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AGRICULTURE AND THE DEVELOPMENT BURDEN

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Introduction
Indian agriculture in the twenty-first century is mired in a context of rapid economic growth and widening income inequality. Record food production, increasing industrial investments, booming exports, persistent hunger, worsening malnutrition, escalating natural resource degradation and unprecedented distress within the farming community, are its key features. This chapter explores how the intermediate regime, or the state along with its ideological and functional allies, imposes its own articulation of development on agriculture. In the process it stifles the rich diversity, production potential and robustness of India’s agriculture and diverse farming communities.

Agrarian movements, academics and activists accuse visible multinational and domestic industry, specific technologies, and unfavourable terms of trade or resource deprivations for the plight of Indian agriculture. Here, we discuss how agriculture as a sector of the economy and a way of life for over a quarter of the population and half the workforce of the world’s largest democracy, is shaped by the power and persistence of a relatively small faction of the population. This population, the intermediate class of domestic businesses, large and middle peasantry and the public sector workforce, seeks and enables state-led development (Raj 1973; Mody 2005; Vaidyanathan 2007). Theoretically, the ‘intermediate regime’ emerges in societies where the feudal class has disappeared or is replaced, but capitalism led by big businesses is not fully established. The evidence comes from developing countries that gained independence in the post-war period, where an industrial bourgeoisie failed to emerge, and assorted strata of lower-middle class, rich peasants, and managers and professionals of the state wield political power (Kalecki 1976). While the emergence and pathways of power maintenance differ between countries, the prevalence of state capitalism with economic policy goals, structures like state enterprises, and a managerial class of professionals and administrators are common to all, be it Peru, Bangladesh, India or Egypt (Fitzgerald 1976; Imam 1980; Sawyer 1985; Streeten 1997). In this regime, major investments have to be carried out by the state. The interests of the lower-middle class, the professionals (technical and executive openings for the ambitious young men of the ruling class), and businesses (small and some big domestic industrial houses) converge with the state’s interests and investment options.1 That the intermediate regime nurtures the multi-nationals and domestic businesses,
and works nonchalantly against the disenfranchised rural poor, especially the beleaguered small farmers and rural labour, is not surprising. But the ways in which the latter are used for legitimising the development agenda that suits accumulation by the intermediate class, and the ways in which these goal posts of development policy then govern the resources and production systems of the majority of the rural poor, is alarming.

India, a country once celebrated for a successful green revolution, is now home to the largest number of hungry people, under-nourished children and anaemic women anywhere in the world. Major policy concerns of food and nutritional security, environmental degradation, rural employment and farm incomes have been articulated at least over the past four decades. Solutions ranging from new legislations and schemes for food security, enhanced food production and assured rural employment (National Food Security Bill (NFSB), 2012; National Food Security Mission (NFSM), 2007; Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), 2005), to specific technologies and techniques (pesticide free and organic production, biofortification, genetic engineering, integrated nutrient management or micronutrient supply to soils, systems of rice intensification, drip and sprinkler irrigation, processing technologies), infrastructure (electricity, roads, storage spaces), and services, organisations for services or organisational formats (micro-finance, farmer field schools, farmer producer companies, co-operatives, women’s self-help groups) have been recommended. Some have been accepted and implemented as part of the state’s development agenda. A rule of thumb for rejection seems to be the extent to which the solution threatens or alters the prevalent centralised supply driven administration of agriculture (Raina 2014a).

It does surprise many that India’s first agriculture policy statement came in the year 2000. The National Agriculture Policy (NAP) 2000, proclaimed its goal for agriculture as 4 per cent growth rate (DoAC 2000). The NAP and the National Policy on Farmers (NPF) 2007, a more farmer focused variant of the NAP, are now available on the website of the Union Government’s Ministry of Agriculture. They have never been tabled or debated in the Parliament. In order to govern agriculture in the absence of a policy, the Union Ministry has several Acts and rules that help develop the administrative and programme guidelines. These Acts and rules (some dating back to the 1950s and 1960s, with a few amendments) conforming to ‘the new strategy’ (Subramaniam 1972) guide the programmes or schemes designed and implemented by the Union Government’s Department of Agriculture and Cooperation (DoAC) mainly as Central Sector Schemes and Centrally Sponsored Schemes. Though the absolute centralisation has seen some reform, the state, mainly the Union Government, continues to be the key actor setting the agenda in Indian agriculture. Private corporate sector growth in Indian agriculture is mainly in the agri-input industry and in the rapidly growing agro-processing; the recent corporate farming initiative and FDI in retail launched by the state will bring more private capital into agriculture.

Indian agriculture can be classified into three phases, based on the place and role it found in development as articulated by the state or, specifically, the intermediate regime that simultaneously constitutes and is nurtured by the state. It was ‘the basis of all development’, has been subjected to ‘modernisation for development’, and has been appropriated by strong contenders for ‘alternatives in development’. The centralising tendencies of the intermediate class and the capacity to exploit the state to their own advantage, is evident in all these phases. But the demand for local authority, decentralised knowledge and policy support for agrarian alternatives is growing. This may change the meanings of development and the burden on agriculture imposed by development as articulated by the intermediate regime.
Three phases of Indian agriculture

The picture of Indian agriculture poses several puzzles. There is pride in touching the desired agricultural growth rates; also concern about degradation and loss of natural resources, and the presence of over 200 million hungry people. Obviously, the marginal and small farmers and the agricultural labourers, who are the majority stakeholders, have no say in framing the development discourse. What is not obvious is the technocratic articulation of development used effectively by the intermediate regime, whose control over the state may now have reached its limit.

In this section we trace the evolution of Indian agriculture in three phases of development articulation, and new relationships between the state and agriculture. Other classifications (for instance, Bhalla and Singh 2010) present the evolution of Indian agriculture in three phases – the first phase of the green revolution with increasing productivity growth rates (18 years, from 1962–1965 to 1980–1983), the second phase of maturity of the green revolution with increasing production growth rates of major cereals but overall slower growth rates of productivity (about 10 years, 1980–1983 to 1990–1993), and the post liberalisation (post-1991) phase of retrogression of production and productivity growth rates (13 years, 1990–1993 to 2003–2006). The growth rates may speak for the performance of the sector. But they mask the development agenda and the crucial changes in the relationship between the state and agriculture.

