring[ing] together millions of peasants, small and medium-size farmers, landless people, women farmers, indigenous peoples, migrants and agricultural workers from around the world...[that, in their words, defends] small-scale sustainable agriculture as a way to promote social justice and dignity” (<http://www.viacampesina.org/>).

Important about identifying these debates are their similarities with the issues that were identified by scientists and reviewers writing during and in the wake of the Green Revolution, parts of which were revisited throughout the 1980s and 1990s, even as there was significantly less debate about these issues throughout this period. While there are shared conclusions about the costs of particular forms of agricultural production, shifts toward industrial agricultural production are often supported by Malthusian assumptions which continue to justify more intensive production based on the speculations and promises of new technologies and new relations of ownership, while less often addressing the ecological and equity issues that have plagued efforts to intensify production, the loss of soil fertility, dependence on increasingly limited water resources, and declines in biodiversity. Research by the institutions of the CGIAR may acknowledge these costs, but they nonetheless exclude them in the forecasting models they offer on agriculture’s future (IFPRI 2010). Further, while rhetorical claims for sustainable development are championed in almost all recent proscriptive policy documents, there is only limited attention to agricultural practices that would contribute to sustainability. Instead, a focus on growing food needs and increased yields are privileged precisely because a declining

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<sup>63</sup> As Wield et al. (2010: 343) suggest in their analysis of the development of agricultural biotechnology from a political economy perspective is “how its applications reflect corporate power and strategy ... [and new] processes of industrial and technological restructuring and accumulation.” They go on to conclude that the “commercialization of the first generation of GM crops has brought concentration and commodity-chain integration of seeds, chemicals and biotechnology. Agrochemical companies have invested into the seeds part of the plant commodity-chain, so capturing new intellectual property from the integration of GM seed and chemicals. ...GM crops are increasingly important but the benefits so far are associated with a small group of (albeit important) crops, for a relatively small number of farmers, in a few, mostly large, producing countries.... [Despite this, they argue that] debate about the potential of GM to raise productivity in farming should not be deflected by the classic populist preoccupation with what is best for ... the poorest farmers in the South.” What they conclude is the need for “an urgent agenda of future work.” The arguments outlined in this paper concur with this need for urgent, but also embedded analyses of current agricultural production and policy priorities. See also Woodhouse (2010) who raises questions about industrial agriculture with a focus on the sustainability of large-scale production; and Weis (2010) who addresses fossil fuel and labor crises in relation to industrial agricultural production.

land base precludes bringing more land into production, and competition by fuel crops, as well as climate changes, erosion, declines in soil fertility, and the loss of agricultural land to industry and housing has meant that land and other resources that can be used for agricultural production are continually being squeezed in ways that threaten a narrow commitment to growth.

#### ***5.4 Food and Agriculture Assessments and Debates***

The post-millennium period is characterised by the emergence of a number of international assessments and reports that focus directly on global agriculture and food. These have been accompanied, or followed, by reports and activities concerned with forecasting future food and agriculture scenarios to 2050. Animating these reports and scenario planning exercises is alarm at the rate of population growth: “Looking to the future ... it is calculated that feeding a global population of just nine billion in 2050 will require a 70% increase in global food production” (IFAD 2010: 14).<sup>64</sup> The IFAD Report, like that of the World Bank Development Report on Agriculture, emphasizes the need for “greater and effective efforts ... to address the concerns of poor rural people as food buyers” (Ibid. 14). This dual commitment – to increase agricultural production and to enhance the purchasing power of the poor – signals one of the key controversies framing contemporary agricultural debates, what is often proposed as the trade-off between enhancing small-farm sustainable production and industrializing agriculture through large-scale capital intensive methods using primarily wage labor in the production of cheap staple commodities that are affordable to the poor.

