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**Policy and Institutional Reforms to Improve Horticultural Markets in Pakistan  
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**Gender Issues and Horticulture Markets in Pakistan**

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**Abstract**

In this paper, we review the conditions of rural women in Pakistan, the role and participation of women in production and marketing, discuss the international experiences of gender outcomes in modern agricultural value chains in developing countries, and draw implications for gender outcomes with modernisation of horticultural value chains in Pakistan. Though females contribute a high proportion of agricultural labour, evidence from many developing countries show that benefits are not equitably distributed. Women from poorer households are particularly likely to experience inequitable distributional outcomes. Socio-cultural norms and practices, and legal and institutional structures restrict female mobility, land ownership, access to education, credit and other markets. These issues are particularly acute in Pakistan that has very poor levels of gender equity. We analyse the experience of a programme implemented by the dairy multinational Nestle that links small dairy producers to a modern value chain, based on the concept of 'Creating Shared Value' (CSV) incorporating corporate social responsibility and financial viability with developmental goals. The project has a special focus on rural women who have traditionally played an important role in livestock management. We explore its claims to have successfully raised farm incomes as well as improve gender outcomes in a case study of a village in Punjab. The evidence suggests that innovative approaches can at least partially overcome barriers to integrating females in modern value chains and deliver positive outcomes. We discuss lessons, issues and implications for horticulture market reforms.

**Keywords**

Horticulture, Mango, Farmers, Inefficiency, Pakistan

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## ***Introduction***

Women play a major role in the agriculture sector of Pakistan, including its livestock and horticultural industries, but occupy a subordinate position in decision making and lack direct access to revenues. Major policy or institutional reforms that change the patterns of resource use, productivity, profitability and revenues are likely to produce outcomes that affect not only the overall welfare of rural households and agricultural produce consumers, but also have gender-differentiated impacts. This means that analyses of the potential impact of policy measures for reforming markets must pay attention not only to their overall impact on household incomes and welfare, but also to the specific impact such reforms will have on women. Such gendered analyses must be grounded on an understanding of the existing structures of gender relations and their socio-cultural roots, and the dynamic context in which agricultural market reforms will be implemented. This paper aims to contribute to such an understanding of the issues and policy challenges in the horticultural sector, so that recommendations for policy and institutional reforms can be formulated so as to enhance the welfare of both men and women.

In this paper we (a) review the available literature and information on gender aspects of Pakistan agriculture, including horticulture as well as livestock sectors, with a focus on horticultural markets, and describe the socio-cultural factors conditioning and constraining female participation in economic activities which must be recognised in the analysis of the potential impacts of horticultural market reforms and in formulation of practical policy recommendations to improve the welfare of women, (b) review the main strands of the international literature on the impact of improving agricultural markets on women, (c) analyse the experience of a specific development in the dairy sector of Pakistan – the initiative by the multinational firm Nestle to develop a modern value chain in the Pakistan dairy sector, and (d) discuss challenges and issues for future research on the gender aspects of policy and institutional reforms in horticulture markets in Pakistan.

## ***Women's role in agriculture in Pakistan***

Pakistan has the second lowest recorded female labour force participation rates in Asia, well below that of neighbouring India, and those of comparable Muslim majority countries like Bangladesh and Indonesia. Low participation rates are attributed partly to cultural restrictions on females working outside the home or own farm.<sup>1</sup> But it has a highly 'feminised' agriculture with women contributing a large and increasing share of agricultural labour. While only about a quarter of the total number of females of working age are engaged in paid work, over 70% of them are employed in the agricultural sector. The female participation (and female share) in the paid agricultural labour force has been increasing over time, while the share of males engaged in paid work in agriculture has been decreasing (Table 1).

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<sup>1</sup> While these restrictions apply in general to all females, women from more affluent backgrounds or highly educated women face fewer social sanctions in engaging in paid work. There is also a strong association between household poverty and women's labour force participation, with high rates of female labour force participation among women from the poorest households, who are forced to take up paid employment out of necessity (see, for example, Kabeer, 2012).

**Table 1: Labour Force Participation and Employment in Agriculture by Gender**

Year	Labour force Participation rate (%)		Labour force Employed in agriculture (%)	
	Male	Female	Male	Female
2001 – 02	82.7	16.2	37.2	64.5
2003 – 04	82.7	18	37.0	66.6
2007 – 08	82.4	21.8	35.2	73.8
2010 – 11	81.9	24.4	34.7	74.2
2012 – 13	81.1	24.3	32.9	74.9

Source: Balagamwala, Gazdar and Mallah (2015) based on *Pakistan Employment Trends, 2013*

These very low formal labour force participation statistics of Pakistan, however, understate the actual contribution of female labour to productive economic activities. Not only do they ignore the huge unpaid labour contribution of females, but these statistics under-report even the actual levels of paid labour force participation. In a patriarchal socio-cultural setting, it is considered to be the responsibility of males to provide an adequate income to the household so that women do not have to go out for paid work. If women do have to go out to work to earn enough income to meet household needs, it implies a failure on the part of the male to meet his responsibilities. Hence male household heads under-report participation of females in the household in paid outside work.<sup>2</sup>

The increasing ‘feminization’ of the agricultural labour force is an outcome of the movement of males out of agriculture. In Pakistan, males have greater spatial and occupational mobility compared to females, and are in a better position to move into better-paid off-farm and non-agricultural jobs. “Women’s employment is limited by the same cultural restrictions that limit their access to education and health services, imposing serious constraints on their autonomy, mobility, and on the types of livelihoods that are available to them. Among those who do work, labour market participation is characterized by occupations that tend to be of low wage and keep women close to home” (World Bank, 2015: 15).

The majority of women continue to be involved in unpaid work on their own farms, and this is not counted and reported as work in labour force statistics (ADB, 2016). For example, in Punjab, “about 93 percent of women in Punjab do not own land, half of them are

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<sup>2</sup> “The labor force participation rates for women are grossly underreported by the official sources of data. ...This is due to problems in data collection such as an inappropriate definition of economic activity, male enumerators who get information regarding working women from the male members of the family, questions seeking information on a single main activity, and exclusion of the informal sector. In the cultural context of Pakistan, women’s wage work is considered a threat to the male ego and identity and women’s engagement in multiple home-based economic activities leads to under-remuneration for their work. Pakistani girls and women spend long hours fetching water, doing laundry, preparing food, and carrying out agricultural duties” (Bari, 2000: p.8).

