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Women Workers in Agriculture: Expanding Responsibilities and Shrinking Opportunities

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Women Workers in Agriculture: Expanding Responsibilities and Shrinking Opportunities¹

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Aruna Kanchi is an economist with around 20 years of research experience. Her status as an independent researcher for the last ten years has provided opportunities to work on a variety of gender issues - gender budgeting, social security, poverty and women's employment, particularly in agriculture. The impact of state policy on women is an area of special interest. Her last publication (with Dr. Maithreyi Krishnaraj), *Women Farmers of India* (NBT, 2008), is an analysis of the status, position, issues and problems of agricultural women workers, written for the non-gender specialist. She works from home in Mumbai.

The responsibility for opinions expressed in this article rests solely with the author and publication does not constitute an endorsement by the International Labour Office of the opinions expressed in them, or of any products, processes or geographical designations mentioned.

¹ *I am indebted to Dr. Maithreyi Krishnaraj for awakening in me an interest in the fascinating study of gender. I am thankful to Prof. Nirmla Banerjee for giving me—a home-based worker like the majority of Indian women—the opportunity and encouragement to write this paper.*

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Executive Summary

This paper explores policy options for enhancing women's choices in and benefits from work in the agricultural sector by analysing emerging patterns in their role, position and problems in this sector. The discussion is divided into three sections: the first deals with a description of the quantitative and qualitative dimensions of women's work in agriculture at the All-India and State levels and the changes therein in the last decade (1993-94 to 2004-05). The second section discusses the issues and concerns that women face as agricultural workers and explores possible policy options. The final section is in the nature of a postscript and highlights the gender aspects of the two important events after 2004-05 - the global meltdown of 2007-08 and the drought of 2009.

Evidence in the form of official data as well as local experience reveals that men are responding to the two decade old distress in agriculture, by migrating to other rural or urban areas and to other sectors of the economy in search of work and in case of severe misfortune, by resorting to suicide and organ sales. Non-farm employment prospects for men, where they exist, are none too cheerful, as only low quality self-employment is available. This movement of men out of agriculture has led to an increase in women's share of the agricultural workforce and an expansion of their role in the sector. However, with labour absorption in agriculture on the decline, particularly in terms of paid jobs, more than two-thirds of women workers are self-employed, working as managers and helpers on the family farm without any remuneration. Those who continue to work as casual labour earn wages less than the statutory minimum. Further, the growth in wages has failed to keep up with prices of consumption goods in general and cereal prices in particular and the male-female disparity in wages has widened. The disparities continue to be highest for operations in which women specialize. In all, women in agriculture face increasing responsibility for ensuring household food security under adverse economic conditions and an intensification of their work burden.

There is wide consensus regarding the need to rejuvenate agriculture through significant increase in public investment, an important element, in fact, of the 11th Plan strategy. If this is to help women in agriculture public investment needs to recognize the gender-specific needs of women as also the constraints that women face in tackling their expanding responsibilities. Analysis of women's location within agriculture shows that to benefit women, public investment must flow into rain-fed areas, backward districts, particularly food insecure ones since this is where women workers are concentrated. It must increase productivity, especially on marginal and small farms, based on sustainable agricultural practices. For women belonging to farm households, especially small and marginal, growing some food grains on family plot is an important way of securing food security. Hence public policy and investment need to focus on increasing the yield of food crops, particularly coarse cereals and pulses which are inherently suitable to arid areas and withstand climate change because such crops are the basis of food security and are therefore preferred by women. These steps must be supplemented by revamping the public distribution system (PDS), which needs to be made universal once again and a serious effort made to plug leakages. Encouraging diversification into a mix of high value products such as vegetables, organic crops, organic manure or bio-fertilizers, bio-pesticides, medicinal or aromatic plants, fodder, fishing and forestry may serve to put some cash income into women's hands. Livestock and dairying are important sources of livelihood even for landless farmers, and of special interest to women. Development of indigenous livestock varieties and the encouragement of fodder cultivation are important here.

In terms of constraints, women struggle in the face of the lack of rights, authority, access to or control over not only the resources required for enhancing production and household income but also over what they produce. Women also have to contend with the absence or low levels of personal resources such as education, skills, mobility and voice. The 11th Plan makes the most serious and comprehensive attempt so far to mainstream gender, albeit inadequately. Plan suggestions relating to giving women rights over land, credit, common property resources and equitable wages as well as enhancing their access to technology, education, skill training are discussed critically, supplemented by alternative suggestions. Women, however, are far from homogeneous. Their needs and problems therefore differ widely depending on their geographical and socio-economic position. Differences in age, class, caste and geographical and sub-sectoral location need to be factored into policy. However what all women workers in agriculture need, like their counterparts elsewhere in the economy, are sufficient, improved, more accessible and affordable government services - crèches, anganwadis and schools for their children, health facilities, a non-targeted and efficient public distribution system in order to increase their productivity and well being.

A large and growing body of work shows that natural disasters not only have clear gender differentiated impact, but also elicit different responses from men and women often leading to changes in gender relations within households. On account of women's differential role and work, their lack of control over productive resources, limited access to coping mechanisms as well as restricted mobility - the very same factors that constrain women during normal times - women and children are more vulnerable than men. Women's (and children's) rights are also often violated during disasters (sex work, sale and trafficking). Further, mitigation, relief and rehabilitation efforts of the state are generally gender-blind and directed at male heads of households. Women's vulnerability is reinforced by their age, caste, class, religion and community identities. The three fronts of state action for enhancing people's adaptive capacity to disasters namely, improving access to resources and knowledge to support livelihood diversification, providing adaptive infrastructure, and capacity-building to ensure that they are able to participate in decision-making processes are in fact also the oft recommended inputs for gender-sensitive development policy. Mainstreaming or incorporation of gender concerns into the underlying systems remains as essential during disaster as during normal times. However, making policies and programmes gender-sensitive does not simply mean adding 'gender' to it. It also requires a nuanced understanding of gendered forms of vulnerability and capability as also a stronger commitment of resources - financial, technical, and human - to address gendered priorities.

Foreword

This paper is part of a series of studies that have been launched by the ILO Subregional Office in collaboration with the Institute of Social Studies Trust (ISST). The work was inspired and shaped by Devaki Jain who suggested conducting a nuanced and policy oriented factual mapping of women's engagement in employment which could be used to influence the knowledge base of policy makers, and to think of new ways to increase productivity of women's work, to shift women out of low productive work to new kinds of work and to give them independent incomes. By doing so, the aim was to highlight women's economic values and recast the ideas and institutions to deal with their contribution as well as neglect. Nirmala Banerjee lead a team of scholars through technical discussions, sifting out key gender dimensions in the current economic scenario and guided the studies and the arguments. Ratna Sudarshan, Director, ISST and Reiko Tsushima, ILO Specialist on Gender Equality and Women Workers' Issues coordinated the entire process.

Over the years in India, the share of agriculture and allied activities in the total GDP has declined but the sector still employed the largest share of the male and female workforce. A gradual shift away from agricultural employment can be observed, with men moving out at a faster pace than women. The study provides an important analysis of the expanding role of women workers in agriculture. The study highlights some pressing concerns over the present "feminization" which is accompanied by loss of viability of cultivation, shortage of paid jobs, decelerating and gendered wages, and degradation of resources. Women agricultural workers - 81 percent of whom are from Scheduled Castes (SC), Schedules Tribes (ST) and Other Backward Classes (OBC), and 83 percent are from landless, marginal or small farm households- are finding it harder to shift out of agriculture than men, and their stake is increasing in a sector that is riddled with adverse economic conditions and where they have little rights, authority, access to or control of resources required for enhancing production and household income.

Rejuvenating agriculture is an important part of the strategy for India's 11th Five Year Development Plan. This paper makes a compelling case for the need to expressly address women in agricultural policy. It discusses policy options that could be pursued to benefit women agricultural workers in view of the women's work and existing responsibilities, limited access to productive resources and technology and low human capital. It also provides policy avenues for enhancing people's adaptive capacity, or to build resilience, to "shocks" in light of the global slowdown of 2007-2009 and climate change.

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Introduction

The agricultural sector is the largest employer of women. According to official statistics (National Sample Survey [NSS] of 2004-05), women make up 32 per cent of the total workforce in the Indian economy. Majority of the female workforce (84 per cent) works in rural India. A very large share (73 per cent) of this female workforce toils in the agricultural sector, mostly (96 per cent) in rural areas. These numbers alone would provide justification for addressing women workers in policy. But the actual numbers are higher. It is now well established that women workers, particularly in the primary sector, are underestimated by official data systems due to difficulties in measuring employment in the informal, unorganized and home-based segments in which they predominate. Further, post-liberalization, women's participation in agriculture has been growing relative to men. This not only implies increased dependence of women on agriculture but the converse as well: women have a crucial role in the future of this sector.

Beyond numbers, the following facts about women agricultural workers provide a compelling case for expressly addressing women in agricultural policy. First, women are involved in almost all agricultural activities. Second, their contribution to household survival and food security is critical, especially at a time when agriculture is in distress. Third, they operate under severe limitations due to their subordinate position in society and the market. This paper sets out to provide a description of the current role, position and problems of women in agriculture with a view to exploring policy options that will enhance women's choices and benefits from work.

The discussion is in three sections. The first section deals with a description of the quantitative and qualitative dimensions of women's work in agriculture at the all-India and state levels and the changes therein in the last decade (1993-94 to 2004-05). Since the analysis is based largely on official data (Census [GoI 2001a] and NSS [GoI 2006; 2001b; 1997]), a word of warning is in order at the very outset: both the Census and the NSS (the former more than the latter) considerably underestimate female workers compared to male workers. Hence official data presented in this paper is to be considered as the lower bound for women's work participation and their share in the agricultural workforce. The second section discusses the issues and concerns that women face as agricultural workers and explores possible policy options. The final section highlights the gender aspects of two important events after 2004-05- the global meltdown of 2007-08 and the drought in India in 2009.

Two brief sketches set the stage for the analysis that follows. Box 1 gives a thumbnail sketch of women's participation in agriculture based on official data, and Box 2 gives the reasons for underestimation, because of its criticality to the arguments in this paper.