Phase 1: Agriculture – the ‘basis of all development’

The political and economic logic that shaped agriculture in the immediate post-independence period (till the mid-1960s) is evident in Nehru’s statement that agriculture was the ‘basis of all our development work’. In keeping with this spirit, and contrary to what the Nehru-Mahalanobis strategy of investing in capital goods industry had many to believe, the first three Five Year Plans allocated over 22 per cent of the total investment to agriculture (including irrigation), while industry accounted only for 17 per cent (Balakrishnan 2010, quoting V.K.R.V. Rao 1982: 72). Irrigation accounted for a significant share in this public investment for agriculture, along with investments (both foreign and domestic) in agri-inputs industry like fertilisers and machinery. This was enabled by a Nehruvian worldview of development, where agricultural growth was necessary for food and for the generation of surpluses for industrial growth (ibid.). Public sector research on food crops doubled in many provincial research stations under the State Governments (Raina 1999). These public investments did have an impact and agricultural growth rate rose to 2.6 per cent (1950–1951 to 1964–1965) compared to 0.4 per cent (1900–1901 to 1946–1947) in the colonial period (Sivasubramanian 2000). While area expansion did occur, it was expansion of irrigated area that contributed significantly to this growth (Vaidyanathan 2010).

Besides the ‘big push’ of public investments in agriculture and rural India, the ‘problem of development’ demanded new ways to address the institutional constraints that stood in the way of adoption of new techniques and increased productivity and production growth rates. Increasing evidence of the inverse size-productivity relationship led to redistributive land reforms (Vaidyanathan 2010), tenancy security, and Community Development (CD) programmes to enable knowledge and technological services for farmers. But land reforms were constrained by the Nehruvian approach to creating and nurturing an intermediate class that would participate in democratic governance and gain from state capitalism (Raj 1964; Mody 2005). Moreover, the stability and participation of the rich peasantry and lower middle
class in governance was threatened by inflation and food crises, a consequence of shortfall in production, two drought years, and state attention diverted to the Indo-China war. By the end of this first phase, centralised public investment including a wide range of public sector enterprises and workforce, and policy-making mechanisms for agricultural growth were established; a powerful political commitment of state support for the poor farmer. The intermediate class had come of age.

Phase 2: Agriculture – modernisation for development

The second phase of Indian agriculture (mid-1960s to the late 1990s) takes off with the green revolution, a national and global political commitment to modernisation for food production. It culminates with the acknowledgement that the green revolution did increase food production but did not reduce hunger. To the ‘poor farmer’ legitimisation of state support (inherited from the first phase), it adds centralisation and science and technology (S&T) for productivity.

With increasing dependence on food grain imports from the USA, and evidence that new planting material was available to complement the irrigated, chemical fertiliser-led crop production systems (already promoted in India by philanthropic organisations – the Ford, Rockefeller and Kellogg Foundations), the mid-1960s witnessed a major change in the rationale of agriculture in development. Agriculture was to ensure national food security. Marked by the world’s biggest transfer of genetic material, the green revolution was launched in India, with the Union Government’s import of 18,000 tons of Mexican wheat for sowing, in 1966. Wheat yields shot up by a record 6.5 m tons in one year (1967–1968); and the newly reorganised Indian Council of Agricultural Research (ICAR) took the credit for the success. The national ‘strategy for agriculture’ (Subramaniam 1972) formulated a few years after the launch of the green revolution, legitimised the centralisation and consolidation of agricultural S&T (Raina 2011), and the two major policy planks of output price support and subsidised input supply (Ray 2007) that continue to date.

The technocratic vision of development dates back to the pre-independence period (Mody 2005). But with the appearance of the miracle seeds, agriculture’s relationship with the larger rural economy, employment and industrial growth was no longer the focus; the focus was exclusively on linear transfer of production technologies. Within the state’s agricultural S&T and administration establishments, institutional reform of social and economic structures (say land reform), and capacities for local decision-making for agricultural development were no longer important.

India’s planners had given specific attention to agriculture in the capital goods investments, with massive investments in the fertiliser industry (some plants established entirely with FDI and international technology) (Mahalanobis 1955; Sivaraman 1991) and irrigation that accounted for almost 90 per cent of public capital formation (Vaidyanathan 2007). Rice and wheat gained the most from these investments and public support (Barker and Herdt 1985; Rao and Gulati 1994), the unique convergence of technological and production capacities. Farmers responded to these capital investments by changing land use patterns, increasing cropping intensity and devoting more land to the cultivation of irrigated rice, wheat, cotton and sugarcane, with a massive reduction in the area devoted to pulses and coarse cereals.

The first phase of the green revolution ending around 1980–1983 (Bhalla and Singh 2010) witnessed the end of the rapid expansion of public capital formation in agriculture. The mid-1980s witnessed increasing private investments in irrigation (tube wells expansion – with over 70 per cent of irrigated cereal production depending on groundwater by the end of the
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In the 1980s, accompanied by increasing subsidies for tube wells, electricity and diesel, agricultural chemicals – fertilisers and pesticides, and seeds. The share of gross capital formation (GCF) in agriculture in total GCF fell from 20 per cent in 1980–1981 to 10 per cent in 1999–2000. With increasing public and private corporate investments in agri-inputs industry and public enterprises for seeds, domestic trade, food, land reclamation, and irrigation and power, capital formation for agriculture had outpaced capital formation in agriculture (see Ministry of Agriculture 2003, and Rao and Gulati 1994). The positive and direct relationship between public and private capital formation in agriculture during the 1970s (until 1979–1980) (Mishra and Chand 1995) turned negative in the next decade. As estimates of public financing of private capital in agriculture became available, it was clear that private investment promoting capital-intensive production practices and policy instruments, were maintained by ‘politically conscious and interest seeking middle and large farmers’ (Mishra and Chand 1995). Public financing of private capital during the early years of the green revolution was 35 per cent, and went up to 60 per cent in the later years of maturity, with stagnation in yield growth rates of staple cereals, and declining incremental yield response to unit irrigation and fertiliser use (Mishra and Chand 1995: A-78; ICAR 1998; Vaidyanathan 2010). Political capture of subsidies and inputs like electricity (Dubash 2007; Gulati and Narayanan 2003) became the norm. For the middle and rich farmers the state’s investments and input supply had become a necessity; partly driven by the limited incremental response to expensive inputs (fertilisers, since the mid-1970s) and partly by the limited local capacities for experimentation and learning because of a preconceived linear supply of knowledge and technologies from the centralised research and extension systems (Raina and Sulaiman 2007). Public investments and public policy support continued with increased flow of agricultural credit (enabled by bank nationalisation and more specific functions for rural banks), price support mechanisms based on cost of production for at least thirteen major crops, subsidies for all modern agricultural inputs – especially fertiliser, electricity and irrigation equipment, and increasing industrialisation for agri-input supply (Balakrishnan 2010; Birner et al. 2007; Dubash 2002; Gulati and Narayan 2003). Modernisation through centralised public investments that subsidised private investments was no longer for development; it became an end in itself.