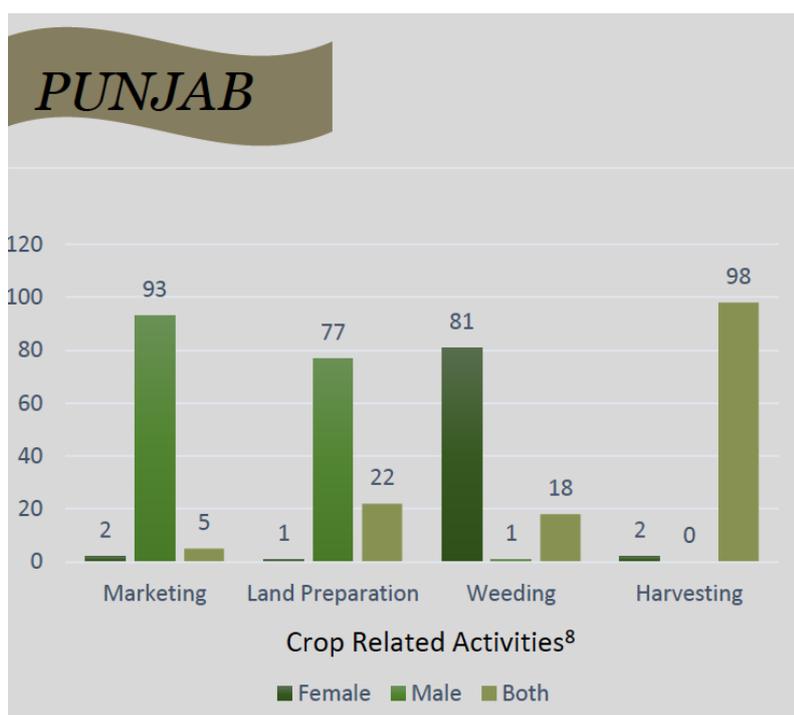
engaged as farm and family labour and around 75 percent of these receive no payment for their work” (Batool and Nosheen, 2015: p. 110). In other words, women are predominantly engaged in so-called ‘vulnerable employment’, with little or no bargaining power or security of employment. While in a low income developing country like Pakistan, most male workers also do not have good employment conditions or wages, the vast majority of women are at the very bottom of the labour force. Indeed, the increasing labour force participation of women is driven largely by ‘distress-employment’ where women are forced by economic necessity to undertake hired employment (Zaidi, Farooq et al, 2016).

This is the situation throughout Pakistan, though there are regional variations (see Samee et. al. 2015 for a description of female roles in various agricultural activities in each region of Pakistan). The situation in Punjab, for example, is described by Batool and Nosheen (2015: p.103) as follows: “.....majority of the field preparation work including hoeing (especially in vegetables) is done by women. At the time of the crop harvest, when agricultural labour becomes short, female labour force actively participates in the harvesting of wheat and cotton. In case of vegetables and fruits, most activities are performed by women. On fruit harvesting women are involved in picking, cleaning, washing, and packing.”

A very similar situation is described for Sindh by Jamali and Khowaja (2015), with rural women contributing nearly half of the labour inputs for both summer and winter crops. In the cotton industry, there is a long tradition of women working as hired employees in harvesting activities; in fact the harvesting of cotton is regarded as almost exclusively women’s work (Siegmann and Shaheen 2008). In addition to household chores, females are also major contributors to the rural economy in all three sub sectors: crop production, livestock production and cottage industry (see Figure 1 for the situation in crop activities in Punjab). Women’s contribution is particularly large in the case of livestock, where their labour contribution often exceeds 70% of total labour.

Despite this large female labour contribution to productive activities, females have little or no managerial control over agricultural management decisions: “...in spite of her roles and responsibilities in agriculture, women have minimal role in decision-making due to existing cultural norms” (Batool and Nosheen, 2016: p. 104). *Females have even less involvement in the marketing of agricultural products, including the main horticultural products.* Women have somewhat more involvement in the livestock sector, however, selling products such as chicken, eggs and milk. In Sindh, for example, where female involvement in cotton marketing is significantly higher than in many other cash crops, though more than 75 percent of women contribute to cotton harvesting, only a third have some involvement in marketing. In horticulture, women are heavily involved in production and harvesting activities but “are culturally constrained to participate in production and related activities and do not cross the boundaries defined by male family members” (Jamali and Kwoja, 2015: p. 129). Mangan and Ruthbah (2018), based on farm household surveys in Sindh (the main Chilli producing region in Pakistan), also report that, while female contribution to chilli production is very high, females have little or no role in marketing and decision making.

**Figure 1: Male and female labour contributions in crop related activities in Punjab**



Source: Sohail (2017)

### ***Socio-cultural Context in Pakistan and Gender Issues in Agriculture***

The gender issues in agriculture must be viewed in the context of the very high levels of gender inequality in almost every major indicators (Table 3). The potential impact of improved markets must be analysed within a gender perspective that recognises the deep rooted socio-cultural constraints to female participation in specific economic activities including marketing, reflected in their low levels of ownership and control of physical and financial capital, lack of skills, education and other forms of human capital. These are critical in determining the extent to which improvements in markets and modernisation of agricultural value chains can benefit rural women.

The main thrust of the discussion in this section is to emphasise the need to recognise that *the main constraints on female mobility, and women's access to, and control over, farm assets and incomes are deeply rooted in socio-cultural norms, rather than in the legal or regulatory systems*. This is not to underplay the importance of legal and regulatory reforms to improve the position of women, but to point out that such reforms by themselves will not be very effective unless the importance of socio-cultural norms are taken into account in formulating effective strategies to improve the position of women. Certainly the socio-cultural norms themselves are changing everywhere in Pakistan, including in the rural areas, but they do and cannot be changed quickly or easily through changes in policies and regulatory reforms alone. Practical policies to improve the position of rural women, including policy and institutional reforms in horticultural markets, must take into account this socio-cultural reality.

Pakistan ranks as low as 130 in world in the Gender Inequality Index, and is second to the last (135 out of 136) in the Global Gender Gap index (which measures the gap between men and women in four categories: economic participation and opportunity, educational attainment, health and survival and political empowerment) (IMF, 2015).

**Table 2: Indicators of Gender inequality**

	Labour Force Participation Rate (%)		GNI per capita (PPP2011 US\$)		Mean Years of Schooling		Gender Development Index	Gender Inequality Index	
	F	M	F	M	F	M		Value	Rank
	Pakistan	24.3	82.2	1498	8376	3.7			
Bangladesh	43.1	81.0	2379	4285	5.0	5.6	0.927	520	119
India	26.8	79.1	2184	8897	4.8	8.2	0.819	530	125

**Notes:**

a. GNI: Gross National Income per capita

b. The Gender Development Index indicates gender inequalities in achievement in the same three dimensions of the Human Development Index: health (measured by female and male life expectancy at birth), education (measured by female and male expected years of schooling for children and mean years for adults aged 25 years and older); and command over economic resources (measured by female and male estimated GNI per capita)

c. Gender Inequality Index reflects gender based inequalities in three dimensions: reproductive health, empowerment, and economic activity. Reproductive health is measured by maternal mortality and adolescent birth rates; empowerment is measured by the share of parliamentary seats held by women and attainment in secondary and higher education by each gender; and economic activity is measured by the labour market participation rate for women and men. The GII can be interpreted as the loss in human development due to inequality between female and male achievements in the three GII dimensions.