Despite this popular framing, discussions reveal the complex relations that are actually entailed in securing the lives and livelihoods of agricultural producers, and it is precisely this complexity that is underestimated in the above opposition. Ongoing debate, in other words, has yet to adequately open to scrutiny the possibilities of small-scale industrial, but unsustainable capital intensive production, or large-scale, sustainable practices that do not displace labor nor provide below-subsistence wages. In short, what debate has exposed, but has yet to fully resolve, is the diversity of rural social and ecological conditions, and the broad range of social and technical knowledge that shape contemporary agricultural production. It is this diversity that decision-making ought to address in the promotion of technologies and ideas by particular interests who seek and create markets for the extraction of rent.

To be sure, there are a range of arguments that are used by large NGOs and the aid industry, as well as scientific interest and commercial groups, to promote different agendas. What is interesting in comparing them is that they each make similar rhetorical claims about sustainability and poverty reduction. Where they differ is on

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<sup>64</sup> See also the United Kingdom Government’s Foresight Report, and various IPPRI and FAO reports.



the role of universal models to forecast global needs (IFPRI 2010), and approaches that are location specific and attentive to the different circumstances, conditions, and social relations at local levels (national or community) of production, policy planning, and implementation (McIntyre et al. 2009). Thus, it is not surprising that the new green revolution for Africa, like the food sovereignty movement, focuses on “small-holders,” even as each may have a different rationale for doing so.

As well, even as debate recognizes the greater complexity of contemporary agricultural relations and practices, and their link to the environment and labor markets, there is still little if any attention to the question of local diets, eating traditions, habits, and practices, or food quality and diversity. Nor is there adequate attention to the link between forms of production and nutrition, diet, or health care. The information generally available on nutrition, diet, and health care (a growing area of research) is their relationship to education and training rather than to the ways in which they also may be differently enabled by the relationship between forms of production and consumption.

One reason for these controversies, and the need to open up public debate about agriculture and food policy is because an increasing number of actors, from across world regions and classes, are contesting the framework within which food consumption and food security, especially for poor and vulnerable people, is conceptualized. There also is growing debate about the agriculture and food policy framework in which scientific, trade, and economic and ecological options are explored (Feldman et al. 2010; McIntyre et al. 2009). Many of these documents challenge a “business as usual” framework, but while the rhetoric may be shared, the substantive meaning of the challenge is quite different. Thus it is useful to explore the context in which this challenge is proposed. In the IFAD Poverty Report 2011 (2010: 222), for instance, the following frame is used:

[it is important to challenge] ‘business as usual’ approaches to agriculture, which do not yet adequately address issues of productivity and market orientation in tandem with issues of sustainability. Yet more profoundly, what is lacking in all these conventional approaches is a full appreciation of both the risks and opportunities that affect the livelihoods of poor rural women and men, how both are changing today, and how mitigating or better managing risk is crucial for opportunities to flourish and for poor rural people to benefit.

In this deployment of the challenge to business as usual, the phrase generally promotes the promises of a neoliberal agenda and the new normal, globalized production for a world market. The Report does not engage the animating assumptions that shape its interpretation of the conditions that generate the need to challenge business as usual, nor does it offer a comparison to a past strategy that is implicitly drawn upon as a frame for a new one. In other words, the question of the need for a better understanding of risk and rural employment would benefit from explanation rather than assertion, so that the strategy employed in this pro-poor, sustainable framework can be open to public discussion and debate rather than foreclosed by a singular focus on issues of productivity and market orientation.

The IAASTD, in contrast, used the phrase ‘business as usual’ to emphasize an alternative approach to the study of rural relations, agricultural practices, and ecological and social sustainability in their offer of future options for action. This approach



highlighted the embeddedness of agricultural production and explored questions about production – its organization, social relations (recognizing power and inequality in access to agricultural resources), links to non- and off-farm work, relationships to “new” and “old” technologies and practices, including agroforestry and the use of genetically modified varieties – in relation to, and inseparable from its ecology and the natural resource base of which it is a part. Agricultural choices and decision-making also are elaborated in relation to consumption practices, trade relations, and political commitments by national governments and popular movements. Thus, for the IAASTD, the challenge of business as usual entailed opening to scrutiny how one thinks about and examines what is usually understood as an independent sector, with other issues examined as externalities which affect agricultural practices but do not constitute them.