Two major features that mark agriculture to this day, were initiated in the second phase with agricultural development defined as technological modernisation. The first was the state’s unquestioning acceptance and exclusive attribution of success in food production to S&T. The second was the technocratically legitimate demand for centralisation and consolidation of all technical aspects of the sector, whether it was the conduct of research, dissemination of technologies generated, or the formulation and implementation of public programmes or schemes for agriculture (almost all of them embodying one or more technologies) (Raina and Sulaiman 2010). Together, these two features (i) policy making driven by a faith in technology, and (ii) centralised knowledge and policy decisions, created a supply driven agriculture sector (Raina 2014a).

The governance of agriculture is dictated by the development norms of the intermediate regime. For them, centralisation is an essential policy mechanism; it keeps the schemes and public services under control. Since they are the executive arm of the state, their articulation of ‘development schemes’, with specifications of where and what type of interventions, who should implement or manage the intervention, who the beneficiaries of the subsidy should be, and the processes of actual disbursement of entitlements, becomes the substance of development disbursed by the state (Vaidyanathan 2007; Raj 1973). The supply of knowledge and technologies as public goods becomes a key instrument of the intermediate regime. Straitjacketed and centralised to enable the irrigated, chemical based cereal production
systems, they are the technical support for the supply syndrome – production policies, schemes and their subsidies (Raina 2011, 2014a).

Even critics who vehemently disagreed with Raj’s application of the (Kaleckian) analytical category of intermediate regimes to the Indian state, did agree that ‘it was a regime of increasing burdens being put on the shoulders of the rural as well as urban poor…’ (Namboodiripad 1973: 2135). In the intermediate regime, the urban and rural poor, the working class, had no voice to articulate and use the state to serve their interests (Robinson 1976). The economic policy of the intermediate regime or the business interests that stand to gain were not very evident in the early 1970s, when public spending was still not exclusively for subsidising private capital. The rich and middle peasantry and industry could direct policy instruments, especially specific embodied technologies, to their own gain; be it attractive minimum support prices for major cereals, subsidies for chemical inputs, electricity and fossil fuels (for groundwater access), and loan waivers every once in a while. By the mid-1980s the public subsidisation of private capital for agriculture had come to stay.

This, the political appropriation of knowledge and policy, legitimised by modernisation for development, is the worst and lasting burden on agriculture. In this regime, formal S&T does not need capacities to understand the production contexts and voices of marginal and small farmers or agricultural labour. Also, with technocratic interests in maintaining status quo, and limited space for even discussing the institutional reforms that were left unfinished in the first phase, there is limited scope for inclusion and participation of the majority of India’s farmers and diverse agri-food systems in knowledge and policy decision-making.

**Phase 3: Agriculture – alternatives in development**

Disillusionment with modernisation of agriculture and concern about increasing malnutrition mark the current and third phase of Indian agriculture beginning around 1998–2000. By the late 1990s, the state – its planners and public sector economists – started using the term ‘post-green revolution’ and questioning the decline in yield growth rate. This on-going phase is witness to a consolidation of forces by the established actors of the intermediate regime, in the face of several alternative conceptualisations and practice of agriculture and development. This phase may turn out to be either the most creative or the most violent and disruptive phase in Indian agriculture.

In industry, structural reform and liberalisation were initiated immediately in the post-1991 era; but not so in agriculture (Ghosh 2010; Storm 1997; and Mittal 2011 agree despite different theoretical frameworks). The intermediate regime took time (almost a decade) to re-shape the relationship between the state and agriculture. The linked decline in public capital formation and expansion of irrigation continued well into the post-reform era (Balakrishnan 2010). Unlike industry, in agriculture there was reluctance and resistance to reform even the most redundant extension departments, public sector labs, and resource degrading subsidies and non-performing services because all of them were legitimised by the existence of the massive number of poor farmers (see Raj 1973) and the state’s responsibility to provide modern technologies and inputs to them (Planning Commission 2008, 2012). Following the global financial crisis of the late 1990s state support for private capital (global and domestic) and rallying slogans like public–private partnerships (PPP) gained acceptance as norms for efficient economic growth. Given public sector rigidities, redundancy and inadequate efforts to reform existing organisations and systems, the state chose to strengthen the prevalent model with new administrative mechanisms like regulatory bodies (quasi-public led by selected experts and bureaucrats) and business models (new public–private partnerships...
and skill development corporations). This was an affirmation of the post-crisis relationship between the state and agriculture. Armed with a policy goal of 4 per cent growth rate, and strategies supporting private (MNCs included) capital for agriculture, the intermediate regime crafted a new development agenda which was contested by various stakeholders.