Box 1

Women's Participation in Agriculture: A Thumbnail Sketch

- In 2004-05, the last year for which NSS data is available, an estimated 249 million workers (usual status, principal and subsidiary [US PS+SS]) are in agriculture, constituting 73 per cent of all rural workers.² Of this, women (103 million) comprise 41.5 per cent.
- A considerably higher proportion (83.3 per cent) of the female workforce compared to males (66.5 per cent) is in agriculture.
- A higher proportion of 'usually working' rural women (8.5 per cent) are subsidiary workers compared to rural men (1.1 per cent).
- More or less equal proportions of men and women are self-employed (64 per cent) and casual workers (35 per cent). Salaried workers are in the minority-1.3 per cent amongst males and 0.5 per cent amongst females.
- More than 50 per cent of all female agricultural workers are unpaid family workers, the rest being 'own account' workers or employers.
- Wages for women are below statutory minimum and the gender gap in wages has been widening in the last decade particularly for tasks in which women specialize.
- Women are active in all operations and activities in agriculture and allied sectors but are concentrated in cultivation and livestock.
- Median age for male and female agricultural workers is 35-39 years, with peak participation for women in the age cohort 40-44 years compared to 55-59 years for men.
- Educational attainments are dismal. An overwhelming majority (70 per cent) is illiterate with only 4 per cent having at least secondary school qualifications. The position of younger women (those in the 15 to 29 age group) is only slightly better with 52 per cent illiteracy and 8.5 per cent having studied up to at least secondary school.
- Geographically women are more predominant in the agricultural workforce of rain-fed areas, in paddy, cotton and vegetable cultivation, and concentrated in the poorer districts.
- Landlessness among female agricultural workers (27.5 per cent) is higher than for males (23.7 per cent). Over 40 per cent each belong to marginal farmer households (i.e., cultivating 1 hectare or less). The majority (83 per cent) of female (and male) agricultural workers are concentrated in three classes: the landless, marginal and small farm households.
- The three social groups-Other Backward Classes (OBC), Scheduled Castes (SC) and Scheduled Tribes (ST)-together account for 81 per cent of female agricultural workers in India. More than half of Scheduled Caste males (59 per cent) and 55 per cent of female agricultural workers are casual labour, reflecting their poorer land holding status.
- Poverty is widespread in agriculture with agricultural labour households and the self-employed in agriculture accounting for 41 per cent and 22 per cent of the rural poor respectively. Women not only form a predominant section of the poor but also experience its adverse effects more intensely than men.

² The absolute numbers are derived from the workforce estimates of Unni and Raveendran (2007).

Box 2

Invisibility of Women

Difficulties in measuring the nature and extent of women's work participation, especially in the primary sector, have been recognized and debated in India since the 1980s by, among others, Anker (1983), Sen and Sen (1985), Agarwal (1985), Sardamoni (1988), Krishnaraj (1990), Visaria (1999) and Hirway (2002). The reasons for the invisibility of women workers are many: women's work is often informal, unpaid and home-based; it is flexible, non-standard and an extension of domestic work and therefore frequently indistinguishable from it, as in the case of cooking for hired labour. Even market work is uncertain and sporadic and often an add-on to male labour (da Corta and Venkateshwarlu, 1999). Social bias prevents recognition of the economically gainful nature of women's work—women as a whole are perceived as housewives, even by women³ For these reasons, female self-employed are particularly prone to invisibility although even agricultural labourers⁴ it seems could suffer the same fate. da Corta and Venkateshwarlu (1999) found that female agricultural labour from medium land holding households was overlooked in official counts. Others such as Ramachandran et. al (2001) and Jose and Shanmugaratnam (n.d.) also provide significant evidence of the underestimation of women. It is also unclear how exchange or reciprocal labour arrangements, unpaid and usually delegated to women, are treated in official surveys. There has been little change despite the several gender-sensitive measures introduced during the 1991 Census (Hirway, 2002; Ramachandran et. al, 2001). Further, the method of head counting used in official statistics has the distinct disadvantage of obscuring the intensity of women's work and classification by principal occupation fails to capture the increasing diversity of people's work portfolios which is required to meet livelihood needs under changing circumstances.

In fact, a parallel official Time Use Survey (TUS), conducted in 1998-99 by the Central Statistical Organisation (CSO), provides unequivocal evidence of the invisibility of women workers relative to men. This pilot TUS carried out in 6 states⁵ estimated the rural work participation ratio (WPR) (current weekly status) for women at 79 per cent, considerably higher than the comparable NSS estimates for 1993-94 (which was 71 per cent) and for 1999-2000 (at 70 per cent). There was less divergence with respect to male WPRs (56 per cent by TUS compared to NSS 1993-94 at 58 per cent and NSS 1999-2000 at 47 per cent) (Hirway, 2002). TUS also showed undercounting to be most pervasive in the case of unpaid, home-based and informal employment, where women and children predominate. There was, however considerable variation in the extent of undercounting between states.

³ This is reflected by the fact that a large proportion of 'usually employed women' report themselves in the NSS as 'out of the workforce' when they ought to report themselves as 'unemployed'.

⁴ The distinction between these two categories is no longer clear-cut. Women of cultivator households are also increasingly taking up paid labour in an effort to meet livelihood needs.

⁵ Madhya Pradesh, Gujarat, Meghalaya, Tamil Nadu, Haryana and Orissa. The pilot survey has unfortunately not been followed up by a full survey.

Section I

Women's Work Participation in Agriculture and Allied Activities⁶

1.1 Recent trends in women's work participation (1993-94 to 2005)

Here we look at changes during the study period in the three most important aspects of women's employment in agriculture: their share in the agricultural workforce, occupational status and real wages.

1.1.1 Increase in women's share of agricultural employment

Women's share in the agricultural workforce has been rising in the post-reform period. Between 1991 and 2001, the agricultural sector saw a decline in rural main workers⁷ from 183 million to 171 million—a reduction of 11.7 million male and a mere 0.5 million female workers—taking women's share in the main agricultural workforce from 27 per cent to 29 per cent (Table 1). This trend can be seen to have extended into the new millennium. Between 1993-94 and 2004-2005, the percentage of workers in agriculture (usual status, principal and subsidiary [US PS+SS]) declined more rapidly from 74.1 per cent to 66.5 per cent for men than for women (86.2 to 83.3 per cent). The gender differential in growth rates was particularly large between 1999-2000 and 2004-05 (Table 2). As a result, the share of female labour in the agricultural workforce increased from 39 per cent to 41.5 per cent. Evidently, men are moving out of the sector leaving women behind to assume a more dominant role.

Table 1: Main workers in agriculture, 1991 & 2001

(in millions)

	Cultivators			Agricultural labourers			Plantation, livestock, forestry, fishing, hunting and allied activities			All agricultural workers			% of females in the workforce
	Persons	Male	Female	Persons	Male	Female	Persons	Male	Female	Persons	Male	Female	
1991													
Total	110.7	88.5	22.2	74.6	46.2	28.4	6.0	4.7	1.3	191.3	139.4	52.0	27.2
Rural	107.6	85.8	21.8	70.3	43.2	27.2	4.9	3.7	1.2	182.8	132.7	50.1	27.4
Urban	3.1	2.7	0.4	4.3	3.0	1.3	1.1	1.0	0.1	8.5	6.7	1.8	21.6
2001													
Total	103.6	78.3	25.4	63.5	41.1	22.4	10.3	6.7	3.6	177.4	126.0	51.4	29.0
Rural	101.3	76.4	24.9	60.5	39.1	21.4	8.7	5.4	3.3	170.6	121.0	49.6	29.1
Urban	2.3	1.8	0.5	3.0	2.0	1.0	1.6	1.3	0.3	6.8	5.1	1.8	25.8

Source: Census 2001, 1991.

⁶ The discussion that follows will be confined to the rural workforce in agriculture since the bulk of agricultural workers are in rural areas.

⁷ Comparisons of the changes in agricultural labour force between the two censuses is confined to main workers, since the 1991 Census gives occupation-wise classification for main workers only. Nevertheless, since main workers are full-time workers changes in their participation are of significance.

Table 2: Employment in agriculture (US PS+SS) by gender and annual growth for rural India

Year	Employment (million)			Compound annual growth rate (%)		
	1993-94 <i>74.1</i>	1999-00 <i>71.4</i>	2004-05 <i>66.5</i>	1993-94 to 1999-2000	1999-2000 to 2004-05	1993-94 to 2004-05
Male	139.16 <i>74.1</i>	140.44 <i>71.4</i>	145.64 <i>66.5</i>	0.15	0.73	0.41
Female	90.25 <i>86.2</i>	88.82 <i>85.4</i>	103.29 <i>83.3</i>	-0.27	3.07	1.23
Person	229.41	229.26	248.93	-0.01	1.66	0.75

Note: Figures in italics show % of usual status workers in agriculture.

Source: Calculated by applying NSS ratios to workforce estimates of Unni and Raveendran, 2007.

The increasing involvement of women workers in agriculture is more clearly discernible in state and district level changes. Analysing Census 2001 data, Vepa (2005) reveals that out of 582 districts analysed, 46 per cent have more female labourers than male and 8.7 per cent have an excess of female over male cultivators. State level NSS data also shows an increase in women's share in the agricultural workforce in 12 of the 15 major states between 1999-2000 and 2004-05. In five of these states-Haryana, Himachal Pradesh, Maharashtra, Rajasthan and Tamil Nadu-women workers constitute 50 per cent or more (Table 3). Further, the female agricultural workforce grew faster than its male counterpart in all states except Gujarat and Mizoram.

Table 3: Percentage of women in rural agricultural workforce in major states of India

Sl. No.	State	Female WPR		Share of women in agricultural workers		Casual labour amongst female agricultural workers	
		1999-2000	2004-05	1999-2000	2004-05	1999-2000	2004-05
1	Himachal Pradesh	47.1	50.6	61.8	63.4	0.5	2.0
2	Andhra Pradesh	47.8	48.3	47.2	48.6	53.8	48.7
3	Maharashtra	43.4	47.4	49.7	50.3	54.0	45.7
4	Tamil Nadu	43.0	46.1	41.8	40.6	55.1	47.3
5	Karnataka	38.0	45.9	41.6	44.2	50.5	48.1
6	Gujarat	41.3	42.7	47.0	46.4	39.3	37.9
7	Rajasthan	38.8	40.7	49.8	53.4	10.0	11.6
8	Madhya Pradesh	38.2	36.6	41.8	40.6	44.1	37.7
	All India	29.9	32.7	39.2	41.9	39.6	32.6
9	Punjab	28.0	32.2	41.1	46.8	7.4	6.4
10	Orissa	29.9	32.2	36.6	38.8	49.5	35.9
11	Haryana	20.2	31.7	37.0	50.5	12.5	12.8
12	Kerala	23.8	25.6	40.0	41.3	32.0	27.6
13	Uttar Pradesh	20.1	24.0	32.5	37.6	20.9	13.1
14	W Bengal	16.0	17.8	19.2	21.7	32.5	30.7
15	Bihar	17.3	13.8	26.2	23.1	50.8	46.5

Source: NSS Reports 409 & 515.