Source: UNDP: *Human Development Report 2016*

The situation is particularly bad in the agricultural sector and rural areas. A recent IFPRI study using a multi-dimensional Women’s Empowerment in Agriculture Index adapted to the specific conditions of Pakistan concluded that over 80 percent of the women are disempowered in indicators for ownership of assets, control over income earned, and control over use of income earned despite their large contribution to productive activities: “In Pakistan, income allocation is usually divided along gender lines. A woman may make small income decisions but have no control of overall household income “(Ahmed, Hameed, Khan, and Rafi, 2016: p.415).

Many developments in the wider economy tend to exacerbate, rather than alleviate, gender inequality, given the specific socio-cultural context of Pakistan. As in many other developing countries, increasing feminisation of agriculture in Pakistan is taking place in the context of a relative decline in agricultural productivity and widening urban-rural income differences. Agriculture accounts for around a fifth to a quarter of GDP, but employs over 40 percent of the total labour force, indicating that agriculture has lower labour productivity

than the rest of the economy. Consequently, there are large rural-urban income differences as well as large differences between urban and rural wages. In 2012 rural wages were 9.9% lower on average than in urban areas in Pakistan and this gap was larger for women. Controlling for factors such as education, age, female wages were on average only 55% of male wages in 2012 and it was less than 50% in agriculture which employs the vast majority of women. This gap has been widening over time (World Bank, 2016; see also Zaidi and Farooq et al, 2016).

These gender inequalities in wages are only one part of large gender gaps in most indicators of wellbeing. Women not only have lower rates of labour force participation and wages, but also have significantly lower health and nutrition levels, literacy, and mobility, with greater gaps in rural areas. Public expenditures on education (2% of GDP) and health (0.23% of GDP) overall are extremely low in Pakistan, so education and health indicators are unsatisfactory among both males and females, but female indicators are worse than those of males.<sup>3</sup> In 2014, female literacy was 47% compared with a male literacy rate of 70%. Though girls' school enrolments have increased over time, gender gaps persist and are widest at middle school level and in rural areas.<sup>4</sup> Gender parity has been almost fully achieved at graduate and postgraduate levels, but that does not lead to gender parity in the labour force, with the vast majority of female graduates not going into the labour force at all (except in medicine, where 58% do join the labour force).

These gender disparities are the outcomes of specific socio-cultural factors that affect their position in the household and wider society, their intra-household bargaining power, and their ability and willingness to participate in economic and market activities and related social interactions. The socio-cultural environment for females is changing in Pakistan, but any analysis of how changes in the agricultural systems, including changes in horticultural marketing, will affect the position of women must take into account the realities of existing socio-cultural norms into account.

The gender dimensions of social and economic activities in Pakistan should be understood in the context of the pervasive influence of 'Purdah' - the practice of gender segregation and the seclusion of women in public. It reflects a set of customary norms, beliefs and values that define the dominant models of masculinity and femininity and allocate men and women, boys and girls to different roles and responsibilities on the basis of these definitions, generally assigning a lower value to those aptitudes, abilities and activities conventionally defined as 'feminine' relative to those conventionally defined as 'masculine' (Kabeer, 2012). Purdah imposes a set of 'gender-specific constraints' on patterns of behaviour which apply to women and men by virtue of their gender. While the practice of female seclusion is often associated with Islamic communities, its widely practiced even among Hindu communities in India, and the specific form of these practices differs substantially not only

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<sup>3</sup> These figures are from Zaidi, Farooq et al. (2016)

<sup>4</sup> The low levels of transition from primary to middle school among girls is observed despite research findings that show that marginal rates of return to additional grades of completed schooling is significantly higher for females than for males (Aslam, 2009). This partly explained by lack of access to schools for girls in many parts of the country, but is also suggestive of social attitudes that inhibit sending older girls to schools.

across Islamic communities in different countries but also from place to place and between different ethnic and tribal groups even within a country (Obermeyer, 1992).<sup>5</sup>

Purdah encompasses a wide range of constraints on dress, patterns of social interaction and other forms of socially acceptable behaviour, but the most important aspects of Purdah that influence women's position in rural agricultural households in Pakistan are, (a) those that define her primary role to being good at domestic duties, and being a good wife and mother and, (b) those that restrict social interactions with outsiders, particularly with males outside the set of immediate family. While there are significant variations across regions and communities, in general she is not expected to be the bread winner of the family, to go outside the home and work to earn her living, or to be the primary decision maker in major household decisions.

These norms have generated a social stigma on females working outside home, particularly in situations where they may be exposed to social interactions with non-family males. This has been a major factor for the low levels of (formal) labour force participation rates (Table 3). When economic necessity forced women from poorer households to undertake paid outside employment they had to cope with this social stigma. This contributed to a pronounced 'u-curve' in labour force participation because when household incomes increase, women withdraw from the formal labour force. Further, a stigma attached to working outside home also lowers the social status of young women in the marriage market, reduces the expected net benefits from education, and reinforces the reluctance of families to educate girls.

These restrictions barred women from playing a direct role in market transactions where they need to interact with outside males, and results in a situation where control over farm operations and decision making becomes vested in the males. Within households, males dominate 'market work' (work on own farm, work on others' farm and non-farm work), while women have the major share of household tasks (Fafchamps and Quisumbing, 2003). "Men, as primary earners are perceived to be capable managers of productive resources. Women, on the other hand, are considered to be dependents without experience and not able to handle property matters and valuable physical assets. Further, particularly in South Asia, women are considered to be member of their husband's family. Giving them control over property is akin to giving it away to her husband and his family" (Zaidi and Farooq et al, 2016: p. 46).

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<sup>5</sup> In a comparative analysis of women's autonomy in India and Pakistan, Jejeebhoy and Sathar (2001) conclude that social institutions of gender within regions, rather than religion, determines the nature and strength of these practices: "There is little support for the argument that Muslim women are disadvantaged in terms of autonomy, at least when compared to Hindu women from the same region" .....once, region is controlled, levels of autonomy are not very different among Hindus and Muslims. Women in Tamil Nadu (South India) – whether Muslim or Hindu - experience far greater autonomy than women in either Uttar Pradesh (North India) or Punjab (Pakistan).