Such an approach to research and policy-making is dependent on interdisciplinary thinking and engagement that builds on a range of expertise as was introduced by the Dams Assessment, but was also viewed as one of the merits of a farming systems approach. In this use of the phrase ‘business as usual’, agricultural research and policy-making depends on opening to question the popular assumptions that drive the neo-Malthusian model that supports the neoliberal agenda in their promotion of corporate sector driven industrial agriculture. This means taking Oasa’s analysis seriously and recognizing that inequalities in resource endowments and consumption are inherent to the capitalist expansion of agriculture such that minor tinkering with its most egregious costs – as if they are simply managerial or technical problems – are not likely to be adequate in creating an approach that is ecologically and socially sustainable over the long term.

Thus, even though responses to the challenges of the current agricultural crisis have been part of ongoing debates for generations, and even if the debates may have been partial or identified different costs and consequences of specific agricultural practices (as opposed to seeking to challenge the epistemic underpinnings of the Green Revolution), what is new about the current conjuncture is that the debates over agriculture’s future have extended beyond the expertise found in global institutions such as the FAO and the World Bank. Current debates are now part of popular discourse and include a broad-based commitment that extends the efforts of the social movements and civil society organizations that addressed some of these issues in the 1990s. Today, both social movements and civil society organizations (CSOs) engage agricultural scientists whose expertise informs their applied research and program activities, including their offering of alternative approaches to sustainable agriculture. Moreover, small-scale producers and consumers from the South as well as the industrialized North are more active in seeking to shape their production and consumption choices.<sup>65</sup> While not always able to significantly alter what might

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<sup>65</sup> While there are crucial differences among these constituencies, and the costs of many of the interventions have been borne by producers in the South, it is important to mark synergies that can help to expose what are envisioned as the costs of maintaining business as usual in relation to agricultural production.

be termed the hegemonic understanding about how to increase and yet sustain production, ongoing discussion, including that in the popular media, has been productive; it has encouraged caution about production choices among some producers and consumers, led to greater attention to the ecological trade-offs of selected practices, revealed the partial way in which WTO rules are employed, and exposed some of the costs of industrialized agriculture.

What this engagement suggests is that even when there is little interest among some researchers and institutions to debate the substantive issues raised by the agrarian, land, water, and food movements and research and policy initiatives, the contemporary period is characterized by complex discussions about agriculture's future. While efforts to elide the IAASTD, for example, has meant that the global institutions that initially funded the initiative have not included it in debate, others, including members of governments, national research institutes and the academy continue to use its research findings and options for action as ways to think about alternatives to large-scale industrial production, a set of issues we return to below.

## 6 Food Policies and the Food System

A critical issue in ongoing discussions about agriculture is the growing demand for cheaper food for the burgeoning populations who have been dispossessed from rural as well as urban communities. In this context, and as especially evident in the growing number of food crises and riots across world regions, the significance of cheaper food in order to avoid public disaster is crucial. Yet, as Sainath (2001) eloquently notes:

An exclusive focus on 'starvation deaths'—disconnected from the larger canvas—seems to imply this: if they don't die, everything's alright. If they lose their land, cannot feed their families, see their children enter bondage, are forced into debt-driven prostitution—all that is okay. They just shouldn't starve to death. That's upsetting. It's bad implementation.

What Sainath is highlighting here are the consequences of the maldistribution of food, but he does so by showing how access and adequate consumption are linked to questions of land control, particular labor relations, and indebtedness where, in each arena of social reproduction, people struggle for survival. He draws these connections to show how, under conditions when food is no longer available to sustain life, and where producers are excluded from their ability to produce, the contradictions of particular forms of production are revealed.<sup>66</sup> Amrith (2008) similarly reminds us of “the discursive power of food as a metaphor for justice” showcasing how broad debates on food actually invite attention to the parallel issues of access to land and other productive resources, including water, the livelihood strategies that secure production, and the emergent crises that attend to climate changes.