Feminization⁸ of agriculture is not a new phenomenon. It has been observed in many parts of the country since the 1970s (Duvvury, 1989; Chowdhry, 1993; da Corta and Venkateshwarlu, 1999) but the current phase has gloomy connotations because of the decline in the growth of income and stagnation of employment in agriculture. GDP growth rates in this sector averaged 2 per cent per annum between 1997 and 2005 (down from 3.5 per cent in the 1980s and early 1990s) and jobs grew by a mere 0.75 per cent between 1993-94 and 2004-2005 (GoI, 2006).⁹ The fundamental conditions underlying the decline, such as persistent dependence on the monsoons, small size of holdings, degradation of natural resources, acute inadequacy of public investment and high input costs, together with supply and price volatilities of global markets following trade liberalization and new threats posed by climate change have rendered farming a non-viable and highly risk prone means of livelihood. The result, notwithstanding overall reductions in official poverty estimates, is the prevalence of multiple deprivations, including food insecurity particularly amongst casual labourers and the self-employed in agriculture, two groups that exhibit the highest poverty rates amongst the rural populace (Radhakrishna et. al, 2004; Sen and Himanshu, 2004).

One response of households to these conditions has been distress migration—mostly of men to urban areas, other rural areas and to other sectors in search of jobs—while women have taken over as managers and helpers on farms. Although official data on migration is not very reliable, numerous micro studies (da Corta and Venkateshwarlu, 1999; Rogaly et al, 2004; Talwar and Ganguly, 2003., Hardikar, 2004; *Financial Express*, 2003; Garikipati, 2006), have recorded this. Men have also been lost to suicide and organ sales (National Commission for Women, 2005). Unfortunately, the growth of employment in the non-farm sector during this period has also been dismal, even for men. Further, the quality of non-farm jobs has been poor, being mostly in the form of low paying self-employment in the informal sector (Unni and Raveendran, 2007). Also from the point of the women left behind to manage the family, repatriation of migrant income is uncertain and irregular.

1.1.2 Loss of wage employment

Changes in gender composition of the agricultural workforce during this period have been accompanied by changes in the structure of employment. Between 1993-94 and 1999-2000 there was an increase in the casualization of the agricultural workforce, from 39.9 per cent to 42.7 per cent for women compared to 37.7 per cent to 39.6 per cent for men. However, between 1999-2000 and 2004-05, there was a reversal—casual work declined and self-employment increased (Table 4).

⁸ We use feminization here to refer to an increase in the proportion of female workforce in the female population; a rise in the proportion of female agricultural workers in the female workforce; and/or a rise in the ratio of female to male agricultural workers (Duvvury, 1989).

⁹ Although some improvement is seen in the last two years, sustained revival will depend on the removal of constraints mentioned here.

Table 4: All-India distribution of 'usually employed' in agriculture by category of employment, rural

Year	Self-employed		Regular		Casual labour	
	Male	Female	Male	Female	Male	Female
1993-94						
Millions	80.6	52.8	5.6	1.1	52.4	36.0
%	57.9	58.5	4.0	1.2	37.7	39.9
1999-2000						
Millions	82.3	50.2	2.5	0.6	55.6	37.9
%	58.6	56.5	1.8	0.7	39.6	42.7
2004-05						
Millions	92.9	66.6	2.00	0.5	50.8	36.2
%	63.8	64.5	1.3	0.5	34.9	35.0
Annual average growth 1993-94 to 2004-05 (%)	1.30	2.02	-8.94	-6.92	-0.28	0.05
Annual average growth 1999-2000 to 2004-05 (%)	2.45	5.82	-4.36	-3.58	-1.79	-0.91

Note: Absolute numbers have been calculated on the basis of workforce estimates in Unni and Raveendran, 2005.
Source: NSS Reports 512, 409.

The point to be noted here is that although there was a general loss of paid jobs (casual plus regular), it is women who sustained a higher proportionate loss¹⁰ – 7.9 points compared to 5.2 points for men. This is also reflected in higher unemployment rates for women, most of whom reported having worked as casual labour. The sharper changes for women are in part a reflection of the flexibility of women's work participation: it expands or contracts and moves from waged labour to unpaid work or vice-versa to balance changes in the employment and income prospects for men. Also, in a situation of shortage of jobs within agriculture, men are able to take advantage of options in the non-farm sector while women are forced to fall back on the family farm or remain unemployed due to lower attainments in education and skills, and limited mobility on account of family responsibilities,¹¹ amply demonstrated by the high under-employment amongst rural women (17 per cent compared to 4 per cent for men in 2004-05). Casualization is widely believed to be bad, but a shift to self-employment may be worse for women, as it entails loss of cash income, loss of status, devaluation of women's labour, increase in women's work burden as well as a loss of visibility in official data systems. On the other hand, working outside the home with other women of similar situation may confer better bargaining strength vis-à-vis the exploitative forces at family as well as societal levels (Banerjee, 1999).

Alienation and fragmentation of land explains to a great extent the increasing casualization in the first period as well as the latest increase in self-employment. Progressive landlessness and non-viability of cultivation on the increasing number of marginal and small holdings since the early 1990s induced women

¹⁰ This is also reflected in the higher unemployment rates observed earlier.

¹¹ Paradoxically women are also withdrawn from casual labour with increasing household prosperity. This flexibility is rooted in the extant gender division of labour, which gives primacy to a woman's reproductive role and considers her as a secondary earner.

of cultivator households to join the ranks of casual labour while majority of the men continued to work on own farms. However, a tipping point appears to have been reached: landlessness now afflicts 43 per cent of rural households and marginal holdings (less than 1 hectare) constitute 70 per cent of all operational holdings. Evidently casual jobs hitherto offered by medium and large farms have dried up, pushing all those unable to move out of agriculture to work on own farms (Krishnaraj and Kanchi, 2008). Conversion of agricultural land to uses such as prawn farming, construction and Special Economic Zones (SEZs)¹² have also decreased supply of land for agriculture, creating at the same time fewer jobs than they have destroyed (National Commission for Women, 2005).

1.1.3 Decline in real wages

Together with the loss of paid jobs, the 1990s have seen a slowdown in the growth of real wages¹³ of male and female agricultural labour as well as widening of the gender gap, especially in many operations such as transplanting, weeding, etc., that tend to be carried out largely by women (Krishnaraj and Shah, 2004). For women obliged to make their living through casual labour, besides impermanence and uncertainty of jobs, low and gender-differentiated wage is the norm. There is a great deal of variation across states in average earnings among female workers. Punjab and Kerala have the highest wage rates; Bihar, Orissa, Maharashtra, Karnataka and Madhya Pradesh have wage rates in the lower range while Haryana, Gujarat and Rajasthan fall in the middle. However, in every state, except Kerala, Himachal Pradesh, Assam and Gujarat, the nominal daily wage rates for women agricultural labour in 2004 were below the statutory minimum, while the male wage everywhere was above it (with the exception of Madhya Pradesh and West Bengal) (Chavan and Bedamatta, 2006) (Table 5).

Table 5: Daily minimum wages and actual wages of male and female agricultural labourers, state-wise, 2004

(in Rupees)

State	Minimum wage	Actual wage (male)	Difference (male)	Actual wage (female)	Difference (female)
	1	2	3 (= 2-1)	4	5 (=4-1)
Andhra Pradesh	52.00	59.88	7.88	32.71	-19.29
Assam	50.00	69.70	19.70	55.06	5.06
Bihar	50.00	58.27	8.27	44.47	-5.53
Gujarat	50.00	69.15	19.15	51.41	1.41
Haryana	84.29	84.73	0.44	75.87	-8.42
Himachal Pradesh	65.00	123.00	58.00	84.60	19.60
Jammu and Kashmir	45.00	121.71	76.71	n.a.	n.a.
Karnataka	56.30	59.29	2.99	36.23	-20.07
Kerala	100.00	238.71	138.71	100.13	0.13
Madhya Pradesh	56.96	50.95	-6.01	36.58	-20.38
Maharashtra	48.00	63.00	15.00	34.09	-13.91

¹² Farmers in Raigadh district of Maharashtra who sold their farms to SEZs are reported to be regretting their decision. The compensation has been squandered on SUVs and houses or invested injudiciously; their chances of finding a job is compromised by lack of marketable skills other than in farming (Ghoge, 2009).

¹³ Money wages deflated by the Consumer Price Index - Agricultural Labour (CPIAL) and cereal prices.

Orissa	52.5	54.11	1.61	39.33	-13.18
Punjab	87.59	n.a	n.a.	n.a	n.a
Rajasthan	67.30	82.94	15.64	48.58	-18.72
Tamil Nadu	54.00	117.21	63.21	39.61	-14.4
Tripura	50.00	74.33	24.33	n.a	n.a
Uttar Pradesh	58.00	60.56	2.56	50.58	-7.42
W. Bengal	107.99	84.48	-23.51	49.63	-58.36

Source: Chavan and Bedamatta, 2006.

Summarizing the changes in the last decade as reflected by official data, there is clear evidence of men moving out of agriculture resulting in an increase in women's share in the agricultural workforce and an expansion of their role in the sector. However, with labour absorption in agriculture on the decline, particularly in terms of paid jobs, more than two-thirds of women workers are self-employed, working as managers and helpers on the family farm without any remuneration. Those who continue to work as casual labour earn wages less than the statutory minimum. Further, the growth in wages has failed to keep up with prices of consumption goods in general and cereal prices in particular and the male-female disparity in wages has widened. The disparities continue to be highest for operations in which women specialize. In response to the distress in agriculture, men are migrating to other rural or urban areas and to other sectors; they are also resorting to suicide and organ sales. Non-farm employment prospects for men are none too cheerful, with only low quality self-employment available.