The first decade of the twenty-first century was a happening phase in Indian agriculture. Though the stagnation in productivity growth rates and the unfavourable incremental capital output ratio (ICOR) were acknowledged (ICAR 1998; Golait and Lokare 2008), the mechanisms to correct these were spelt out as a policy for targeted growth rates in the National Agricultural Policy (NAP) (DoAC 2000). The share of GCF in agriculture in total GCF which had fallen to 6 per cent in 2007–2008, rose marginally to 10 per cent in 2009–2010 and 7.2 per cent in 2011–2012. Though all major policy instruments were deployed for food production, the average rate of growth of yield per year fell from 4.4 per cent (between 1980–1990) to 2.8 per cent (between 1991–1998) and further to 0.6 per cent (between 1999–2009) (Gillespie et al. 2012). The post-green revolution stagnation in yield growth rates in the rice-wheat cropping systems and in other well-endowed agricultural tracts, was soon related to major equity challenges (marginal and small farmers, disadvantaged caste groups), and demands made for further technological solutions to address these challenges (Murgai and Howes 2003; Jain 2006; Erenstein and Thorpe 2011). The increasing dependence of agriculture on groundwater and energy (free electricity) and fertiliser subsidies became major concerns for political bargains (Dubash 2007; Gulati and Narayanan 2003; and Birner et al. 2007). The chemical inputs, fertilisers and pesticides, electricity and fuel subsidies were questioned for their limited contribution to productivity gains and for the political bargaining associated with the supply of these technologies to farmers (Planning Commission 2008; Vaidyanathan 2010; PMEAC 2012). But election campaigns that were fought and won on the promise of free electricity since the late 1970s, had attained a political maturity by the turn of the century, to capture political space in the world of agricultural modernisation and development. The political demand was to intensify the green revolution technologies in areas where it had an impact, and expand into areas that it had bypassed in the 1970s and 1980s. Alternatives to the public sector-led supply driven agriculture were necessary. The alternative, the new global articulation of the second or double green revolution (Conway, 1997) was accepted, which avowed public–private partnerships and new markets as absolute necessities.

Domestically, the demand for dismantling fertiliser subsidies was the most vociferous, when the subsidy bill touched a record Rs. 76,603 crores (766 billion) in 2008–2009 and maintained course till 2013–2014 (Planning Commission, Data Book, 2014). Though these soaring fertiliser subsidies were driven by global fossil fuel price rise and food price volatility, it was painful to realise that between 21.43 per cent to 32.01 per cent of agricultural GDP was being spent on subsidies (food, fertiliser, electricity and petroleum) every year since 2008–2009 (ibid.). The political debates ranged from dismantling all subsidies and enabling market mechanisms in the input sector, to installing regulatory authorities and more targeted technologies including precision cultivation methods and genetically modified (GM) crops.

Seeds were at the centre of the more targeted technologies to use chemicals most effectively. Seeds became the most contested agricultural input of the twenty-first century. Reform in the seed sector started in the 1980s (the maturity phase of the green revolution, Bhalla and Singh 2010), when industry or specifically Monopolies and Restrictive Trade Practices (MRPT) and Foreign Exchange Regulation Act (FERA) companies were granted permission to invest in and market seeds. With the National Seeds Act of 2004, the seed industry became an equal on many counts with the chemical industry; all seeds and planting material sold under a brand name had to be registered with the state, and all foreign seeds
imported or foreign certification granted would be recognised by the state. Farmers were allowed to breed and exchange their own seeds, as long as they did not sell them under a brand name, and maintained the quality standards of registered seeds. But by this very Act, they were excluded from the seed industry. Cotton, fruits, vegetables and maize gained the most from this industry in terms of productivity per hectare. These and the cultivation of public sector generated cotton hybrids appropriated and sold as private produce with international IPR protection for specific Bt genes and processes of insertion, with no acknowledgement or profit sharing mechanisms with the public sector geneticists, plant breeders, agronomists, entomologists and pathologists (see Vennila 2006; Ramasundaram and Vennila 2013) mark a point of departure in the role of knowledge in agriculture. The political articulation of generation of public sector knowledge and technologies for modernisation of agriculture in phase 2, was replaced in phase 3 by the pro-active facilitation mechanisms for appropriation by or partnership and subservience to private (domestic or multinational corporate) sector for commercialisation (see, ICAR 2007; FICCI 2012). Centralised regulation and structures (a Seed Act or a proposed BRAI) were considered essential.

As it is globally, the state-led alternative of strengthening the green revolution paradigm co-exists with other alternatives. Many agro-ecosystems, diverse food cultures, and social and ecological movements (some since the 1970s) articulate alternatives to the green revolution approach. Contradicting the centralisation characteristic of the state-led alternative, these alternatives are being developed and promoted as decentralised location-specific programmes, in many cases (like Sikkim, Uttarakhand and Karnataka) with the support of the State Governments.

A major institutional innovation for decentralisation came in 2007, when the Union Government launched the Rashtriya Krishi Vikas Yojana (RKVY) granting 25 per cent of the plan allocations to the State Governments. The RKVY funds were to be used by State Governments for planning (including district agricultural plans) and executing location-specific programmes relevant to each agro-ecosystem, technology and natural resource. It ended the 100 per cent centralised planning, programme design and funding in agriculture. But the expectation that it would ensure flexibility and autonomy at the state level to engage with context-specific production and distribution problems remains unrealised. Some State Governments did design and use RKVY for organic agriculture and specific schemes for conjunctive use of water or groundwater sharing or pest surveillance and control. But the emergence of new guidelines and regulatory authorities for decision-making within and by the Union Government stifles these fledgling attempts for autonomy.