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<sup>66</sup> Sainath also chides his readers by suggesting that the problem of starvation is not systemic, but rather technical or managerial – poor implementation – whose solution merely requires minor fixes or shifts in how production and producer relations are managed.

The concern with food production, the right to food, and the provisioning of sustainable and healthy food is a concern to increasing numbers of people. As social movements, Sainath, and the IAASTD Report make evident, not only must agriculture be embedded in issues of social and environmental sustainability, but it must also engage questions of equity, health and nutrition. Nutrition, or consumption in the narrow sense, concerns not only what we eat but how food is grown and prepared, the kinds of food to which people have access, under-consumption and hunger, as well as obesity or eating the wrong or poor quality food.

As Lang (2010: 87) argues, “food policies are failing to respond adequately to the squeeze on land, people, health and environment ... [and] the dominant twentieth century productionist policy paradigm is running out of steam.” With food as both the metaphor and the commodity itself, it is evident that even acknowledging the need to produce more food to meet growing population demand, need not default to a narrow focus on production. Rather, as current debate suggests, it is critical to move beyond treating food or the agricultural sector in isolation, as the productionist paradigm would have it, and instead to embed food (and energy) production and consumption in a larger social and environmental landscape. Food and its trade-off with fuel production also helps to make evident the policy choices that attend to the interests of some producers over others, opening opportunities to explore relations among production, “ecological public health,” food access, and consumption. This focus also provides a context to examine questions of climate change as well as water access, quality, and safety, foci that currently take center-stage in research and policy debates in agriculture.<sup>67</sup>

Lang (2010: 89) also suggests that “[t]oday’s food system exhibits a ‘lock-in’: over-production distorts what bodies need, while human aspirations and market power distort land use, and marketing distorts desire.” To compensate for these practices and understandings, he concludes that we need to build food systems that can deliver low-carbon, nutritious, sustainable food. He assumes, in accordance with IAASTDs findings, the importance of moving beyond a narrow productionist paradigm in ways that integrate agricultural practices and policies with environmental, social justice, health, and security issues. Under these conditions food security must not only be realized by ensuring availability, or even accessibility and affordability, but by delivering sufficient:

...production only on ecological terms, with sustainable food systems at the heart of international development; to judge food not just by price but meshing embedded carbon, water and land use with calories – a new set of heuristics; to factor in *all* diet-related ill-health, not just hunger; to draw on all the sciences, not just the ‘natural’ sciences, to help create resilient food systems; to focus on entire food chains, not just agriculture; to transform how food is produced, distributed and consumed; to re-frame consumer aspirations to engage them in lowering food’s impact on the environment; and to deliver the above through democratic means, building movements that hold food systems to account and shape needs appropriately....

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<sup>67</sup> (<http://www.conferencealerts.com/water.htm>).

From this ecological public health perspective, food security *is* sustainability; only sustainable food systems can deliver meaningful security (Lang 2010: 94–95 *italics* in original).<sup>68</sup>

What is critical about this discussion for understanding shifts in agricultural debates and practice is the lack of consensus about the various ways to meet global food or, in some cases, even recognition that there may be alternatives to the promotion of a second Green/Genetic Revolution that may employ modern technology without adequate consideration of the costs to doing so. Some of these costs have been identified from the extensive critiques of the earlier revolution; increasing landlessness and resource impoverishment, loss of control of decisions about food production and consumption, loss of biodiversity, and environmental degradation. But, unlike the earlier initiative, what the institutionalization of a second revolution reveals is greater dependence on industrial, large-scale forms of production, land grabs by government or the private sector to secure their own food needs, often through cross-national agreements, and efforts to ignore or foreclose opportunities for debate (Feldman et al. 2010). Under these circumstances, despite rhetoric to the contrary, the objectives of environmental and social sustainability continue to be treated as externalities. An examination of the food security and food sovereignty movements, however, offers a window on ongoing debate that is now centered on popular movements for food security and sovereignty.