**Table 3: Labour Force Participation Rates in Pakistan**

Indicators	2012-13	2013-14	2014-15
<b>Refined Activity (Participation) Rates (%)</b>			
<b>Pakistan</b>			
<b>Rural</b>			
Total	49.0	49.2	49.0
Male	70.3	69.4	69.0
Female	27.3	28.9	28.8
<b>Urban</b>			
Total	39.7	39.0	38.7
Male	66.4	66.0	65.7
Female	10.8	10.2	10.0

Source: Pakistan Economic Survey 2015-16

These cultural norms have had precedence over Islamic religious teachings conferring inheritance and property rights to women. Even when a woman inherits land, she is generally unable to operate the land, so land is transferred to a male family member. Because of all these factors, as seen in Table 4, ownership of agricultural assets, above all the most important asset, land, has become concentrated among males to the near total exclusion of females.<sup>6</sup>

**Table 4: Distribution of asset ownership in Pakistan (% owned by females)**

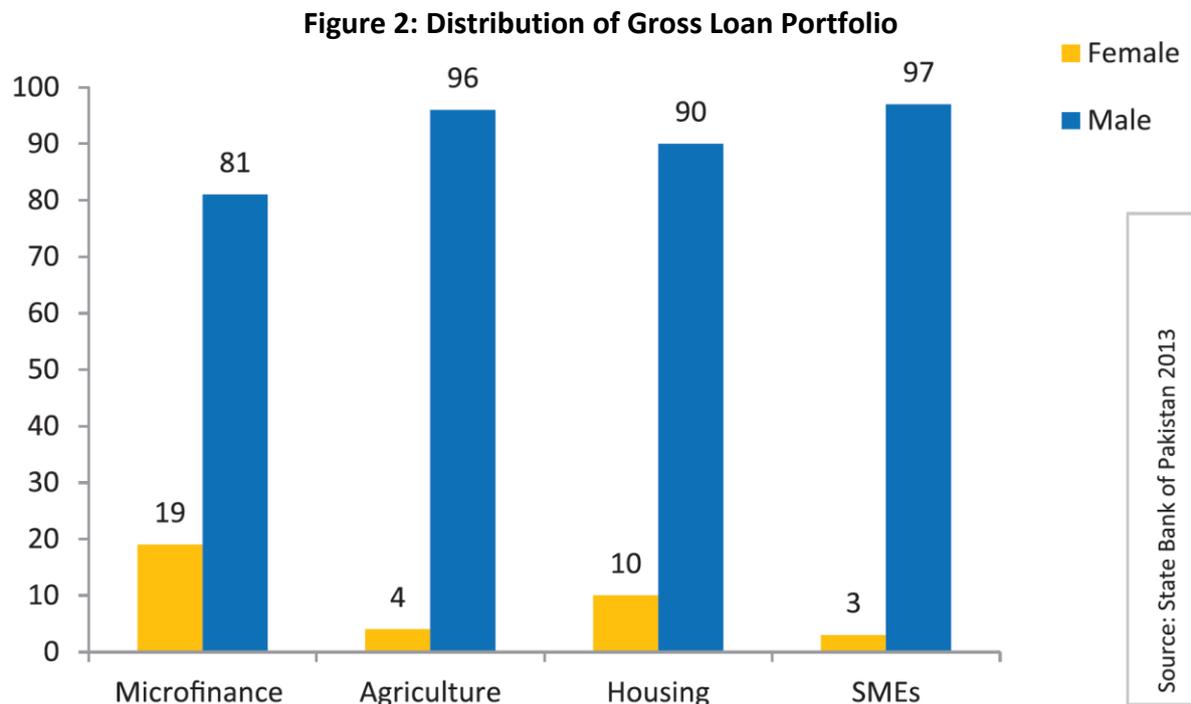
	Alone	Jointly	Alone and Jointly
House	2.0	7.4	1.3
Land	2.0	1.8	0.1

Source: Zaidi, Y. and Farooq, S et al (2016) based on *Pakistan Demographic and Health Survey (PDHS) 2012-13*

The exclusion of females from ownership of assets also constrains their access to financial markets and borrowings, to land, machinery and other agricultural inputs, and limits their capacity to engage directly or independently in economic activities. Despite efforts to expand female access to financial markets through various schemes including: microfinance programmes, access to finance and borrowings remains male dominated (Figure 2).

<sup>6</sup> There is a large literature on the complex interactions between purdah, dowry system, under-investment in female education and other forms of human capital (see, for example,

In these circumstances, understandably, females have little or no power to exercise much influence on farming decisions, and more generally on household economic decisions.



Zaidi, Y. and Farooq, S et al (2016) based on *Pakistan Demographic and Health Survey (PDHS) 2012-13*

But neither the economic nor the social environments are static.

The social restrictions and practices associated with purdah are changing in Pakistan with higher levels of female education, exposure to outside influences, and both economic necessity and new economic opportunities. This has been occurring in urban areas for quite some time (Mirza, 1999), but is also now beginning to happen in rural areas.

Higher levels of girls' school enrolments are also indicative of changing attitudes in society, and there's beginning to be greater recognition of the value of female education both in terms of higher income earning capacity and household benefits that come from having more educated females. Makin (2017), based on econometric analysis of field data from Punjab (Pakistan), concludes that enhanced outside income earning ability is becoming more valued in the marriage market, leading to lower dowry payments, and her interviews suggest that many working women believe that working outside helps them find a marriage match. As Batool and Nosheen (2016: p.105) point out, "Men are used to markets and women with domestic work but trends in Punjab are changing with its economy strengthening and changing social norms". The changes in Punjab are paralleled by similar changes in other provinces, though the pace of change varies across different provinces and different ethnic groups.

### ***Integration into modern value chains: impact on women***

The situation of rural households in Pakistan can improve in a sustainable way only if agricultural productivity and incomes are raised through modernisation and reforms of value chains.<sup>7</sup> But what will be the impact of such reforms on the position of women, and what kinds of policies and measures can help women to capture benefits from value chain development? This has generated much debate and an extensive literature on the various issues has emerged in recent years.

Market reforms can by themselves improve price transmission through the value chains and improve prices received by the primary producers. While such price improvements can contribute to improving the conditions of the producers, arguably, the most important long term impact of market reforms is that they provide an enabling environment whereby the entire production, harvesting, processing, transport and delivery of final products to consumers can be transformed into a modern value chain supplying high quality and high value products to final consumers. These do more than simply delivering farm produce to final consumers. In fact the 'middle-segments' (processing, wholesale, logistics) of agri-food value chains account for 30-40% of value added and costs and have been rapidly modernising and transforming, undergoing major technological and institutional changes in recent years (see Reardon, 2015, for an overview and review of these developments).

In the case of horticulture, the incentives for modernisation of such value chains arises from powerful demand-side forces; rising urbanisation, higher numbers of working women, and increasing incomes (reflected in the emergence of a better educated middle class that seeks higher levels of food quality and food safety) in the country, as well as the (currently almost unexploited) potential for penetrating lucrative foreign markets, create large profit opportunities for the Pakistan horticultural industries.