The social and political contestations about alternatives came alive in the seed sector. The constitution of national regulatory authorities like the Genetic Engineering Approvals Committee (GEAC) in the midst of protests over the Dunkel Draft in the early 1990s, and the rapid growth of India’s private seed industry (domestic and multinational owned) supported by a World Bank loan during a phase of stagnation in industrial growth, sparked a series of protests, a rapid sprout of alternatives like community seed banks, in-situ seed conservation systems, and two important national legislations which were brewing over the 1990s (the Protection of Plant Varieties and Farmers Rights Act 2001, and the National Biological Diversity Act in 2002). The centre–state antagonisms built up with the leaking of genetically engineered cottonseeds for cultivation in Gujarat even before formal approval by the GEAC (regulatory lapse which led to burning of the ‘illegal’ cotton fields). Cases were filed by State Governments against the seed industry (Monsanto) and the Union Government, under the MRTP Act. Civil society responses and doubts about scientific credibility and expertise were fuelled by the public interest litigations and public hearing of
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evidence on GM crops (led and supported by a learned Union Minister of Environment and Forests). The Minister’s demand for sound science to assess the GM crops debate resulted in a scientific report (Indian Academy of Sciences 2010), which was found plagiarised and eventually discredited. The moratorium on genetically modified crop trials (recommended by the Supreme Court and supported by a highly qualified group of scientists in 2013) till requisite biosafety mechanisms and protocols were put in place, and the approval granted for GM crop trials by an out-going government, a month before the national elections in 2014, raised questions about the politics of technology, and the nature of democracy and development in the country. Despite several such opportunities, the state, true to its intermediate class interests, strives to maintain status quo.

The state continues to provide the subsidies needed and strives to generate more Foreign Direct Investment (FDI) for agriculture, in industry, transport, infrastructure, processing and retail businesses. The empowered intermediate regime strives to maintain status quo even in the face of massive public losses. It feeds on the state’s resources. It legitimises (a) the second green revolution as an alternative and (b) the policy instruments that offer opportunities for accumulation by the middle class.

The development burden: evidence and options

The intermediate regime’s articulation and appropriation of the development agenda is now being questioned; whether seen as the configurations of agrarian and rural distress in an uncaring political regime (Vasavi 2012), the indifference of the collectivity of grossly statist policies (Drèze and Sen 2011), or the state elites wedded to growth and unwilling to address state capacities to deliver services to the poor (Kohli 2012). The current status of agriculture reveals how the intermediate regime is now incapable of seeing the evidence of distress caused by its articulation of agricultural development.

For the state, it is a matter of pride that agricultural growth rate was 3.75 per cent over the period 2004–2005 to 2012–2013 (Chand 2014); this approaches the policy goal of 4 per cent annual growth rate. Yet, this impressive growth rate pales in the context of overall growth rates of the Indian economy, which was 6.1 per cent in the decade 1991–1992 to 2000–2001, with growth rates above 9 per cent for the period 2005–2008 (Balakrishnan 2010). Table 6.1 here offers a brief profile of agriculture in the economy. That favourable terms of trade, increase in real prices of agricultural commodities, and consequent increase in profitability contributed over 50 per cent of the growth rate in agricultural GDP (Chand 2014), despite massive increases in use of inputs (Ministry of Finance 2014) is worrisome. That growth rates of productivity did not keep pace with growth rates of input use (chemicals, irrigation – mainly groundwater, HYV and hybrid seeds, and electricity consumption) bothers policy makers and other stakeholders (NDC 2007; Planning Commission 2012). Agriculture and allied sectors grew at 4.7 per cent in 2013–2014 (higher than the 3 per cent growth rate from 1999–2000 to 2012–2013), accounted for 13.5 percentage of the national GDP, and provided livelihoods for 263 million people – cultivators and workers, hosting 54.6 per cent of the national workforce (Ministry of Finance 2014; DoAC Census 2011). The relative stagnation of growth in productivity keeps the massive un- and under-employed workforce in agriculture, the poorest. Given the jobless growth in Indian industry and limited skilled jobs open to the rural population in the services sector, agriculture bears the burden of structural unemployment in a rapidly growing economy. Given the policy goal of 4 per cent growth rate the state spends more than a third of agricultural GDP on subsidies when the sector barely accounts for 14 per cent of the value-added in the economy (in 2012–2013).
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<tr>
<td>National GDP at factor cost (2004–05 prices) (Rs. Crores)</td>
<td>4,516,071</td>
<td>4,918,533</td>
<td>5,247,530</td>
<td>5,482,111</td>
<td>5,741,791</td>
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<tr>
<td>Growth rate (%)</td>
<td>8.6</td>
<td>8.9</td>
<td>6.7</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td>Agriculture share in total GDP (%)</td>
<td>14.6</td>
<td>14.6</td>
<td>14.4</td>
<td>13.9</td>
<td>13.5</td>
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<tr>
<td>Growth rate (%)</td>
<td>0.8</td>
<td>8.6</td>
<td>5</td>
<td>1.4</td>
<td>4.7</td>
</tr>
<tr>
<td>Agriculture share in agricultural GDP (%)</td>
<td>12.3</td>
<td>12.4</td>
<td>12.3</td>
<td>11.8</td>
<td>n.a.</td>
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<tr>
<td>Food grains (million tonnes)</td>
<td>218.1</td>
<td>244.5</td>
<td>259.3</td>
<td>257.1</td>
<td>264.4</td>
</tr>
<tr>
<td>Agriculture share in total GCF (%)</td>
<td>7.3</td>
<td>6.3</td>
<td>7.0</td>
<td>7.1</td>
<td>n.a.</td>
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<td>Share of agriculture in agricultural GCF (%)</td>
<td>6.7</td>
<td>5.8</td>
<td>6.5</td>
<td>6.5</td>
<td>n.a.</td>
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<tr>
<td>Agricultural GCF as a % of agricultural GDP (%)</td>
<td>20.1</td>
<td>18.5</td>
<td>20.8</td>
<td>21.2</td>
<td>n.a.</td>
</tr>
<tr>
<td>Share of private sector (%)</td>
<td>16.7</td>
<td>15.7</td>
<td>18.0</td>
<td>18.1</td>
<td>n.a.</td>
</tr>
<tr>
<td>Agricultural exports including marine products as per cent of total exports (%)</td>
<td>8.2</td>
<td>8.0</td>
<td>10.1</td>
<td>11.8</td>
<td>11.9</td>
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*Source: Adapted from Chapter 1 and 8, Economic Survey, Ministry of Finance, and DGCI&S data*
Effectively, the intermediate regime transfers income to agri-business and industry from the shrinking share of the economic pie that agriculture generates.