## 7 Food Security and Food Sovereignty<sup>69</sup>

Food security and food sovereignty are key themes that characterize current discussions in agriculture. Food security as a key issue in agriculture emerged as part of a development approach that sought national food self-sufficiency and arose in relation to questions of land security/reform and peasant movements across world regions in the 1970s. Discussions within countries sought to sustain diversified agriculture in ways that would contribute to food self-sufficiency in a balance between food imports and stocks. This was a concern to limit, and, where and when possible, avoid, price fluctuations in a global market, dependence on foreign currency, and the lack of timely distribution. During this period, for instance, Bangladesh promoted a strategy of self-sufficiency in rice production. Subsequent policy decisions under structural adjustment lending agreements in the late 1970s and early 1980s,

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<sup>68</sup> As Lang indicates, the small-scale farmer focus remains critical to discussions on many sides of the debate, and is not dissimilar to that raised by Johnston and Mellor (1961) and Johnston and Clark (1982) during the height of the first Green Revolution. However, comparison must be cautiously drawn given dramatic differences in the context of each historical moment.

<sup>69</sup> We do not address the changing practices or discourses associated with food aid or the role of the World Food Program (WFP) and the continued need for food during emergencies. Nor do we examine the Fair Trade movement that also is consequential for appreciating the range of issues shaping agricultural production and consumption.

however, led to the promotion of a comparative advantage strategy such that today the country is South Asia's largest rice purchaser. Moreover, food insecurity at the individual and household level, finds insecurity reproduced in national policy arenas as the current government of Bangladesh seeks to secure land for agricultural production in Uganda to be organized with the support of private Bangladesh investors (Reuters 2011). While such investments may provide more available crops for the Bangladesh market, they do not respond to the employment needs of those unable to sustain production in the country. As Reuters reports, "Some 25,000 people are needed for farming [but only] 10% will be Bangladeshi farmers." This approach opens debate on how the handling of single issues within agriculture can fail to respond to the multiple and complex issues that face current food crises.

Boyer (2010: 324–325) identifies a similar pattern in Honduras; "US official pronouncements on food security during the 'lost decade of the 1980s' must have possessed a particularly hollow ring. By this time, USDA had issued its definition to the world: food security for a household meant access by all members at all times to enough food for an active, healthy life. The definition purposely ignored how or where food is produced." Such a proclamation reinforces the notion that people should be able to purchase affordable food rather than worry about having access to the resources to enable them to produce food.

What these examples suggest is that the discourses of food security have been read in different ways by different constituencies. In some cases, they promote small-scale production and the right, not only to consume, but also to produce food. That is, discussions of food security emerged alongside the global commodification of food, as producers and consumers within countries began to experience reduced access to securing the means to meet their food needs, especially when policy decisions distinguish between production and consumption and focus only on the latter. For those who link consumption with production, mobilization has focused nationally or regionally and discussions generally include attention to land reform, credit access, the movement to privatize water, and rural class inequalities, although some also raise the negative costs of food aid (including PL480).<sup>70</sup> Not surprising in this context is what Patel (2009: 664–665) recognizes as the changing meaning of food security as it moved from being simply about producing and distributing food, to a whole nexus of concerns about nutrition, social control, and public health. An examination of current discussions in most assessments and reports on food and agriculture, particularly those from development institutions including the FAO, the World Bank, IFPRI, and IFAD, reveals the continued distinction between production and consumption, and an unambiguous commitment to the food security of individual households by increasing the production of food for market.

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<sup>70</sup> PL480 (Public Law 480), now referred to as the Food for Peace Act (FPA), provides for government-to-government sales of United States agricultural commodities to developing countries on credit or grant terms. Depending on the agreement, commodities provided under the program may be sold in the recipient country and the proceeds used to support agricultural, economic, or infrastructure development projects (USDA 2010).