1.2 Implications

The increasing stake of women in a sector marked by loss of viability of cultivation, shortage of paid jobs, decelerating and gendered wages, and degradation of resources has at least two important gender-specific effects. First, women who are traditionally responsible for food - from acquirement and storage to cooking and serving - are now burdened more than ever with the responsibility of ensuring household food security under adverse economic conditions with little or no rights, authority, access to or control of resources required for enhancing production and household income,¹⁴ and no authority over what they produce. Second, the additional responsibility is also likely to intensify women's work burden.

The increase in women's responsibilities needs to be looked at in the light of the loss or erosion of support from male incomes for reasons already discussed. Although women bear the primary responsibility for food provisioning, male incomes must play the important role of contributing to education, health and other expenses, to savings and purchase of assets (National Commission for Women, 2005) and to serve as protection from shocks. Volatility of prices of agricultural products¹⁵ and fuel due to liberalization of international trade, withdrawal of input subsidies and contraction of the public distribution system, environmental stress and climate change are the other set of factors originating outside the sector that compromise women's capacity to ensure household food security.

Women's work burden is one aspect of their working lives that is generally overlooked, particularly in macro policy. Domestic work, variously known as housework or reproductive work, is an invariable

¹⁴ These constraints will be further discussed in Section II.

¹⁵ Although relative, prices of food grains (market and minimum support prices) have increased over time, turning the terms of trade in favour of farmers. However, the bulk of those in agriculture are net buyers of food and therefore stand to lose rather than gain from these changes.

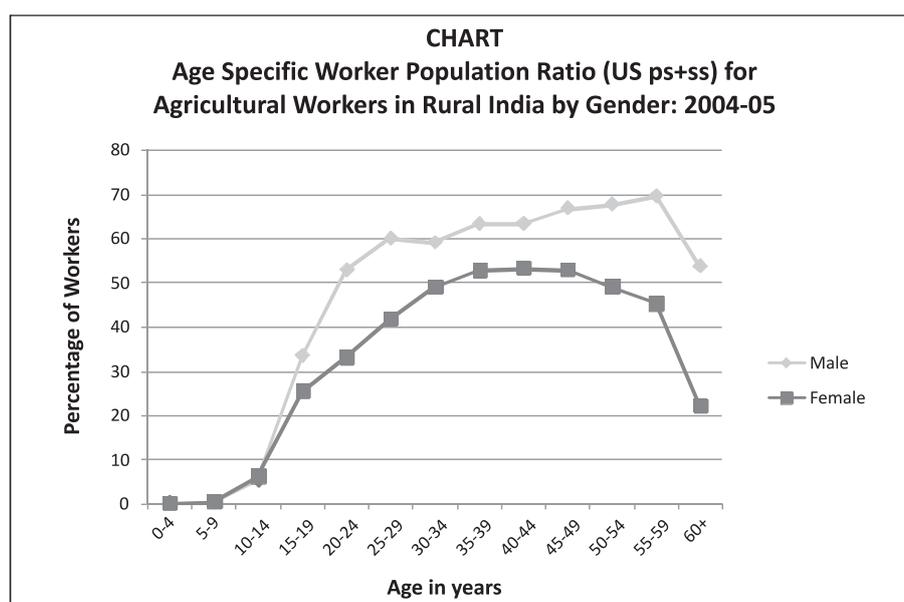
fixture in the lives of majority of women. In addition, women are heavily involved in a very wide variety of activities in agriculture as well as allied sectors. Progressive degradation of resources and high prices, especially of fuel but also of education and health, necessitate the expansion of women's activities to make ends meet. Women have to work longer hours on several unpaid and low paying jobs as also spend considerable time on and travel longer distances for foraging free goods like food, fuel, fodder and drinking water. The increased work burden impacts not only on women's physical and emotional health but may affect children's health and educational progress, since women will have less time to devote to children and are likely to recruit them, especially the girls, to share household responsibilities. This will be especially true for poor women, spouses of migrant men due to uncertain and infrequent remittances, and widows of indebted farmers who are obligated to repay. Also, women may find little time available to spare for community participation and awareness creating activities of the government. The state needs to take this into consideration while drawing up programmes for women farmers.

1.3 Some characteristics of women workers

We have so far looked at the all-India picture and at women in general. However, women agricultural workers are far from homogeneous. Women workers with differentiated needs and problems need to be distinguished while designing interventions. We now look at distribution of rural female agricultural workers based on age, class, caste and location (geographical as well as sub-sectoral) before discussing policy options.

1.3.1 Age composition

The median age for male and female agricultural workers is 35 to 39 years. However, in terms of the proportion of agricultural workers in each age group, participation for males rises with age, albeit somewhat unevenly, peaking for the age class 55-59 years. For women, the pattern is different: a smoother, inverted 'U' with participation peaking at 40 to 44 years and falling thereafter. Data also reveals that younger males and females (35 to 39 years) select themselves for casual labour in agriculture apparently due to its high physical demands while there is a preponderance of women just past their prime (40-49 years) and older men (above 50 years) tending own farms. The majority of women workers (over 93 per cent) are currently married.



1.3.2 Work participation by class

Here we look at two indicators of class, namely, land ownership and income.

Land ownership

NSS data on household land ownership reveals that work participation of both men and women decreases with increase in the size of household cultivated land. A larger proportion of women workers (28 per cent) belong to landless households compared to males (24 per cent). The majority (83 per cent) of female (and male) agricultural workers are concentrated in three classes: the landless, marginal and small farm households. The self-employed belong predominantly to the marginal and small farm households and the majority of casual workers hail from the landless and marginal farm households with little gender difference.

As regards individual ownership of land, there is no reliable data by gender.¹⁶ Title to land generally rests with males in our patriarchal society. The implications of this are discussed in the following section.

Income

According to the Eleventh Plan calculations based on NSS 61st Round, the self-employed in agriculture and agricultural labour households constitute respectively 22 per cent and 41 per cent of the poor (GoI, 2008a).¹⁷ These numbers are based on the official poverty line which, as the Plan document admits, is too low. Gender-wise calculations reveal that 85 per cent of poor female workers are in agriculture compared to 73 per cent of poor male workers. Women also experience poverty more intensely than men due to their inferior social status. Numerous studies have documented how they are the last to eat, consult health care personnel only as the last resort and give up education for work and reproduction, thus suffering greater deprivations than men.

1.3.3 Work participation across social groups

The three social groups-Other Backward Classes (OBC), Scheduled Castes (SC) and Scheduled Tribes (ST)-together account for 81 per cent of female agricultural workers in India. The OBCs form the largest contingent (43 per cent) of female agricultural workers, followed by SCs (22 per cent), Others (19 per cent) and STs (16 per cent). As in the general population, female participation in agriculture exceeds that of the males across social groups. Amongst STs, 89.9 per cent of female workers are in agriculture while the gender gap in agricultural participation is highest amongst SCs (19 percentage points). Social mores regarding caste-based division of labour have a role to play in determining participation rates, although caste-wise specialization in different agricultural operations varies from place to place (see, for instance, Rajuladevi, 2000). As in the general population, a larger proportion of agricultural workers (male and female) are self-employed amongst STs and OBCs. However, in the case of SCs, 59 per cent of males and 55 per cent of female agricultural workers are casual labour, reflecting their poorer land holding status (more than 57 per cent of SCs do not have any land under cultivation compared to 42.8 per cent in the general population). SC/ST women are among the poorest in the country. Among social groups, SCs, STs

¹⁶ NSS and Agricultural Censuses do provide data on holdings by gender but with the household as the unit of enumeration. Further, operational holdings do not refer to title or ownership as they include owned and tenanted or leased holdings.

¹⁷ Vol. III, p. 80. Four states account for half of India's poor: Uttar Pradesh (19.6 per cent), Bihar (12.23 per cent), Madhya Pradesh (8.3 per cent) and Maharashtra (10.5 per cent).

and backward castes account for 80 per cent of the rural poor in 2004-05, considerably more than their share in the rural population. Educational attainment of women is lowest amongst STs (nearly 72 per cent are illiterate) followed by SCs (69 per cent) and OBCs (60.1 per cent). Only 16.6 per cent of STs are educated up to primary (17 per cent for SCs and 19 per cent for OBCs). In all, ST and SC women in agriculture are at the bottom of the economic ladder, with caste reinforcing gender differences.

1.3.4 Participation in sub-sectors and operations

NSS data shows majority of men (95 per cent) and women (83 per cent) in agriculture are engaged in the growing of crops, especially cereals and other food crops. A higher proportion of women (16 per cent) relative to men (3 per cent) is also seen to be involved in farming of animals. Micro studies reveal women have a high stake in dairying; they account for 93 per cent of total employment in dairy production according to the National Commission for Women (2005).

In terms of operations involved in cultivation, besides 'other cultivation activities' in which men and women spend nearly a quarter of person days, women are more heavily involved in weeding and harvesting relative to men, especially as hired labour. Self-employed women spend 22 per cent of their person days on manual work in animal farming. Micro studies reveal that their work with animals constitutes bathing and care of livestock, grazing and collecting fodder, feeding and milking. Depending upon their economic status, women also perform the tasks of collecting fodder, collecting and processing dung and carrying it to the fields. Women prepare cooking fuel by mixing dung with twigs and crop residue. Men in general take charge of ploughing¹⁸ and other mechanized activities; the health aspects of livestock; and the sale and purchase of crop, livestock and other agricultural products. Women have no ownership rights over either crop or livestock, and income from all activities (except income from small poultry) usually belongs to men (National Commission for Women, 2005).

However, there are considerable inter-state and intra-state variations as well as class and caste differences. For instance, according to Verma (1992), animal husbandry is predominantly a male affair in large land holding families, as the majority of them employ permanent male workers to look after the animals, while it is an important female responsibility in the case of medium and small farmers. Until recently, milk co-operatives were dominated by men. Only recently have all-women dairy co-operatives enabled women to earn money from the sale of milk. Women are also chief collectors of non-timber forest products, and preservers and sellers of fish (National Commission for Women, 2005), although this is not readily visible in NSS data (possibly because of the exclusion of processing activities in which women predominate).