But these opportunities can be realised only if producers are provided with the right incentives - higher prices for better quality production and the technologies, skills and physical equipment and facilities for better harvesting, storage and processing. International experience suggests that this kind of change and transformation typically involves the linkage of small primary producers with large modern downstream agri-business firms. This is a process where the value chains shrink in terms of the number of intermediaries, and lengthen in terms of distance as more and more products reach consumers not only within the country but also in distant foreign markets, and products move from being bulk commodities to highly differentiated (often branded) products that meet stringent standards of food quality and food safety.

Integrating small producers into such modern value chains is very challenging. In order to ensure that products meet high standards, downstream firms must be able to count on reliable suppliers who have both the ability and the incentives to achieve such standards. If mutually beneficial relationships between such firms and resource poor small farmers can be established whereby the farmers get access to better technology, resources, stable markets

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<sup>7</sup> We use 'value chains' rather than 'supply chains' in this paper recognising that these terms are used in the literature to look at issues from a value addition and product differentiation point of view (a consumer side perspective) in the one case, and from the supplier perspective in the other (Reardon, 2015).

and higher prices, while the firms get stable supplies of quality products in return, the corporate profitability objectives, and rural development and poverty alleviation goals coincide. That such relationships, based on various institutional innovations such as contract farming and other mechanisms, are feasible and viable, is shown by the numerous examples of successful development of agricultural value chains in many developing countries, most of which are in horticultural industries (e.g. the vegetable export sector in Madagascar (Minten et al., 2009), vegetable value chains in Philippines (Concepcion, Digal and Uy, 2007), the horticultural export sectors in Kenya, Peru and Ethiopia (Humphrey et al., 2004; Schuster and Maertens, 2016; Staelens et al., 2016)).

However, there has been much concern about the distributional impacts of the penetration of modern value chains into rural communities. Any major changes in economic conditions can create both 'gainers' and losers' at the least in the short to medium term, and the 'losers' are typically those who lack the skills and assets that are in demand in the new circumstances, and whose bargaining power is weak. There is a huge imbalance in the bargaining power of the parties that are brought into such a relationship - small resource-poor producers and large, modern agribusiness firms, often globally networked giant multinationals. Because of the transactions costs associated with supervision of a large number of small producers, enforcement of standards and production practices, potential scale economies and required higher skill levels, modern agri-food firms often prefer to deal with larger and better endowed producers. On the other hand, given the asymmetry in bargaining power, and the lack of skills and resources, poorer rural farmers and households often find that they cannot benefit from such value chains.

A second reason why poorer farmers find it hard to integrate into modern supply chains is due to the perceived higher risks of new farming practices involving higher cash costs for inputs, including investments in equipment or machinery, and adoption of non-traditional crops or animal breeds.<sup>8</sup> In the case of dairy cows, for example, farmers consider buffaloes to be 'low risk' - less vulnerable to diseases with lower mortality levels - though milk yields are lower compared to improved foreign breeds. Hence poorer households with less risk bearing capacity are reluctant to shift to improved foreign breeds. The observation from farm surveys that smaller chilli farmers are less likely to adopt higher yielding hybrid varieties may also be due, at least partly, to perceived higher risks.

These concerns are magnified when considering the potential implications for rural women, who are typically even more handicapped by their lower education and skill levels, restricted mobility, lower capacity to bear risks and constrained access to markets.<sup>9</sup> There has been evidence that in some cases, such as in the horticulture sector in Kenya (Dolan, 2001), rise of supermarkets in many developing countries (Reardon, Pingali and Stamoulis (2006), and in the South African fruit sector (Barrientos, Dolan and Tallontire, 2003), women have

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<sup>8</sup> The important role of risk in farmers' crop choices and production practices has been documented in Pakistan (see, for example, Kurosaki and Fafchamps, 2002).

<sup>9</sup> Immobile factors who are constrained from moving into the new, more profitable industries or activities typically tend to be the losers. To the extent that the poor, or females, are hampered in their occupational mobility for whatever reason and unable to switch to the more profitable sectors, they are likely to be hurt.

been indeed adversely affected. These concerns raised the question: “Are African horticulture value chains are bearers of gender inequality”?<sup>10</sup>

However, after reviewing the large literature that has developed on the distributional outcomes of modern horticultural value chains, Maertens and Swinnen (2012) paint a more mixed picture, concluding that such adverse distributional outcomes are not universal, and discuss the channels through which rural communities, including women, are affected by modern value chains. These value chains can generate benefits to rural communities in two ways, both through product markets and labour markets, with the impact and benefits depending on factors such as the extent of agro-industrialisation, the level of vertical coordination and the occurrence of market interlinking across countries and sectors. First, farm-households are affected through the production and marketing of high-value produce in contract-farming type schemes. Though it is possible that large corporates may exploit their superior bargaining power to exploit the small producers, unless producers feel that they gain from relationships with purchasers of their products, such relationships are unlikely to be viable and sustainable in the long term. Hence purchasers of farm produce have an incentive to enter into mutually beneficial production and trading arrangements, as purely one sided relationships do not last over time. Both recent theoretical and empirical research now suggest that farmers generally gain from participation in high-value contract-farming schemes through enhanced access to inputs, reduced production and marketing risk, improved technology and productivity, and ultimately higher incomes. Second, if high-value value chains are characterised by contracting with large commercial farms or by vertically integrated estate production, or if labour-intensive post-harvesting and processing is needed, rural households gain through labour market effects; these labour market effects are particularly beneficial to the poorest households.

How would these labour market impacts affect women? The empirical experience shows that the actual outcomes are very much context-dependent and can vary even from crop to crop. Some products are more likely to enhance demand for female labour because females are considered ‘better’ for some types of operations for a variety of reasons. According to Kimenyi (2005), in Kenya females are considered to be better at harvesting beans. In Senegal, Maertens and Swinnen (2012) report that agro-industrial firms prefer to hire females because they believe that women have better capabilities for delicate harvesting and handling of fresh produce; except for harvesting mango, which involves climbing trees and for which male workers were preferred. The overall outcomes for women may not always be positive, even when there is employment of women in new value chains. Guijt and van Walsum (2008) examined the impact of ‘Fair Trade’ mango production and marketing in Burkina Faso and found that while some women gained from the new employment opportunities provided by the packing station, other women suffered from reduced marketing opportunities. Mangoes that women used to sell locally were now marketed internationally, but women’s role in the international marketing chain appeared to be much smaller than it was in the local market.