The food sovereignty movement, in contrast, is part of a discursive formation and practical politics that are grounded in countering the global corporate agro-industrial food system and embracing a number of agrarian-centered reforms. The call for food sovereignty was introduced as part of the Via Campesina platform of change,<sup>71</sup> with key elements that include prioritizing local agricultural production with assurances of access to land, water, seeds and credit by peasant and landless peoples. Assuring such conditions requires land reform, fighting for free access to seeds and being cautious of GMOs, and safeguarding water as a public good; securing the right of farmers, including women farmers, to produce food and the right of consumers to be able to decide what they consume, and how and by whom it is produced; and the right of countries to protect themselves from extremely low priced agricultural and food imports recognizing that agricultural policy choices should be made through democratic decision-making.<sup>72</sup> “At the heart of food sovereignty,” notes Patel (2009: 670), is a radical egalitarianism in the call for a multi-faceted series of ‘democratic attachments’.

Yet the sovereignty movement, like that of peasant calls for food security, shares important features that include securing the rights of the poor and dispossessed not only to food, but also to democratic and equitable access to the conditions that can secure their social reproduction, whether for subsistence production, decision-making in matters of agriculture, and in all matters that enable social and ecological sustenance. As Edelman (2005: 339) emphasizes, “food [is] a human right rather than primarily a commodity, [it] prioritizes local production and peasant access to land, and upholds nations’ rights to protect their producers from dumping and to implement supply management policies.” As well, McElwee (2007), writing from the vantage point of Vietnamese peasants, notes “the Zapatistas in Mexico to cooperatives of cheese artisans in France, [producers] are taking their claims to a global audience: that they are entitled not just to food security (the moral economy of times past) but to “food sovereignty” – the right to continue to be agriculturalists and retain autonomy over livelihood decision-making rather than ceding this autonomy to the WTO” (see also Windfuhr and Jonsén 2005). Significantly, OECD farmers and the food industry did not succumb to the WTO agreements, and in India there is still subsidization and protection of commercial agriculture even as agriculture is still comprised of a significant proportion of small-scale, under-subsistence producers.

Important for the argument here, and for understanding current debates and policy shifts in agriculture, is the continuity between these two arguments and movements despite their origins in different historical moments. As Sivaramakrishnan (2005: 327) suggests, “struggles over human rights, heritages, homelands, clean

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<sup>71</sup> See Boyer (2010) who distinguished between food security that resonates with deeply held peasant understandings of security for their continued social reproduction in insecure social and natural conditions, and sovereignty which is generally understood as powers of nation states and thus distant from rural actors’ lives.

<sup>72</sup> These attributes of the food sovereignty movement are drawn from the Via Campesina webpage ([http://www.viacampesina.org/en/index.php?option=com\\_content&view=article&id=47:food-sovereignty&catid=21:food-sovereignty-and-trade&Itemid=38](http://www.viacampesina.org/en/index.php?option=com_content&view=article&id=47:food-sovereignty&catid=21:food-sovereignty-and-trade&Itemid=38)).

technologies, and healthy foods that dominate agrarian politics now are still mired, if differently, in questions of moral claims and the basic right of those who work the land to a dignified, secure, and fair livelihood.” Also important from these debates are the ways in which food production and consumption engage people across world regions and classes, if differently, and how these debates challenge – in a democratic if unequal way – the business as usual model of agricultural development interventions characteristic of the 1980s. Such debates return us to the engagement and political space made during the first Green Revolution where agricultural research and policy formation were undertaken primarily as sectoral analyses that were disembedded from the agroecological landscape and the social and political relations that connect production and consumption to the right to food and the sustainable use of resources.<sup>73</sup> But, the period does remind us that global social movements and assessments that offer interdisciplinary, evidence-based, embedded analyses of agriculture can contribute to sustaining public debate on food and agriculture, identify the linkages between food, agriculture, and other social and environmental resources, reveal the political interests that shape policy reform, and what these processes mean for the contemporary structure and relations of global food production, and what, together, these mean for the lives and livelihoods of producers and consumers.