An analysis of CSO's Time Use Study (Vepa, 2005), shows that on average women spent 24 hours a week on all System of National Account (SNA)¹⁹ activities, ranging from 19 in Orissa to 29 in Meghalaya. Of this, anywhere between 17 (Orissa) to 26 hours (Meghalaya) were spent in agricultural activities, of which between 7 (Orissa) to 14 (Madhya Pradesh) hours were spent in crop production while non-crop production absorbed 6 (Tamil Nadu) to 18 (Haryana) hours. Unpaid work absorbed 32 per cent to 86 per cent of the time they spent on SNA activities. But women also spent more time (30 hours a week) on extended SNA activities-primary production and free collection of goods for household consumption.

¹⁸ In India there is a taboo against women ploughing.

¹⁹ The TUS classifies activities into four classes in terms of whether they are considered (as economically productive and therefore) included in the System of National Accounts (SNA activities) or not (Non-SNA activities) and whether they are market or non-market activities. For a more detailed explanation see Hirway, 1999. Extended SNA activities are non SNA, non-market activities.

1.3.5 Regional characteristics of women's work participation

With the all-India average rural female WPR (2004-05) as the cut off, the 15 major states can be divided into two groups. The first group-Himachal Pradesh, Andhra Pradesh, Maharashtra, Tamil Nadu, Karnataka, Gujarat, Rajasthan and Madhya Pradesh-show consistently high female WPRs over the years, overall and in agriculture. With the exception of Himachal Pradesh and Rajasthan, the rest of this group also exhibits a high incidence of female casual labour. These two states (Himachal Pradesh and Rajasthan) have registered respectively 2 per cent and 12 per cent of female casual labour, although the proportion has shown an increase between 1999-2000 and 2004-05 in contrast to the tendency in the rest of the country.

Punjab, Orissa, Haryana, Kerala, Uttar Pradesh, West Bengal and Bihar, in the second group, are states with low female participation rates. The bulk of rural women workers in Haryana (91 per cent), Punjab (90 per cent), Uttar Pradesh (87 per cent) and Bihar (86 per cent) are in agriculture, with only Bihar showing high casualization. West Bengal and Kerala have smaller proportions of women in agriculture (59 and 52 per cent respectively) and relatively low rates of casualization. The north-eastern states-Arunachal Pradesh, Mizoram, Nagaland and Manipur (not shown in the table)-reveal high female participation in agriculture combined with low incidence of female casual labour (4 to 5 per cent). But even here there are exceptions: Assam shows a high rate of female participation in agriculture with a larger proportion of female casual labour (21 per cent) than the other states in the region; and Tripura has only 48 per cent of its women participating in agriculture but a 40 per cent incidence of casual labour (Krishnaraj and Kanchi, 2008). Evidently, a variety of factors determine women's participation in agriculture. Besides agro-climatic conditions, factors such as type of crop grown (food or cash crops, wheat, rice or coarse cereals), availability of irrigation, type of agriculture (market or subsistence), crop intensity, degree of diversification, the technology used, extent of mechanization as well as socio-economic factors such as poverty, backwardness, incidence of landlessness, caste, class, cultural norms of social mobility and seclusion, level of education and skills, and accessibility of non-farm opportunities determine the extent of women's participation (Table 3).

In explaining the differences, a distinction is usually drawn between the north and north-west regions where irrigated or dry wheat cultivation discourages female participation in contrast to the southern region where double cropping of wet rice cultivation requires high female labour. Some studies point out that most of the states with high female WPR - Andhra Pradesh, Gujarat, Rajasthan, Maharashtra, Karnataka, Madhya Pradesh and Tamil Nadu - are predominantly dry land regions. In fact, 56 per cent of all women agricultural workers in the country are in primarily rain-fed states (that is, states with irrigated ratio less than the all-India ratio of 39.5 per cent). High participation is attributed partly to the greater importance of livestock economy and partly to the predominance of crops such as rice, groundnut and cotton where women have been traditionally engaged (Krishnaraj and Shah, 2004). Distress migration of men from these areas is also cited as a cause (Unni, 1992; Bardhan, 1985). The predominance of certain castes and tribes has also been associated with a large proportion of landless female agricultural labourers (Ahmed, 2004).

Section II

Issues, Concerns and Policy Options

There is wide consensus regarding the need to rejuvenate agriculture through significant increase in public investment. This is, in fact, an important element of the Eleventh Plan strategy. In order to benefit women, agricultural policy in general and public investment policy in particular must address women specifically. Sufficient evidence is now available to prove that gender neutral policy is invariably gender blind. Women-specific schemes have always been part of India's planning process and have been successful to some extent, particularly by way of providing relief. However, these have proved sorely insufficient to improve women's economic position or capabilities. It is now well recognized that mainstreaming is essential since women constitute nearly 50 per cent of the population but are in a subordinate position, within the household and in the public arena. However, though every Plan from the Ninth Plan onwards has reiterated its importance, there has been little understanding and even less implementation of mainstreaming. The Eleventh Plan makes the most serious and comprehensive attempt so far but even here many lacunae can be observed. For instance, despite the emphasis on mainstreaming and gender as a cross-cutting theme on the one hand and the importance of agriculture for women (the Plan acknowledges the feminization of this sector) on the other, the document fails to make the labour force forecasts for agriculture gender disaggregated. Can planning based on data that is not gender disaggregated comprehend the implications of the major structural changes in employment, especially in a sector that is getting increasingly feminized?

The foregoing analysis shows that if it is to benefit women, public investment must flow into rain-fed areas and backward districts, particularly food insecure ones, since these are where women workers are concentrated. It must increase productivity, especially on marginal and small farms, based on sustainable agricultural practices. For women belonging to farm households, growing some food grains on the family plot is an important way of securing food security. This is particularly true of small and marginal farmers, who may not have enough money income to rely entirely on the market for their requirement of basic food grains. Further, there may be no money income forthcoming in some parts of the year (for example, in the rainy season). Hence public policy and investment need to focus on increasing the yield of food crops, particularly coarse cereals and pulses²⁰ which are inherently suitable to arid areas and withstand climate change because such crops are the basis of food security and are therefore preferred by women. These steps must be supplemented by revamping the public distribution system, which needs to be made universal once again and a serious effort made to plug leakages.

In addition to the above, other segments of farming like mix of high-value products such as vegetables, organic crops, organic manure or bio-fertilizers, bio-pesticides, medicinal or aromatic plants, fodder, fishing and forestry must be developed concomitantly in order to give women some cash income. Livestock and dairying are important sources of livelihood even for landless farmers and, as we have seen, of special interest to women. Development of indigenous livestock varieties and encouragement of fodder cultivation are important here.

It augurs well for women farmers that the Eleventh Plan has, in line with the recommendations of the Sub-group for Women in Agriculture and in consultation with the group of Feminist Economists,

²⁰ Since most coarse cereals are grown in unirrigated lands, HYVs have been found to be unsuitable.

incorporated this line of action. In what follows we identify the constraints to women's productivity and income earning capacity and discuss possible policy options to overcome these, including those recommended by the Eleventh Plan. Women's income opportunities and handicaps vary widely across states, agricultural regions as well as land holding classes and castes. Women cultivators, casual labourers and landless labourers, each face different sets of problems. However, the distinction between these groups is becoming fuzzy with women from cultivator households taking to casual labour to supplement household income, while casual labourers become landless due to fragmentation and alienation of land. For convenience we continue to follow the categorization in official statistics of cultivator or self-employed and casual labour.

2.1 Land

Land and labour are two basic factors available with rural people for income generation. Ownership of land is concentrated mostly in male hands in our patriarchal society, though little reliable data is available on ownership by gender. Lack of entitlement to land (and other assets such as house, livestock, and so on) is a severe impediment to women cultivators because of its role as security for credit and as a basis for entitlement to irrigation and other inputs, especially technology. Without title to land, women are not recognized, even by the state, as clients for extension services or as candidates for membership in institutions such as co-operative societies. However, the clinching argument in favour of land titles to women is the stability and security it provides, the protection it affords from marital violence (Agarwal and Panda, 2005), and the bargaining power it gives women in household decision making and in the labour market for wages (Garikipati, 2006). Finally, widows of farmers committing suicide would certainly have been in a better position to repay debts taken by their men if they had title to land.

Inheritance, market and the government are the only sources of land acquisition. Even though the legal framework has been amended in favour of women as recently as 2005 with the deletion of the gender discriminatory clause on agricultural land,²¹ women often forgo their claims in anticipation of support from their natal family in case of marital problems or their marriages breaking up, even though such support may not actually materialize. Women also face impediments in operationalizing the statutory codes and getting their names included in the records (Rao, 2006). Also, ownership does not always translate into control. A study on land rights for women in West Bengal (National Commission for Women, 2005) found that 39.9 per cent of the households surveyed—mostly agricultural labourers and marginal farmers—had sold or mortgaged their land in order to pay dowry. Surprisingly, 79 per cent of the families who sold land to pay for dowry were Muslims, where dowry was not a tradition. As for the policy commitment of giving title to women in the distribution of surplus state-owned land (of which there has been very little available, only around 5.4 million acres), there has been variable progress due to the differential implementation by state governments. Actual progress is difficult to assess for lack of monitoring information (Rao, 2006).

The Eleventh Plan has many suggestions for providing women access to cultivable land—ensuring joint ownership or sole ownership to women of all land distributed by the state including under rehabilitation schemes, facilitating 'group' ownership or leasing, and allotment of homestead lands of 10-15 cents to landless families within one kilometre of existing habitation with priority to single women

²¹ In the case of Muslim women however, Section 2 of the Shariat needs to be amended before they can be brought on par with Hindu women (Agarwal, 2005).

and female headed households. The plots are also expected to be used by beneficiaries for economic activities such as planting high value trees, growing fodder and keeping livestock. Giving title to the wife has been suggested while regularizing irregular or insecure homesteads.

It must be pointed out here that the term 'female headed household' is the source of considerable confusion. The household head recorded in the census, for example, is the person socially accepted by the members of the household as its head, usually the senior-most male or female, not necessarily the member who economically supports the family. Thus migrant men who hardly repatriate their earnings or have practically deserted their families and men unable to work for health reasons may be reported as heads, despite the fact that the woman is, in practice, the sole or primary earning member. This is one reason why the proportion of female headed households in India reported by official data is as low as 8 per cent. But more critically, programmes targeting female headed households are bound to leave out a considerable section of households 'headed' by men but provisioned by women.