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<sup>10</sup> See the discussion in Maertens and Swinnen (2009)

Maertens and Swinnen (2012) summarise the findings from a large number of studies and point out a number of factors that affect the position of women following the establishment of improved marketing systems and modern value chains as follows:

1. Biases that constrain women's access to production and labour contracts
2. Even if women are included in such contracts, they may be in an inferior bargaining situation because of low education, and poorer access to information and technology and productive resources
3. If women are excluded from these production and labour contracts, they may be worse off because their work intensity, levels of drudgery and risk, on the family farm may increase when husband and/or male siblings gain these more profitable contracts
4. High value modern farming may increase the productivity and incomes of men, while relegating women to lower productivity work, thereby increasing gender inequality
5. Intra-family decision making and bargaining powers affects outcomes. While higher income from the modern farming systems may increase overall family income, women may not benefit if they are excluded from access to better income earning opportunities and they lack decision making power over incomes within the household. On the other hand, if women do gain access to the more remunerative income earning opportunities, they will not only gain from higher household incomes, but also gain greater within-household bargaining power and control over decision making.

These factors provide a useful checklist of questions to ask and investigate when conducting analysis of the effects of specific market reforms and their consequences. They also provide some guidance into how pro-women policies and measures can be formulated and implemented in specific socio-cultural contexts. In the next section we briefly discuss the experience of the case of a modern value chain in the dairy sector of Pakistan, the Nestle Dairy project, and consider what lessons can be drawn for gender outcomes if market reforms lead to significant development of modern value chains in horticulture.

### ***Modernising dairy value chains: the Nestle experience***

There are many similarities as well as important differences between the markets for dairy and horticultural products. Urbanisation and higher incomes are rapidly increasing the demand for both these products, and the international market also offers export opportunities if required quality standards can be met. Pakistan is not only a large producer of horticulture products but also one of the world's largest dairy producers, but not only has it been unable to develop export markets, it has even been unable to meet increasing domestic demand.<sup>11</sup>

Milk producers are typically small farmers, with small herd sizes (over 80% of producers have herd size below 4 animals) and few resources. Production and processing technologies are primitive, mechanisation almost non-existent, milk yields are low (reflecting the poor quality of breeding stock - two thirds of the milk come from very low yielding buffalos

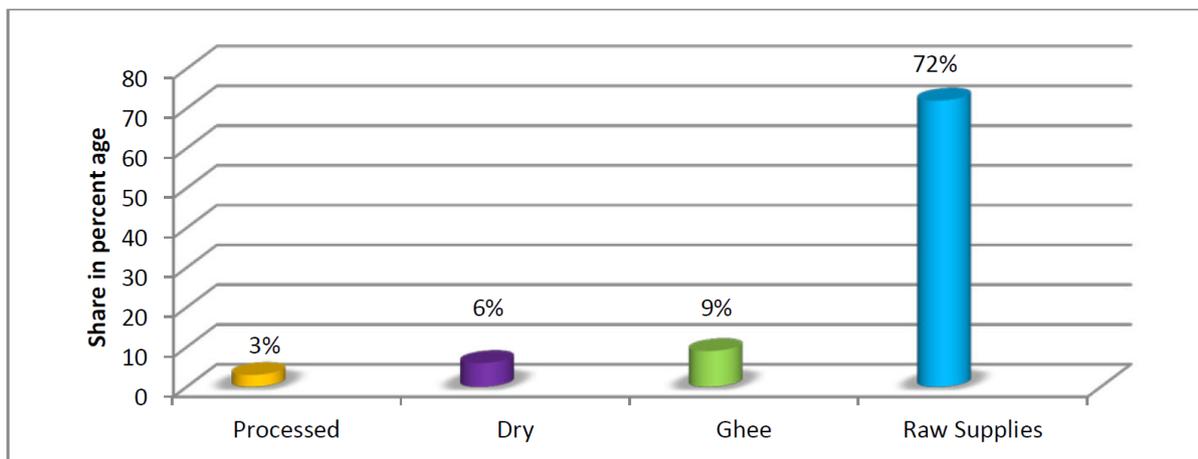
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<sup>11</sup> Instead it has been importing increasing quantities of dairy products, particularly powdered milk, which is used by many milk processing plants to produce UHT milk which has a longer shelf life, and is in greater demand as consumers become more conscious of food safety issues.

– the low quality of feed and poor animal health), marketing chains are long and inefficient, wastage and other losses are high, the quality of product provided to consumers is low, and adulteration and contamination are pervasive.

Only a small fraction of total milk production is processed and marketed through large scale modern processing ('formal') channels (Figure 3). A high proportion (60%) is consumed by farm households, and the remainder sold. Though some farmers carry their milk to urban centres on bicycles or motor cycles, a large proportion of milk is sold through intermediaries (*Dodhis*). The smaller *Dodhis* collect small amounts of milk from farmers at farm gate, middle sized *Dodhis* collect from small *Dodhis* and sell to large *Dodhis*. They transport milk over long distances, often in extreme weather conditions. An Asian Development Bank (ADB) report (Malik and Lujkx, 2004), estimated milk losses due to the lack of cold storage at about 15 to 20 percent of total milk production in some areas. During the summer many *Dodhis* add ice (often made with dirty water) as well as bacterial inhibitors, such as penicillin and other harmful chemicals, to the milk to prevent spoilage, and add other adulterants (such as washing powder and maize flour) to enhance volume and whiteness (Zia, Mahmood and Ali, 2011).

**Figure 3: Shares of processed and raw dairy products**



Source: Aslam (2012)

The increasing domestic demand for better processed, safe and hygienic milk has created a market opportunity that has attracted not only domestic but also large multinational firms into the Pakistan dairy sector (such as the Swiss firm Nestle, and the Dutch firm FrieslandCampina, which purchased a controlling interest in a local firm Engro Foods).

But all firms that are willing to invest in the storage facilities and processing plants to produce better quality dairy products face the problem of procuring stable supplies of uncontaminated good quality fresh milk on a commercially viable scale. In principle they can (a) buy from *Dodhis*, (b) assist existing farmers with technology, capital and skills to produce and deliver quality milk and source fresh milk directly from them (the contract farming model – 'Dairy Hub'), or (c) they can establish vertically integrated dairy production systems by establishing their own large scale modern dairy farms.

In Pakistan firms have been adopting all these models, and often a combination of them. Engro Foods “has made better connectivity with large dairy farms to improve milk supply and also help them to adopt better farm management practices. The company has also established corporate dairy farming in the private sector which ensures timely supply of quality milk for processing and producing other dairy products. Some other big farmers such as Sapphire Dairies, Dada Dairies, Al-Tahur Dairies, Sharif Dairies etc, have already integrated their supply chains by establishing commercial farms” (Zia, Mahmood and Ali, 2011: 17).

Nestle, however, having invested in establishing its largest dairy product factory in Kabirwala, Punjab, opted to source most milk directly from farmers, and claims to have achieved excellent results not only in raising the quantity and quality of milk, farm income and average herd size, but also in improving the position of women in small dairy farming households. This success is attributed to the way they developed their milk sourcing strategy based on the ‘Creating Shared Value’ (CSV) approach.