India has achieved record food grain production, an all-time high of 264.4 million tonnes (2013–2014) (Table 6.1), with an almost equal volume of horticultural produce. Field agriculture, mainly crop production, contributes far less (at 11.8 per cent) to agricultural GDP (Table 6.1) than in the latter half of the twentieth century, with horticulture and livestock accounting for an increasing share (30.4 per cent from horticulture and 4.1 per cent from livestock, in 2012–2013). In addition, fruits, vegetables and meat and dairy products are gaining in their share of consumer expenditure on food, with cereals (rice and wheat) declining in their share in the consumption basket. In 2013–2014, India’s cereal exports accounted for 46.8 per cent of the total value of agricultural exports.

However, the successes in food production are marred by increasing calorie poverty in the country, the most deficient in calorie intake being the rural poor (Table 6.2). The trend of calorie poverty continues; India is in 2013 home to a quarter of the world’s hungry people, a third of all the malnourished children in the world (Welthungerhilfe et al. 2013; WFP-MSSRF 2009). Nearly half of its children under three years of age are underweight and under-nourished. One child dies of malnutrition every eight seconds, and over 87 per cent of pregnant women are anaemic (NFHS 2008; Jose and Navaneetham 2008). Given that the national agricultural production and distribution system is built to ensure food security, or at least one dimension of food security, namely food availability, this prevalence of hunger and malnutrition speaks of strategic fault-lines between agriculture, food and nutrition.

Table 6.2 Calorie poverty increases as consumption poverty declines

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption poverty (%)</th>
<th>Calorie poverty (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>1983</td>
<td>46.5</td>
<td>42.3</td>
</tr>
<tr>
<td>1987–88</td>
<td>39.3</td>
<td>39.2</td>
</tr>
<tr>
<td>1993–94</td>
<td>36.8</td>
<td>32.8</td>
</tr>
<tr>
<td>1999–2000</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2004–05</td>
<td>28.1</td>
<td>25.8</td>
</tr>
</tbody>
</table>

Note: Consumption as measured by Monthly Per Capita Expenditure (MPCE) and calorie intake (2400 and 2100 kilo calories per day for rural and urban populations respectively) measured at the minimum level associated with the poverty line

Source: World Bank team (2011: 50), based on Deaton and Drèze (2009) Table 5, and World Bank staff estimates

Historically, the green revolution, a food production strategy combining irrigation with chemical inputs and high yielding varieties, was one of the most successful attempts at increasing food production. But the production successes have not been sustained nor translated into consumption of adequate and safe food for all Indian citizens. Of the 54.6 per cent of the total workforce (DoAC Census 2011) that depends on agriculture, many are marginal and small farmers themselves, and workers who have been displaced or lost their land. They account for at least half of the 44 per cent increase in male agricultural workers and 24.5 per cent increase in female agricultural labour between 2001 and 2011 (DoAC Census 2011).
The shrinking size of operational holdings, with the average holding size falling from 2.28 hectares in 1970–1971 to 1.23 hectares in 2005–2006 (DoAC 2008), is noticeable. There is also a significant decline in the number of cultivators (down by 8.6 million between 2001 and 2011); a 3.2 per cent decline (ibid.). Though the percentage may vary depending on the food crops produced, caste and gender of the cultivators, it is estimated that less than 44 per cent of all cultivator households are net sellers of main food crops (Vishwanath and Serajuddin 2010). This makes these cultivator households and labour households vulnerable to food inflation, and worsens the disconnection between food production and nutrition (Gillespie et al. 2012).

Among the producers, marginal and small farmers are vulnerable to various risks. Handling over 44 per cent of all the sown area and 85 per cent of all operational holdings (Table 6.3), they remain the most under-nourished and vulnerable to price shocks (Ministry of Finance 2014). Given the fact that the number of operational holdings they handle has increased by 48.83 per cent and the average operational area has declined by 46.05 per cent between 1970–1971 and 2010–2011 (Table 6.3), their vulnerability to various other production risks is already high with each producer handling several diverse tiny parcels of arable land. The decline in the number of cultivators adds to vulnerability due to a decline in the share of self-produced and processed foods in the food basket of these marginal and small producers. Though they are efficient and more productive than medium and large farmers, their vulnerability to food price shocks increases (Dev 2012). They are likely to remain in chronic poverty (Gangopadhyay et al. 2010; McKay et al. 2004; Planning Commission 2010), given limited opportunities to participate in and gain from local value-added production systems. The diverse opportunities for sustainable agriculture and poverty reduction using local knowledge (GTZ Sustainet 2006), once lost, becomes irretrievable.

The state does acknowledge the stressed natural resources resulting from prevalent production practices and inadequate rural infrastructure (Planning Commission 2008; 2011a). But the centralised agricultural S&T and administration can only proffer solutions to selective problem definitions, which often add to the natural resource degradation (Raina et al. 2006). For instance, depletion of micronutrients and minerals (nine major ones recorded thus far) due to chemical-intensive production practices is acknowledged, and fortification of

### Table 6.3 Distribution of number of operational holdings by major size-groups for all social groups: all India

<table>
<thead>
<tr>
<th>Year</th>
<th>Total ('000 numbers)</th>
<th>% of marginal and small (together) to total number of holdings</th>
<th>Total ('000 hectares)</th>
<th>% of marginal and small (together) to total area of holdings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970–71</td>
<td>70,493</td>
<td>69.67</td>
<td>162,124</td>
<td>20.86</td>
</tr>
<tr>
<td>1980–81</td>
<td>88,883</td>
<td>74.47</td>
<td>163,797</td>
<td>26.19</td>
</tr>
<tr>
<td>1990–91</td>
<td>106,638</td>
<td>78.28</td>
<td>165,507</td>
<td>32.46</td>
</tr>
<tr>
<td>2000–01</td>
<td>119,930</td>
<td>81.80</td>
<td>159,436</td>
<td>38.86</td>
</tr>
<tr>
<td>2005–06</td>
<td>129,222</td>
<td>83.29</td>
<td>158,323</td>
<td>41.14</td>
</tr>
<tr>
<td>2010–11</td>
<td>137,757</td>
<td>84.98</td>
<td>159,180</td>
<td>44.32</td>
</tr>
</tbody>
</table>

Note: Marginal holding – less than 1 hectare. Small holding – 1–2 hectares

Source: Estimated from DoAC, various years, and Census of India

The shrinking size of operational holdings, with the average holding size falling from 2.28 hectares in 1970–1971 to 1.23 hectares in 2005–2006 (DoAC 2008), is noticeable. There is also a significant decline in the number of cultivators (down by 8.6 million between 2001 and 2011); a 3.2 per cent decline (ibid.). Though the percentage may vary depending on the food crops produced, caste and gender of the cultivators, it is estimated that less than 44 per cent of all cultivator households are net sellers of main food crops (Vishwanath and Serajuddin 2010). This makes these cultivator households and labour households vulnerable to food inflation, and worsens the disconnection between food production and nutrition (Gillespie et al. 2012).