Other suggestions for increasing the supply of land that deserve exploration are:

1. To use part of the public investment to bring waste land, including arid or poor quality land, into cultivation in a big way (Mulji, 2003), to be transferred to women individually or as a group. Even though this may appear an expensive proposition to begin with, the social benefits are bound to exceed the financial costs. Poor quality arid land has been successfully transformed into productive assets using *sangams* or groups in Andhra Pradesh by the Deccan Development Society (DDS) (Satheesh Periyapatna, personal communication, January 2009).
2. To go to the market as a group. NGOs like DDS and the Self-Employed Women's Association (SEWA) have organized landless women to collectively lease or acquire and cultivate land with some success.²² An active land market is a pre-requisite for this to be successful. SEWA's experience in leasing government-owned land indicates that the legal and institutional impediments that stand in the way of giving a group title to land need to be eased.
3. To undertake updating and computerization of land records and, in the process, to add the name of the wife in the titles, as is being proposed in Maharashtra according to recent press reports. Gender sensitive tenancy reform should also help women.
4. Securing and maintaining updated and computerized land records is an essential pre-requisite for the implementation of these measures. This is undoubtedly a stupendous task, the chief problem being to ascertain the true current owner. State governments need to be persuaded to begin this process immediately.
5. Finally, besides land, entitlement to other assets is also a source of economic power and a means to increasing women's capabilities. Workers with own bullocks, carts and agricultural implements are shown to have higher social status and command better wages; title to the house affords security and stability. Arrangements for giving credit to women for the purchase of such assets need to be explored.

²² These experiments also suggest that farm activities should go beyond mono crop production to cover various related operations like simultaneous cultivation of several crops and allied activities like livestock, manure production and grain banks.

2.2 Credit

'No land (collateral) no credit' has generally been the motto of the complex network of credit institutions towards agricultural lending. Due to their lack of title to land and other property, women are denied credit by formal and informal institutions. Revathy (2007) cites evidence of a rise in fallow land among households of farmer suicides due to structural and institutional constraints faced by women. Credit to women from the organized financial sector has been miniscule despite RBI announcements setting up targets for commercial bank lending to women. The woman cultivator is caught in a difficult situation. In the absence of institutional credit, resorting to the money lender has serious consequences: she usually has to sign away title to land, if she has it, to persuade the money lender to part with production credit. In most cases she loses her land. If she does not mortgage it, she and her family starve. Pallavi (2007) characterizes the relation between women and money lenders as volatile and violent. She reports several cases of physical and sexual violence targeted against women for recovery of debts or to snatch land. In order to facilitate institutional credit to women, the Eleventh Plan gives the welcome proposal of recording women's names as cultivators in revenue records where women operate the land, regardless of its ownership, and to use this as the basis for (crop-based) lending. In addition, the household male member may also be considered as guarantor for loans taken in the name of the wife.

Since 1991-92, micro finance institutions (MFIs) or self-help groups (SHGs) have come to be seen as alternatives. Today, India has one of the largest numbers of SHGs in the world (around 2.2 million). Not surprisingly, state-wise data indicates that low income states still have a long way to go regarding formation of groups and access to credit for economic activity (SU, 2007). The advantages and limitations of SHGs both as instruments of credit and of empowerment have been extensively debated in literature. If some of the operational difficulties can be ironed out, women can be encouraged to set up micro enterprises in agricultural and allied activities rather than non-farm activities like tailoring or candle making. Cultivation of medicinal or aromatic plants and local specialities, organic farming, cultivation of fodder, and rearing of small ruminants and poultry appear suitable. Agricultural enterprises are likely to have higher chances of success over the non-farm variety due to the skills, knowledge and expertise that women already have in these activities and because food always has a local market.

However, it is important to emphasize here that micro finance or SHGs cannot replace agricultural production credit since substantial capital at key points of the production calendar is required. The intensive promotion of SHGs has displaced the search for ways in which production credit may be delivered to women cultivators. Micro finance and SHGs can only work as supplementary sources of finance for diversification purposes.

For purchase of inputs and marketing of output, forming co-operatives can be a good strategy for women. Procedures and regulations need to be suitably amended to become more gender sensitive. Considerable mentoring and assistance may also be required until women acquire confidence in managing such arrangements. The extension system may need to add this to their agenda.

2.3 Common access/property resources (CPR)

Inequity in access to common resources-water bodies, forests, grazing grounds-impacts women from cultivating households, casual labour and, above all, landless labour households. A study in seven states in semi-arid regions showed that CPR accounted for 9 to 26 per cent of household income of

landless and marginal farmers, 91 to 100 per cent of their fuel requirements and 69 to 89 per cent of their grazing requirements (Bandyopadhyay, 2008). Restriction of access to community resources robs women of opportunities for diversification into livestock and collection of non-timber forest products and also increases their work burden by increasing the distance traversed and time required for collecting fuel for cooking and water for drinking. Shortage of water for irrigation, particularly ground water depletion, is widely being reported in most parts of India (National Commission for Women, 2005) and is emerging as a major problem. Women need to be trained to use water conservation techniques such as drip irrigation and micro water harvesting methods to conserve this important resource, especially in rain-fed areas.

But even where irrigation is available, drinking water shortage imposes a needless burden on women and girls and is often one of the reasons why girls drop out of school. Community participation initiatives like Joint Forest Management (JFM), Participatory Water Shed Management, Participatory Irrigation Management (PIM) and Water Users Associations have only partly been successful in empowering women. They suffer from low membership of women, sparse attendance and lack of voice. Also, women's opinions and suggestions are largely ignored by the decision making bodies because of the complex web of social, economic and cultural factors that generate subordination of women. Inequitable distribution of costs and benefits of the schemes and class and caste conflict between women have also been reported (Sarin, 1996; Ahmed, 2004; Agarwal, 2000).

Besides exploring ways to involve women more effectively in these community organizations, the state must increase its investment in non-conventional energy production-wind, solar and biogas-in a big way so as to meet women's need for fuel. Supply of piped water close to the habitation also needs to be organized.

2.4 Technology and extension

This is another important constraint that women face. Technology, in general, is not designed with women in mind. Technology aimed specifically at women is usually confined to narrow arenas of household work. This is not to deny the importance of such innovations: introduction of time-saving technology for household work can free time for income earning work (World Bank, 2008). Women are rarely considered as clients for agricultural research and development. Extension workers almost exclusively aim their advice at men's activities and crops. This bias may depress production of subsistence food crops (often women's crops) in favour of increased production of cash crops (often men's crops) so that family nutrition suffers (National Commission for Women, 2005). In fact, the Eleventh Plan appears to have little to say on the gender dimension of technology. Government extension and R&D activities need to shift from the laboratory to women's fields. More women extension officers need to be used to contact women farmers directly at their door step and according to the latter's convenience.

The impact of Genetically Modified (GM) technology on the environment and on women - the erosion of women's skills and rights over seed, loss of bio-diversity, compromise of multiple uses of crops, the growing power of transnational corporations over livelihoods of farmers, erosion of women's employment - have all been widely discussed (Row, 1998; Sahai 2003). Another quarrel against GM seeds is the rapid increase in child labour, particularly girls, in areas where GM cotton seeds are commercially produced (Parthasarthy n.d.). Steps need to be taken to stop these exploitative practices.

Gajendra Singh et. al (1998) have put together a list of improved agricultural equipment developed in India for women. Availability of technology therefore does not appear to be the problem. Popularization, ready availability and affordability of tools need to be ensured. The extension system has a very important role to play in this respect.

As for Information Communication Technology (ICT), the other major technological breakthrough in this decade, an assessment of Village Knowledge Centres (VKCs) set up by the M.S. Swaminathan Research Foundation (MSSRF), Chennai, revealed that women are constrained by lack of education, physical access and financial affordability besides restrictions imposed by social and cultural norms in putting ICT to use (Ahmed, 2004).

As can be deduced from the foregoing discussion, the government extension system has a critical role to play beyond technology in bringing women agricultural workers into the mainstream and in equipping them to increase productivity by providing assistance in the choice of crops and suitable varieties, input management and marketing. The system requires overhauling and some of the public investment must be channelized into improving links between research institutions and extension, and in attracting, retaining and equipping women agricultural graduates as extension workers in order to better mobilize and train women agricultural workers.

2.5 Marketing

In order to increase income of households, it is essential to bring subsistence farmers to the market and to help small producers who are already there to benefit from it. In crop production as well as allied areas like dairying and livestock breeding, small and marginal farmers in India lack adequate access to marketing facilities due to lack of basic infrastructure like market yards, roads and transportation, and storage including freezers and depend on unscrupulous middlemen. Additional constraints for women include seclusion, lack of literacy, knowledge and information. Women have no representation in agricultural marketing committees and other similar bodies. For marketing as well as for access of inputs such as credit and extension, the Eleventh Plan proposes 'group' operations. The modalities need to be worked out and the extension system could be used for mobilization and technical assistance.

2.6 Equitable wages

The existence of widespread gender disparity in wages has already been pointed out. Gender disparity seems to be a particularly challenging problem that has persisted despite the existence of a statutory minimum wage and the equal wage statute. In an unequivocal invalidation of the commonly held belief that wages reflect productivity, tests conducted by Punjab Agricultural University at the government potato seed farm found women 4 times as efficient as men (Ahmed, 2004) though women were paid less than men. An interesting study by Narayanamoorthy and Deshpande (2003) shows that irrigation brings market wages closer to the statutory minimum and narrows gender differentials. The reasons for this are, however, not sufficiently explained. Ultimately market forces alone are not going to bridge the gender gap in wages. Equitable wages may not be possible until women's real magnitude of participation and their contribution is recognized and appreciated.

The National Rural Employment Guarantee Scheme (NREGS) and the export sector do offer windows of opportunity for institutionalizing gender equitable wages. Although equal wages is embodied

in the Act, NREGS in practice perpetuates discrimination through norms based on capability of the average male worker; gender division of labour; lower wages for operations usually carried out by women; handing over piece rate wages for distribution to the gang leader, who is usually a male; and through a collusion of officials with male workers in discounting women's wages. If the covert discrimination is eliminated and the promise of 100 days of work fulfilled, there is a good chance that equal wages will become an acceptable practice in agriculture due to the pan-national spread of the scheme and the similarity of NREGS work to agricultural work. The Eleventh Plan proposal to implement both the Minimum Wages Act, 1948 and the Equal Remuneration Act, 1976, monitored by the Ministry of Labour and Employment through an increase in women labour officers, and the inclusion of works more conducive to women's physical capabilities and skills is a welcome proposal in this regard.