According to Niels Christiansen (2014), who claims to have coined the term CSV in 2005 when he was Vice Chairman of Public Affairs at Nestle, it “simply means that in making business decisions on future plans and investments, Companies simultaneously consider what long-term value can be created both for society and for shareholders. This requires a long-term business perspective and is based on the assumption that chances for sustainable business success are increased when a company, as appropriate within the business strategy, invests in social aspects that improve business conditions. CSV also implies a process wherein a company assesses its value chain and identifies those primary points of intersection between the company and society where social investments can improve the chances of business success” (p 354).

CSV is now accepted as a business strategy that in some circumstances can reconcile business profitability goals with wider social and community goals, particularly after Michael Porter popularised it (see Porter and Kramer, 2011). In principle, it can be thought of as a strategy where a firm steps in to provide some types of quasi-public goods in environments where market failures are pervasive and governments are weak or ineffective. The success of such strategies, that can encompass a range of different approaches including various forms of contract farming, naturally depends on the extent to which contracts between the firm and suppliers from target communities are incentive compatible and sustainable.

A modern firm faces huge challenges when it plans to source stable supplies of an input of consistently high quality from small farmers who lack skills, training, capital, and other resources, and are un-accustomed to the demands and requirements of a modern value chain. Christiansen (2014: 355) details the measures Nestle has adopted to overcome these challenges, stressing the need for the firm to have a long term planning horizon: “First, it requires a willingness to assume long-term risk and strong financial management to permit making major investments that may not pay off for 10 years. This is particularly true when entering areas that are populated by the marginalized poor and that lack the basic infrastructure, educated work force, communications, and reliable business suppliers necessary to serve the company’s manufacturing or raw material needs. Second, it requires an understanding of what will benefit society in the long term, and where those potential

benefits intersect with a company's business interests. Third, it requires a planning process and mindset that translates the interests of shareholders and the interests of society into concrete business plans. Fourth, this approach requires patience and persistence aligned to a common value set and continuity in personnel, as well as not being dependent on that significant segment of the investor community that only pursues short-term results (for example Nestlé S. A. refuses to be listed on any stock exchange that requires reporting of quarterly results)."

The company adopted a multi-pronged approach through their Milk Collection and Dairy Development (MCDD) programme where they established milk collection centres in villages, provided training, assistance and advice, and various inputs to farmers to improve farm practices, and upgrade the quality of herds, to improve the quantity and quality of milk production on small farms.<sup>12</sup> They have also helped to increase the supply of better animal feed, both directly (for example, by demonstrating how to make silages) and indirectly by working with feed suppliers. According to company sources, in 2014, they also developed the capacity of 27 animal feed manufacturers in Punjab to produce cost effective, nutritious and compliant cattle-feed solutions in the shape of feed concentrate and cotton seed pellets; in 2014, more than 540,000 such feed bags were delivered to farmers.

From a gender perspective, a major aspect of Nestle's CSV program was the involvement of women. This strategy of targeting rural women – who have been traditionally bypassed in much agricultural extension and development activities – and actively implementing measures to integrate them into their supply chain was based on the above mentioned long term planning perspective. Nestle recognised that involving women was crucial to the success of the programme because women play an instrumental role in managing small animal herds, accounting for around 84 percent of labour inputs. As Christiansen (2014: 362) noted, "While it is almost always the women that take care of the dairy cattle, they do not have access to knowledge about animal husbandry due to cultural barriers, as nearly all of the veterinarians are men".

To address this issue, Nestle launched a programme to train female livestock workers with the aim of developing women who possessed skills in animal husbandry and dairy farming, and who could return to their villages and share their expertise with other local women. They are given basic training in livestock management and provided with instructional materials and a veterinary kit to use in their villages that includes medical instruments, medicines and vaccines. A woman veterinarian heads this training program and her knowledge about animal care is transferred first to the trainees in the program, and then to the village women who receive (and pay a nominal fee for) the advice given by the trainees. Through this programme, over 5,000 women have been trained in basic animal husbandry and livestock management to provide extension services in more than 3,000 villages.<sup>13</sup> They also serve as a conduit for microfinance efforts, and complement Nestle's "Women Agriprenure" initiative.

Nestle claims that this investment in training and involving women has been not only critical to their success in attaining improvements in all aspects of animal health and hygiene

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<sup>12</sup> See, <https://www.nestle.pk/csv/ruraldevelopment/milk-collection-dairy-development>.

<sup>13</sup> <https://www.nestle.pk/csv/ruraldevelopment/nestl--drdf-dairy-project>

and establishing a reliable and stable supply of raw milk from small producers, but has also led to significant increases in farm incomes and overall wellbeing of participating farming communities. Thus, the involvement of females has been a calculated decision that fits into the corporate profit goals of the company as a component of the CSV strategy. As Christiansen (2014: 356) put it, it is a “part of a business plan and is tied to the long-term enhancement of corporate profit, it will endure over time because its financial support is not tied to the largesse of the company, but to a self-sustaining financial model. The potential for scaling up this strategy is therefore also greatly enhanced because it is a part of core business activities rather than something that is an additional activity to the main business.”

### **How much actual impact on women’s situation?**

The most important lesson from the Nestle experience for enhancing the position of women when developing modern horticultural value chains that seems to come through is that the socio-cultural barriers that constrain rural females in Pakistan from participating in modern value chains can be overcome, at least in certain situations. This is the case if involving females in the improved production or processing of the product is perceived to be a channel for enhancing its long term profitability by firms that plan to extend and integrate their value chain with primary producers. In the case of dairy, Nestle recognised the traditionally important role of women in dairy management at the household level, and the necessity to impart skills and knowledge to those women to improve the quality and quantity of milk. They devised a strategy that was socio-culturally acceptable to approach and work with those women, by employing and training females who could then serve as the company agents in approaching the women in the dairy households who did not themselves have to travel outside their homes or villages. Nestle claims that their strategy not only served to enhance productivity and helped them establish a stable supply chain for milk for the company, but also improved the position of women in the household because the women with their improved skills and knowledge and enhanced role in the dairy management are now more empowered in general within the households.

How valid are these claims? Ideally this claim should be tested through a large scale study of women in the Nestle project areas. But time and resources precluded such a study and we decided to conduct a limited exploratory case study in Akhtrabad, a village in Okara district, Punjab, to explore the impact of the Nestle project. Over several months in 2018, we interviewed a sample of households, including both participants of the Nestle project and non-participants (using both a small structured questionnaire and several open ended questions designed to prompt discussion), a sample of females from the households, as well as intensive discussions with some key informants.<sup>14</sup>

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<sup>14</sup> Neither the sample size (one village, a sample of 40 households), the method of selection of the village nor the selection of interviewees permits any valid generalisations of our observations. The village, while it can be considered a fairly typical village, was chosen primarily because of one of us (Afzal) has good contacts in the village, so that culturally sensitive questions (such as those on decision making within the household) could be asked with the expectation of eliciting reasonably reliable responses. Often surveys are carefully designed, samples selected with statistically accepted criteria, detailed questionnaires are developed asking culturally sensitive questions, and responses recorded, analysed, and reported, and generalised conclusions are drawn. Unfortunately the responses obtained have only spurious accuracy; often they can be downright misleading. We adopted this case study approach to get some insights we do not therefore make unwarranted claims of generality for our findings.