## 8 Concluding Reflections

In this review, we have argued for continuity in the themes and issues that have characterized agricultural debates since the early 1960s. We build this argument by revisiting the issues and challenges posed by the introduction of the Green Revolution during this early period, and explore the debates that were an ongoing feature of its development, beginning in South Asia, but also having resonance in other world regions. These debates, we suggest, in large part because they were grounded in long-term evidence-based research, offer important cautions for the research, policy, and extension communities as we move toward the promotion of a second Green/Gene Revolution. Of course, the social and political context has dramatically shifted during this time – no longer is state-driven development with its attendant subsidies, supports, and import substitution strategy a feature of global relations.

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<sup>73</sup> It is important to recognize that the food sovereignty debate and its commitment to the rights of peoples and nations to define their own food, agricultural, and trade systems and policies includes what Kloppenburg (2010: 367) refers to as ‘seed sovereignty.’ Seed sovereignty incorporates the development of an institutional platform that, at the national level means “confronting state assertions of ‘national sovereignty’ over genetic resources and the role of national agricultural research services...[and at] the international level ... means pushing the CGIAR centres and the Multilateral System of the ITPGFRA [The International Treaty on Plant Genetic Resources for Food and Agriculture] in open-source directions. ...The CGIAR system in particular ... retains a commitment to public purpose and its broad germplasm holdings and experience with participatory breeding would be invaluable resources for building the protected commons” (Kloppenbug 2010: 381).



Nor are national popular movements and civil society organizations the primary centers of debate and challenge. Instead, food is now a global commodity and production, for national consumption occurs not only within the boundaries of the nation state, but also through investments by individual countries or investors in production that takes place across world regions. This complements the increased dependence and promotion of free trade as part of the neoliberal assumptions animating global relations with its strategy of comparative advantage.

Despite these critical differences, we suggest that there is much to learn from these debates since many of the issues raised by critical engagement with them are salient today, and thus offer important cautions when reclaiming the successes of this earlier agrarian transformation. For instance, farmers continue to be viewed as rational actors whose ability to manage risk centers responsibility on individuals rather than households, communities, or states, and for whom solutions and accommodations are assumed to best be made through the market. This means, for instance, that while efforts to empower women include their increased access to resources, credit, the labor market, and education, they increasingly are also individually held responsible for the costs of their reproduction. These efforts reveal the contradictory processes that are involved in struggles for women's enhanced opportunity structures; they may feel more empowered to engage as individuals accessing and controlling resources, as with land titling programs, but they also are challenged to meet subsistence needs under increasingly more precarious ecological, climatic, and social conditions, conditions about which they can have only limited control.

For small-scale farm families, this has meant that multiple incomes have come to shape their resource base, as increasing numbers are either forced out of agriculture to secure employment in off-farm or non-farm activities, or choose to migrate if they are to find ways to meet their subsistence needs. An emphasis on the role of off-farm and non-farm rural employment has been a central feature of the post-Green Revolution debate. Today, these issues are even more central to the discussion of agricultural production as increasing numbers of people are displaced from control of their means of production. These issues also highlight a limitation of a productionist paradigm that treats employment as external to the changes that arise with the transformations of the agricultural economy and suggest the potential contribution of integrated approaches to the study of agricultural practices and policies, as well as to prognoses of agriculture's future.

New collaborative initiatives among global institutions (FAO/ILO/IFAD) signal the salience of these new issues as well as the potential for more embedded understandings. Crucially, they also identify new sites for public engagement to address the consequences of the substantive shift from the agrarian to the rural economy. The new issues that emerge with this shift include land grabs expanding and globalizing debates on land reform; recognizing "seed sovereignty" and corporate ownership as central to questions of the control of productive resources; expanding a focus on irrigation to now include water resources and climate change for their impact on land tenure and ecological security; and corporate regulation and responsibility for sustainable agricultural practices broadening a prior focus on the

environmental costs of land degradation, and how, together, these issues recast the social and ecological landscape.