As to the export sector, equal wages is already current in some sections such as production of grapes. Gender equitable wages should be made an obligatory condition for export production and contract farming units. Although this sector is small at present, given its potential, there is a possibility that the practice will permeate the domestic sector as well.

2.7 Literacy, education and skills

The importance of education for occupational mobility, especially outside the agricultural sector, is well known. Also, education can be very useful for enabling women to negotiate patriarchal regulation and to claim their rights over property (Kodoth, 2004). A minimum level of education is indispensable even for managing agriculture, dealing with input suppliers and public officials, adoption of research, development and extension (Mittal and Kumar, 2000), and even to be an informed member of a SHG. Educational attainment of agricultural women workers is shockingly low, though younger women (15 years to 29 years) have acquired, despite the continuing high drop out rates, a higher level of general education compared to older women.

In 2004-05, of women aged 15 years and above, 70 per cent were illiterate, 18 per cent had up to primary education and only 4 per cent had secondary qualifications and above. Women engaged in casual labour appear to have the lowest levels of education, even amongst the younger cohort (Table 6). However, some improvement is seen in the age group 15 years to 29 years, although the picture is not exactly cheering: more than half (52 per cent) are illiterate, 25 per cent have up to primary and only 8.5 per cent have at least secondary qualifications. For male workers aged 15 years and above, the corresponding proportions are 39 per cent, 30 per cent and 30 per cent. Female casual labour has the highest percentage of illiterates (77 per cent).

One important point to be noted here is that unemployment rates are much higher for educated women than for men with equivalent qualifications, the gender gap being particularly high for those with qualifications of higher secondary or above. Possible reasons could include (i) the failure of general education to equip women with specific skills necessary for upward mobility (Eapen, 2004) (NSS 61st Round reveals that 91 per cent of women 15 to 29 years of age have no vocational training.), (ii) the strong constraining influence of social mores on mobility and family responsibilities, and (iii) the correspondence of female education with higher economic class, which is known to withdraw its women from the labour force. More research is called for here.

Table 6. Percentage distribution of usual status (PS+SS) agricultural workers by general education level for rural India, 2004-05

	Not literate	Literate upto primary education	Middle Secondary	Secondary	Higher secondary	Diploma/ certificate	Graduate	Post- graduate and above	Secondary and above	All
15-29 age group: Male										
Self-employed	18.5	28.2	26.7	14.5	7.9	0.6	3.0	0.7	26.7	100
Regular/Salaried	44.9	32.1	12.8	5.4	1.5	0.7	2.3	0.1	10.1	100
Casual	33.7	38.1	20.3	5.7	1.6	0.1	0.5	0.1	7.9	100
All Categories	24.8	32.1	24.0	10.9	5.3	0.4	2.0	0.4	19.2	100
15-29 age group: Female										
Self-employed	47.2	24.1	17.1	7.4	3.2	0.2	0.6	0.1	11.5	100
Regular/Salaried	43.6	34.2	11.6	1.3	3.3	0.0	5.1	1.1	10.7	100
Casual	59.5	25.2	11.8	2.8	0.6	0.1	0.0	0.0	3.5	100
All categories	51.8	24.6	15.1	5.7	2.2	0.2	0.4	0.1	8.5	100
15 and above age group: Male										
Self-employed	32.6	28.7	19.1	10.5	5.4	0.5	2.7	0.6	19.6	100
Regular/Salaried	49.7	29.8	9.7	5.2	1.9	0.5	2.9	0.3	10.8	100
Casual	49.7	31.8	13.3	3.7	1.1	0.1	0.3	0.0	5.3	100
All categories	38.8	29.8	16.9	8.0	3.8	0.4	1.9	0.4	14.4	100
15 and above age group: Female										
Self-employed	66.1	18.4	9.5	4.0	1.4	0.2	0.3	0.0	5.9	100
Regular/Salaried	52.6	35.3	6.6	1.4	2.4	0	1.2	0.5	5.5	100
Casual	76.8	16.3	5.2	1.3	0.3	0.1	0.0	0.0	1.6	100
All categories	69.8	17.8	8.0	3.0	1.0	0.1	0.2	0.0	4.4	100

Source: Statement 24 NSS Report No. 515: Employment and Unemployment Situation in India, 2004-05.

While improvements in the general education system targeted at retaining girls is necessary, there is equally an urgent need to provide training to develop technical, entrepreneurial, marketing and organizational skills, especially for the younger cohort of 15 years to 30 years who have the requisite basic education, thus equipping at least a section of the female labour force in agriculture to move out of the sector to take advantage of emerging opportunities. Market trends in new opportunities need to inform the design of programmes so as to provide constant upgradation of women's skills and make them competitive in the labour market.

But even the older cohort of illiterate women need not be denied training for lack of education. Modern audio-video methods and demonstrations not dependent for their impact on literacy can be used to communicate basic numeracy, technical skills pertaining to agriculture, computer literacy and other need-based skills. Lack of basic computer skills is a stumbling block in the use of computer kiosks for accessing weather and market information. State programmes popular with women such as the NREGS can be used as sites for the mobilization and training of women.

Finally, women workers in agriculture, like those elsewhere, also require better performing government services-crèches, anganwadis and schools for their children; improved health facilities; and a non-targeted and efficient public distribution system in order to increase their productivity and well-being.

The Eleventh Plan rightly claims to be the most gender-conscious of all plans so far. It recognizes women as agents of socio-economic development and change. While undertaking to guarantee the rights and entitlements of women, it concedes the heterogeneity of women, and their needs and problems in terms of their social, economic and geographical location. The Plan proposes a five-fold agenda for gender equity-economic empowerment, social empowerment, political empowerment, strengthening mechanisms for effective implementation of women-related legislation, and augmentation of delivery mechanisms for mainstreaming gender. The following need to be added to this list: (i) arrangements for independent monitoring of progress, and (ii) substantial improvements in gender disaggregated data collection.

Much will also depend on how state governments act upon the intentions expressed in the Plan.

2.8 Non-farm diversification

Even with considerable improvement of agriculture, the sector may not be able to absorb the growing rural labour force. Further, as will be discussed in the next section, with frequent and/or more intensive occurrence of disasters such as drought and flood due to climate change, farming households will need to diversify into non-farm occupations as part of their adaptive strategy. Rural manufacturing and services of the conventional kind have so far failed, for various reasons, to provide opportunities for unskilled and semi-skilled rural labour. It is the small scale and informal sector enterprises that have absorbed labour. In fact, the importance of small or medium scale decentralized rural manufacturing enterprises of the Khadi and Village Industries Commission (KVIC) model has long been recognized as a better alternative. However, the present system suffers from various shortcomings. The lack of a sufficiently large portfolio of proven project prototypes based on emerging technologies such as bio-technology, bio-mass processing, ICT and bio-fuel is an important lacuna. Parthasarathi (2005) points to the ready availability of such technologies from premier R&D organizations such as the Indian Council of Agricultural Research (ICAR), Council for Scientific and Industrial Research (CSIR), National Research Development Corporation (NRDC), Council for People's Action and Rural Technologies (CAPART), IITs and NGOs and suggests that several of these activities, such as growing of spirulina for the commercial market, are eminently suitable for women, being conducive to home-based, farm-based and village-based application. Manufacture of organic manure or bio-fertilizer and bio-pesticides also appears to be a suitable activity.²³ The absence of service sector projects in KVIC's portfolio (soil testing, for instance) and the lack of a system of extension for advocacy and training are other shortcomings that prevent the spread of this model.

²³ *Judging by Maharashtra's requirements (the state is the largest consumer of fertilizers), organic fertilizers appear to have a huge potential (GoI, 2005).*

Section 3

Postscript: Developments since 2004-05

3.1 The impact of the global slowdown of 2007-2009

The initial impact of the global meltdown of 2008 on the country's economy was via the decline in the growth of exports, but after the Lehman crisis of September 2008 it was transmitted to the financial sector and the stock market (Ram Mohan, 2009). However, its effect on the agricultural sector in general and on agricultural employment in particular is likely to be small for the following reasons:

- (i) Agricultural exports constitute around 11 to 12 per cent of India's total exports. Although estimates are not available, agricultural exports are likely to form a very small proportion of total agricultural production. Changes in the volume of these exports is therefore unlikely to have a significant effect on overall agricultural employment at the all-India level. Loss of employment is likely to be localized in areas where production for export is concentrated. However, it is difficult to venture a guess regarding the magnitude of this impact on gender in the absence of data on labour intensity of production and women's participation rates in production-for-export units in this sector.
- (ii) Out of the total 107 million women workers in agriculture (rural and urban), 54.9 million (51.3 per cent) are employed as unpaid family workers and operating at the subsistence level and are therefore unlikely to have been affected by the recession due to the global meltdown.

3.2 Drought in India in 2009 and climate change

The delayed onset and inadequacy of rains during the first few months of the 2009 south-west monsoons (June-September) spread anxieties regarding the impact of drought on the growth of the Indian economy on the one hand and on the livelihood and food security of nearly 700 million rural residents on the other.²⁴ The monsoon has since revived in large parts of the country, increasing the summer (kharif) sown area as well as improving the chances of a near normal winter (rabi) crop. Nevertheless shortfalls in area under the production of rice,²⁵ soya and sugarcane are anticipated. Some parts of Bihar are also experiencing floods following drought in August of 2009. These disaster patterns are signs of worldwide climate change, the impact of which is predicted to be more significant on India's agriculture than any other country's (Kapur et. al, 2009). Briefly discussed below are the gender aspects of climate change on agriculture.

The most important effect of natural disasters such as droughts and floods on those who live by agriculture is the loss of livelihood due to crop failure or lower yields and loss of livestock, which can lead to migration (urban or otherwise),²⁶ hunger and even starvation. Food shortages and rising food prices also threaten food security. The other equally serious effect is the shortage of safe water for consumption,

²⁴ Concerns about the impact of drought on growth are valid but less worrisome compared to the previous droughts partly because agriculture accounts for much less of national income now (17 per cent) than it did during previous droughts and partly because other sectors of the economy are less dependent on agriculture than they were earlier. Its impact on livelihoods and food security are more important given the size of the population dependent on agriculture.

²⁵ Of these, rice production is estimated to decline most significantly by 10 million tonnes to 83 million tonnes compared to 2008.