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soil systems and food-grains with the missing micronutrients (especially zinc [Zn] deficiency which is known to be a major cause of diarrhoeal deaths among infants) recommended (Prasad 2010, Srinivasarao and Rani 2013). There are several methods to enrich soils with biomass based, micronutrient and mineral retaining manures. But they rarely receive policy support or public investment; they cannot be designed into a central scheme and produced and supplied in standard (subsidised) doses for the entire country given the diversity of nutrient content in diverse green manures and farm yard manure mixtures. Options for public investments in location-specific soil rejuvenation and agricultural production systems do exist (Planning Commission 2011a), but they would demand a shift from the policy instruments of centralised input subsidy and output price support systems.

There is clear evidence of technology fatigue, run-down delivery systems in credit, extension and marketing services and insufficient agricultural planning at the district and lower levels (Planning Commission 2011b: 89, quoting the NDC meeting 2007). The state does acknowledge the explosive diversity of agriculture and food systems, and the administrative inefficiencies involved in over 55 central schemes (designed and implemented) by the Union Government’s DoAC in the Ministry of Agriculture (streamlined into six National Missions in the XII Five Year Plan). But the demand for decentralised planning, public investments and production capacities at the district or lower levels remains on paper. The DoAC has issued guidelines for the allocation of RKVY funds by State Governments (DoAC 2007); this undermines the RKVY as an institutional innovation and debilitates the State Government’s capacities to plan and implement programmes in diverse agro-ecosystems.

The persistence of technologies, investment patterns and centralised administration is best illustrated in the state’s understanding of and solutions for rainfed agriculture. Rainfed production tracts cover 60 per cent of India’s net sown area (Katyal and Farrington 1995; Shah 2006) and produce 34 predominant crops (NRAA 2009). There is evidence of stunning yield growth rates of millets, fruits and vegetables, livestock and dairy, from these tracts (Ministry of Finance 2014). They gain little from the centralised schemes and the massive subsidies (mainly fertiliser, and fuels and electricity)6 that enable production of 3–4 major irrigated chemical-intensive crops with assured minimum support prices (announced by the government). The rainfed farming systems (crops, livestock, horticulture and inland fisheries systems) that depend on rainwater harvesting, soil moisture management, and soil biomass based fertilisation, produce anywhere between 60 to 90 per cent of important food, fibre, fodder, and fuel. Increasing growth rate of food-grain production in the rabi season7 (in the period 2005–2006 to 2012–2013) is mainly due to impressive productivity growth rates achieved by these rainfed crop tracts and the rapid increase in groundwater withdrawal in these tracts, increasing private market channels and transport investments in rural and peri-urban areas. There is awareness that increasing irrigation (groundwater in particular) and fossil fuel dependent agriculture in rainfed tracts are not sustainable solutions (Vijayshankar 2006; Raina 2013), especially given the diversity of biophysical and social contexts even within one state (Vijayshankar 2005). Farmers in the rainfed farming districts (the ‘Big 5’ rainfed farming states of Maharashtra, Andhra Pradesh, Madhya Pradesh, Karnataka and Chhattisgarh) account for nearly two-thirds of the annual average of 16,000 farmer suicides between 1995 and 2012 (Raina 2014b). It is not that the state has been caught unaware; this slow and consistent disaster is a consequence of the inability and unwillingness to see the evidence, and to enable differentiated policy options and decentralised governance mechanisms.

Public policy changes and commensurate investment in decentralised capacities for production, processing and consumption systems have been recommended in the rainfed farming blocks and districts where more than 80 per cent of the rural poor live. The XII Five
Year Plan, includes a National Rainfed Farming Programme (Planning Commission 2012: 46–47), designed to strengthen and build capacities in local organisations (block level) to provide complementary and integrated support for rainfed farming and non-farm activities, including leveraging funds and support from a range of on-going public schemes. But even with specific designs to operationalise decentralised public investment and support to achieve food and nutrition security through sustainable agro-ecosystems in different rainfed agriculture typologies (FAO, RRA and CRIDA 2013), little has changed. The intermediate regime is unwilling to acknowledge that there is no sustainable growth without inclusion, and unable to create the decentralised norms or institutions that will ensure such opportunities for inclusion. By legitimising and renaming the reinforcement of the green revolution approach as the alternative, it forecloses the opportunities for several other decentralised location-specific alternatives that the rural poor can participate in and gain from.

**Development, decentralisation and diversity**

A demand was made about three decades ago for a national policy for food, agriculture and nutrition, with the ‘policy objective of minimising nutritional inequalities’ (Rao 1982: 137). This is an entirely different policy goal compared to the prevalent goal of 4 per cent growth rate. The green revolution paradigm of genetics-led production knowledge and support (subsidies) has outlived its potential; there will only be diminishing returns to this paradigm (Ruttan 2005). What is needed is an alternative paradigm that celebrates the explosive diversity of agro-ecological and social systems. Agrarian alternatives based on principles that have ecological and social feedback loops, which will be based on ‘building secure bridges between agriculture and nutrition/health on the one hand, and between agriculture and the environment on the other’ are necessary (ibid.). Many alternatives in India have demonstrated a different epistemology of development and different policy goals. The question today is whether the middle class that enjoys the benefits from rapid economic growth will push for reform of the intermediate regime. Will it mobilise different fiscal and financial allocations, and educated and articulate decision-makers who can design and implement regionally differentiated production and distribution policies?