While such collaborative efforts are promising, other indicators suggest that business as usual is more likely, even as rhetorical commitments to poverty reduction and sustainable development are part of the claims of almost all agricultural development research and policy initiatives. We have shown, for instance, that early critics of the Green Revolution, as well as those writing in its wake, debated the possible environmental and ecological costs of a transformation in agricultural production. Thus, contemporary debate about the centrality of environmental and ecological degradation to current discussions about agriculture's future is hardly surprising and one might argue that it is a consequence of a failure to integrate and address the costs of new agricultural practices over the past 30 years, where growth and profitability have taken precedence over long-term sustainability. This suggests that serious debate has yet to adequately address the compromises and trade-offs that need to attend to the meeting of multiple goals. It also suggests that such debate has yet to seriously be engaged by a number of the international institutions that play a central role in policy-making. For example, the International Food Policy Research Institute (IFPRI) reiterates the neo-Malthusian framework in their offer of 15 future scenarios for food security through 2050. As the IFPRI summary document makes clear,

Each scenario involves an alternative combination of potential population and income growth and climate change. The authors ... conclude that the negative effects of climate change on food security can be counteracted by broad-based economic growth—particularly improved agricultural productivity—and robust international trade in agricultural products to offset regional shortages. In pursuit of these goals, policymakers should increase public investment in land, water, and nutrient use and maintain relatively free international trade.<sup>74</sup>

These policy strategies are precisely the approach the Dams and IAASTD Assessment sought to open to critical debate as they built evidence-based understandings of agriculture, not as an independent sector, but rather in relation to “such cross-cutting issues as health, education, climate change, trade, indigenous knowledge, formal science (agroecology, modern biotechnology, etc.), gender, food security, access to resources, rights – and, even briefly, food sovereignty” (Ishii-Eiteman 2009: 691). What we also learn from these debates, and from the concerns and demands raised by the broad-based global movements focused on global agriculture, is that the issues they raise can readily be dismissed or ignored by some of the major institutions, especially if their analyses do not comport with those who continue to have a dominant role in agricultural policy-making, and where the commitment is to a relatively narrow focus on increasing production and securing international trade. Yet, it is precisely the struggle to keep debate alive that promises to expand the knowledge we bring to bear on agriculture's future.

From these contrasts and multiple goals we can conclude, as we have tried to suggest in this review, that the research focus and policy commitments that have

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<sup>74</sup><http://www.ifpri.org/publication/food-security-farming-and-climate-change-2050>

shaped international shifts in agricultural debates and practice continue to build on, and critically engage, key contradictions that emerged and were identified more than a quarter-century ago, with the promotion of the first Green Revolution and the deployment of a productionist model of agricultural growth. What is perhaps most striking about the current moment is that despite support from broad-based social movements, civil society organizations that represent constituencies the world over, and important support from key interlocutors – among policy-makers within countries and in international institutions – open debate in the common project of building toward food security and sustainable lives and livelihoods has yet to become a central part of the policy-making process and the debates upon which evidence-based decision-making unfolds. Rather, what characterizes the current conjuncture is an intellectual impasse opposing different arguments (here we characterize them as follows); one that centers on the call for a second Green Revolution and a growth-*cum*-productionist framework that promises to meet the food needs of a growing population, and a second that calls for an integrated approach to agriculture that centers social, ecological, and environmental sustainability within the discussion of food security and sovereignty. Unfortunately, we are currently witness to a narrowing of the intellectual terrain able to address the embedded character of agriculture, ecology, and social sustainability, equity, and justice.

**Acknowledgements** We thank all the participants in the IAASTD project, especially Robert Watson, Beverly McIntyre, Marcia Ishii-Eitman, and Rajeswari Raina.

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