²⁶ Contrary to expectations there have been few reports of migration or of large-scale mobilization for public works during this drought; the official figures for employment/attendance on NREGS sites have in fact been lower than for the corresponding months for 2008 and for the first six months of 2009.

hygiene and sanitation, which in turn often results in the spread of diseases. The poor are particularly vulnerable to such crises, though vulnerability is not restricted to the poor. In fact, more prosperous middle income farmers are known to suffer relatively heavier losses (Moench and Dixit, 2004). Thus vulnerability has a broader and more dynamic range than poverty - it is defined by the physical location of the household or individual; access to physical infrastructure, information and communication systems; patterns of social capital; and the ability to secure alternative livelihoods and ensure the flow of resources (financial, social and political) to maintain livelihood security (Twigg, 2001). Social location defined by class, caste and gender is also an important determinant of vulnerability, particularly in India.

A large and growing body of work shows that natural disasters, including drought, not only have clear gender differentiated impacts but also elicit different responses from men and women. They also lead to changes in gender relations within households (Ahmed and Fajber, 2009). On account of women's differential role and work, their lack of control over productive resources, limited access to coping mechanisms (credit facilities, for example, or knowledge of swimming) as well as restricted mobility, women and children are more vulnerable than men. Women's (and children's) rights are also often violated during disasters (sex work, sale and trafficking). Further, mitigation, relief and rehabilitation efforts of the state are generally gender blind and directed at male heads of households. Poor women's disproportionately heavy 'vulnerability bundles' (Wisner et. al, 2004) are reinforced by their age, caste, religion and community identities.

However, women (much like the men) are also socio-economic agents and actively adapt to emerging situations. In the context of agricultural distress such as that experienced since the late 1990's, women's work participation increases or declines to compensate for the reduction or augmentation of men's income or job prospects. Where there is a general loss of jobs, whether due to drought or cyclical changes (in national or international markets), men may migrate or move to the non-farm sector while women will increase their unpaid work - partly by substituting for hired labour or by taking on jobs vacated by men on their own farms and partly by increasing their 'other' work such as foraging for free goods. The years 1987 (a year of severe drought) and 2004-05 (agricultural stagnation) both registered an uncharacteristic spurt in women's rural labour force participation rates (RLFPR) (25.4 per cent and 24.9 per cent respectively). The 1987 RLFPR for women is, in fact, yet to be surpassed. Interestingly, this was accompanied in 2004-05 by an increase (from 15.5 per cent in 1999-2000 to 17.8 per cent in 2004-05) in the proportion of women who 'attended domestic duty and also engaged in the collection of free goods' (code 93), and by a corresponding decline (from 20.2 per cent to 17.5 per cent) in the proportion of women engaged in 'domestic duties only' (code 92).²⁷

Abraham (2009) using unit level NSS employment data (2004-05) for distressed²⁸ and non-distressed regions demonstrates how the share of females in the agricultural workforce was higher (45 per cent) in distressed regions compared to non-distressed regions (36 per cent). This was true, but to a lesser extent, of the non-farm sector as well. This pattern reinforces the differences in coping strategies between men (migration) and women (increased work participation). Employment data, it must be emphasized, fails to capture the increased time and effort expended by women in distress situations (the longer distances women are forced to travel to collect water, for instance).

²⁷ That the 2004-05 RLFPR for women was primarily augmented by women under code 92 due to distress is reinforced by the fact that the proportion of female students (the other big category of those 'out of the labour force') actually increased in this round.

²⁸ Based on districts identified as distressed by the Expert Group on Agricultural Indebtedness, Government of India.

Traditionally state policy and action during disasters in India and elsewhere is confined to immediate relief and rehabilitation, though even here technological solutions and administrative machinery have been found wanting. The Report on Drought Management Strategies (2009a) and the Crisis Management Plan (2009b), for instance, discuss short-term and long-term strategies in purely techno-administrative terms. The human or gender aspects are conspicuous by their absence. Currently, the government appears to be using a three-pronged strategy to provide relief. The first, a subsidy on diesel, is an attempt to encourage exploitation of ground water (this will help only larger farmers and may be counter-productive in the long run). The second is a slew of measures to prevent hoarding and keep food prices under control. These include export bans, restrictions on forward trading of certain agricultural commodities, ticking off hoarders, plans to import food and higher procurement prices. The third is an attempt to provide employment through expansion of the types of works undertaken under NREGS.

Though relief and rehabilitation are essential and need to be gender sensitive, it is now recognized that nurturing adaptation alone can minimize vulnerability in the long run, given the increased frequency and/or intensity of disasters due to climate change. Adaptation is defined as 'the capacity of social actors to shift livelihood strategies under stress and to develop supporting systems that are resilient and flexible to absorb and respond to the impacts of [climate] change' (Ahmed and Fajber 2009:35).²⁹ For the first time in India, the recently announced National Action Plan on Climate Change (NAPCC) recognizes the need for formulating longer-term adaptive strategies and acknowledges the importance of incorporating gender aspects therein (GoI, 2008b). However, some experts feel that, 'this understanding has not been translated into the NAPCC's assessment of the effects of climate change or its outlines of mechanisms that could support people to adapt' (Ahmed and Fajber, 2009: 33). One of the stumbling blocks appears to be the lack of gender disaggregated data on climate risks and poor documentation of adaptation programmes, their effectiveness and the lessons they have offered.

Three fronts of state action for enhancing people's adaptive capacity are indicated-improving access to resources and knowledge to support livelihood diversification, provision of adaptive infrastructure, and capacity building of poor women and men to ensure they are able to participate in decision-making processes.

Diversification of livelihood, including migration, increases adaptability. Diversification can take the form of cultivation of crops that can endure climatic changes (pearl millets or basmati rice which are less sensitive to weather fluctuations) or of non-farm activities. Vulnerability assessment through participatory research in coastal villages by Uthman, an NGO, in Gujarat revealed that lack of property rights amongst women of marginal and small farmer households increased vulnerability by limiting their access to various resources like irrigation, credit and extension services. Unreliable water supply systems increased workload and cut into the time women could spend on diversifying opportunities (Verhagen, 2004). Access to early warning systems was found to be largely inaccessible to women because ownership or access to communication devices, mobile phones for example, is gendered. Finally, lack of knowledge or skills-most of the women did not know swimming compared to 60 per cent of men-affect their ability to take care of themselves and their dependants (Ahmed and Fajber, 2009). On the other hand, strengthening information social structures such as co-operatives and SHGs (Agarwal, 1995) has been found

²⁹ *Adaptation can be autonomous or planned. The first depends on underlying systems that enable people to take advantage of opportunities thrown up by the new environment while the second depends on the ability to proactively identify and respond to emerging constraints and opportunities by developing suitable physical and social infrastructure and protective systems (op. cit).*

to be an effective instrument to exploit economies of scale and negotiate power structures. Gender sensitive extension systems have an important role to play here.

Public works programmes such as NREGS do provide a safety net during distress. In the past, women's participation increased dramatically in the Maharashtra Employment Guarantee Scheme during droughts in the 1970s and late 1980s though, contrary to expectation, participation in NREGS actually declined during the current drought. Exclusion, delay in payment of wages and corruption have been identified as the reasons (Menon, 2009). Convergence of watershed management and provision of infrastructure with NREGS will help augment rural assets (Rizwanullah, 2009) and convert what is now a relief scheme to one of long-term transformation.

The declining reliability of rainfall and the increasing demands for water dictate a fresh look at water policy. Recharging water sources and recycling of water are important issues for all. So is the efficient management of water supply-both for irrigation and drinking. For women, easy access to safe drinking water and sanitation facilities are among their priorities (consistently identified by them) since women are usually responsible for collection and management of water which they use not only for household purposes but also in home-based enterprises. Thus water is more than just a welfare issue; it is an economic input. The government has to take the lead role in the provision of these facilities. Government usually invests in and lays down large pipes for bringing water from the source but fails to extend pipelines to habitations. Breakdown of water supply is also frequent. Thus, despite the availability of infrastructure women are forced to continue to spend time and effort in collecting water for their needs. Once again, the setting up of community-based institutions for participatory management of these facilities with the involvement of women has been found effective. These efforts will need to be supplemented by training in efficient use and conservation of water.

Formation of village level committees for communication, rescue and relief, health, water and sanitation, and permanent and temporary shelters with a good representation of women has been found essential to ensure that women's concerns are addressed. However, participatory management whether for water or communication often carries hidden costs for women, often in the form of unpaid labour. This needs to be factored into the design and process. One problem that persists in participatory management is that women are often found to be inactive members. Substantial efforts in skill training and capacity building for women, either by the government or NGOs, is required.

Conclusion

Attention to engendering adaptation to climate change on the ground is still relatively new in India. The foregoing analysis reveals how many of the same factors that constrain women's productivity and income earning capacity in normal times also makes them more vulnerable to climate change-limited access to property and resources, gender-based division of labour and inequitable returns to labour, lack of education and skill training, and lack of opportunities for diversification. Gender-blind policies reinforce these constraints. The line of action suggested above for meeting the challenges of climate change are in fact also the oft recommended inputs for gender sensitive development policy. Thus, central, state and local authorities need to incorporate gender concerns into underlying systems and to bridge the gap between disaster and development policy. Making policies and programmes gender sensitive does not simply mean adding 'gender' to it. It also requires a nuanced understanding of gendered forms of vulnerability and capability, as also a stronger commitment of resources-financial, technical and human-to address gendered priorities.

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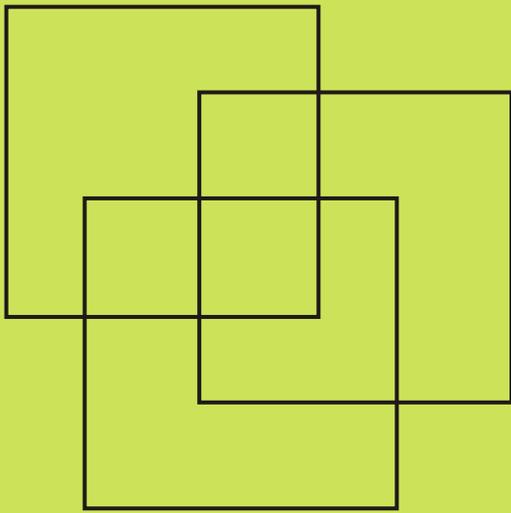
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