This chapter has discussed how an empowered intermediate regime articulates development, the role of agriculture in development and policy instruments. For the regime, agriculture has been fundamental to all development (phase 1), the driver of modernisation for development (phase 2), and is now a game of contending alternatives (phase 3). That an alternative development paradigm and policy framework is necessary for agriculture, food and nutrition is obvious. When contending alternatives (like systems of rice intensification (SRI), non-pesticidal management, and organic farming) seek scientific and political legitimisation from the existing knowledge and policy paradigm the response from the entrenched actors is to co-opt the alternatives into the prevalent approach (Raina 2013). The intermediate regime has used centralised target and control mechanisms to implement innovations like the RKVY; these policy solutions come as technological packages, without mobilising the decentralised capacities or functional devolution needed for the small farmers to participate effectively in these solutions. These centralised bureaucratic strangleholds on agriculture prevail. Whether it is the formulation of central guidelines for the RKVY, national authorities for specific technologies (say GM crops), or central subsidies disbursed for chemicals, fuel and food, the intermediate regime is aware that this centralisation and bureaucratisation leads to inefficiencies and corruption much like the bureaucratisation of co-operatives did in the past (Jodhka 1995).
Today, many constituencies of Indian agriculture which were excluded in the green revolution strategy, like small farmers, agricultural labour, minor millets, consumers of diverse staples, rainfed and mountain agro-ecosystems, and the environment with all the flora and fauna associated, soil and water systems, and local food cultures, are gaining voice and presenting alternative problem statements. Several State Governments who had unquestioningly accepted the centralised development agenda for agriculture in the latter half of the twentieth century are asserting their constitutionally guaranteed authority to make specific technological choices, to promote their regional agri-food systems. The policy options here are public investment in education and health care and promotion of decentralised regional production systems, and domestic markets with short energy efficient value chains (Drèze and Sen 2011; Singh 2012). Contradicting these are the globally accepted development norms and their reaffirmation of programmes for centralised public subsidisation of market-led export oriented agriculture. Here the state accounts for, subsidises and ultimately legitimises the energy, nutrition and environmental deficits, all in the name of the poor farmer and malnourished children. The wealth of India’s billionaire community increased twelvefold in fifteen years; enough to eliminate absolute poverty in the country twice over (PTI 2014). The legacy of past development trajectories, evident as climate change and several political-social conflicts may not permit this kind of accumulation; at least not for long. The intermediate regime has to confront its obsessions with vacuous growth rates to start with. It has to find ways of addressing questions of income and nutritional inequalities by acknowledging and promoting the diversity of Indian agriculture, seeking alternative decentralised knowledge and policy paradigms for development.

Acknowledgements

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Notes

1 There were serious Marxist critiques (Namboodiripad 1973) of Raj’s application of Kalecki’s intermediate regime theory to understand India’s middle class nurtured by state capitalism (Raj 1973). But what Kalecki and Raj were pointing out was how the intermediate regime weakened the working class and the poor peasant, using Marx’s own methods of analysis on problems that have come up since (Robinson 1976).
2 Quoting Nehru (1968), from a speech delivered to the National Development Council in 1963 (see Balakrishnan 2010).
3 The Timbaktu Collective, Deccan Development Society, Centre for Sustainable Agriculture, The Keystone Foundation, Foundation for Ecological Services, Sewa Mandir, Central Himalayan Rural Action Group, Samaj Pragati Sahyog, Centre for Indigenous Knowledge Systems, Agriculture, Man and Ecosystems Foundation, and Watershed Support Services and Activities Network are a few examples of organisations that this author has known or collaborated with in the civic space. These organisations have demonstrated dynamic agrarian alternatives that are profitable, equitable and sustainable (socially and ecologically).
4 They include organic agriculture policies formulated, debated and approved in the state legislative assemblies of eleven states of the Indian Union. This is surprising in a country with little that is available as national policy or state level policies for agriculture. Also, the Ministry of Rural
Development of the Union Government and several State Governments pro-actively enabling SRI (Systems of Rice Intensification), Integrated Pest Management, agri-horticulture programmes led by Women’s Self Help groups, area based technology and development approaches with emphasis on employment and social entrepreneurship for ecological and economic returns, hundreds of civil society organisations or community based agro-ecosystem specific production and marketing networks and local and fair trade food systems that shun chemicals, pesticides and child labour (for some examples, see www.indiaenvironmentportal).

5 See Malik et al. (2013), the scientific manual for creating and managing community seed banks published by the NBPGR; the scientific validation of the work of several local biodiversity and seed conservation efforts say, by Muniyamma in Karnataka, a Sarangi in Orissa, or organisations like CIKS, Gene Campaign or Navdanya.

6 Total subsidies (including food, fertiliser, petroleum, import of food items – sugar, edible oils, etc.) amount to 2.19 per cent and 21.43 per cent respectively of the national GDP and agricultural GDP in 2009–2010; rising to 2.57 per cent and 32.02 per cent respectively in 2013–2014 (Estimated from Planning Commission, 2014: 34).

7 *Rabi* is the winter cropping season, harvested in spring.

8 The Working Group on Natural Resource Management and Rainfed Farming (Planning Commission 2011a) recommends a National Rainfed Farming Mission with three policy instruments, that would enable an iterative process of action, interaction and learning among critical actors in the system. The proposed Mission will involve:

i a National Rainfed Farming Program to be piloted in 1,000 Blocks,

ii creation of ‘rainfed windows’ within all other line departments and ministries relevant to rural/agricultural development, energy, natural resources, and science and technology (S&T), and

iii specific policy support within central, state and district administrations to develop an institutional architecture for sustainable development of rainfed agriculture, fragile ecosystems and complex, diverse livelihoods.

It is not surprising that of this three pronged strategy, only the NRFP has been included in the XII Five Year Plan document (Planning Commission 2012). A Mission-mode piloting of the paradigm is an idea that prioritises a development problem that is at the core of India’s economy, and demands a political willingness to reconsider and weigh macro-economic choices.

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