Before Nestle started the milk collection project some five years ago, most households sold their milk to Dodhis who collected the milk at farm gate, though a few also sold to neighbours and supplied to restaurants some distance away. Almost all of the households selling milk to Nestle felt that they were better off in several ways: they are paid regularly (weekly), know how to maintain farm hygiene and prevent diseases, and how to improve milk quantity and quality. Some also reported getting inputs and credit. Nestle offered a more stable purchasing system as it would purchase all the milk a farmer would bring through the season at the specified price so long as quality standards were met, in contrast to the Dodhis who would sometimes refuse to buy milk or pay less in times when supply was high. While there were farmers who did not supply to Nestle, or had dropped out after supplying for some time – mainly because they felt it was difficult to meet the standards - the regular suppliers were certain that they benefitted from higher and more stable incomes.

This also stimulated a range of changes in farm practices and technology. With a stable sales outlet and steady prices, farmers were encouraged to produce more milk by increasing their herd size and shifting to better yielding breeds. Farmers felt that while buffalos were low yielding compared to cows (particularly improved breeds) they were less susceptible to diseases and had lower mortality rates, and they tended to continue with the less risky though also less remunerative option of keeping buffalos. But Nestle, through their milk purchase system and technical and managerial advice and training, had incentivised them to increase milk supply to the point where many farmers reported shifting from the traditional buffalo to cows.

We investigated the impact of the project on women by eliciting responses from women in settings where they felt free to talk about their experiences. In almost all households (>80%), women were in charge of looking after the animals and managing the herd, and in most cases (70%) it was also women who did the milking. Many women received training and advice from Nestle and felt they were much more knowledgeable now than before. They also felt that they spent more time and did more work on their cattle now.

However, typically it was a male who took the milk to the milk collection centre (which was located less than 2 kilometres from the households); it was rarely that a woman took the milk. (In the past, they did not have to travel much to sell the milk as milk was collected by the Dodhis from their homes or was sold in the neighbourhood). Even when the money was paid into an account, it was usually a male in the household who held the account and received the money. While all those who were supplying to Nestle agreed that they were better off now with higher incomes, it was a rare woman who was the direct recipient of revenues from milk sales. This did not necessarily mean that females were totally excluded from household spending decisions. While conceding that major spending decisions were made by men, and that women were not able to make major spending by themselves, many women also felt that they had a role in making major spending decisions in the household.

Thus the picture that emerges is one of positive benefits at household level from participation in the Nestle project. The outcomes for women were more nuanced. Women had higher self-esteem due to their acquisition of knowledge and skills, though there are hints of a possible 'double burden' arising from them having to do more work on their animals.

While not direct beneficiaries of milk sales, women also felt that they and children too (including daughters) benefited from the higher household income. While more extensive research is required to generalise these findings, the Nestle experience is suggestive of an overall positive impact on both households as well as women.

To what extent is it likely that this experience can be replicated in the case of horticultural crops? As the detailed analysis of data from the project surveys is undertaken, more light will be shed on this. Nevertheless, some tentative observations can be made on the basis of the information currently available. As was also the case in the dairy sector, there is almost no involvement of females in the post-farm value chain of any of the horticultural crops. In the case of both Tomato and Chilli, females contribute substantially to many farm operations at various stages of production and basic processing (such as in drying chilli, which is a critical operation that affects product quality); in Mango, females seem to have a more minor role in farm operations. If horticultural market reforms lead to entry of modern value chains that place a strong premium on quality and require much improved on-farm processing (e.g. improvements in chilli drying methods) it is conceivable that innovative firms may see the potential for reconciling profit motives with greater involvement of women and the benefits of providing them with knowledge, skills and inputs.

If modern processing requires factory-based activities, it is likely that opportunities for female employment may be more constrained. In the case of milk production, female participation is limited to on-farm activities even in Dairy-hub type projects, because once milk is delivered to a village collection centre, it is taken away for processing in a large central factory - away from most of the villages. This would contrast with the case of Africa, where most benefits to females, from modern value chains, had come from the new employment opportunities created in processing factories.

In considering the Nestle experience and its implications for gender issues in horticulture value chains we note that no rigorously conducted independent studies are available to substantiate all the claims of positive outcomes that are made by the company. Further research is needed to understand the overall impact of the Nestle operations on the position of women in the dairy households, including the extent to which farming women who have gained training and skills have benefitted from the higher productivity of dairy animals and better prices obtained from Nestle collection centres. To what extent have they gained direct access to revenues from milk sales? Has the workload of women gone up because of their newly acquired skills? What has been the impact on intra-household dynamics, and the bargaining power of women within the household? To what extent have they enhanced their capacity to influence household expenditures? Is there any bias in program participation towards richer, larger or better educated households? <sup>15</sup>

## **Conclusions**

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<sup>15</sup> We have initiated some exploratory studies as part of the current ACIAR project in one village in Punjab where Nestle operates to gain some insights into these questions, though we are unable to undertake the more comprehensive study that is required for a rigorous assessment given the budget and time constraints. The results of this exploratory study will be reported once it is completed and data analysed.

Integrating rural producers into modern value chains to enhance productivity, and linking them to distant markets and deliver better quality products is a potential avenue for improving the conditions of rural women. Well-designed market reforms can facilitate improved price transmission and incentivise modern firms to invest in direct links to small producers.

Many factors influence the distribution of benefits including access to resources, skills, and knowledge. International experience shows that rural females gain most through labour market (employment) effects that are large when modern value chains generate large increases in production and processing. Typically, this happens when modernised value chains enable penetration of large external markets (i.e. export markets) and/or through expanding domestic markets associated with increasing income and urbanisation. They also contribute to expansion of markets for quality differentiated (and also often more highly processed) products.

This is a major opportunity but also a big challenge in Pakistan, where females make a large contribution, particularly in terms of their labour, into most horticultural industries and agriculture more generally, but confront socio-cultural barriers that, despite signs of easing, continue to significantly constrain their access to resources, education and skill acquisition, markets, and occupational mobility. In these circumstances, it is important to recognise that the impact on women of policy reforms to horticultural markets will be mediated through these prevailing socio-cultural norms and social institutions that are unlikely to change drastically in the short term. For example, it would be unrealistic to expect that female participation in post-farm marketing will increase drastically even if efficiency enhancing policy reforms are undertaken; the reason is that the barriers to female participation in marketing are rooted in entrenched socio-cultural factors and not in legislative or regulatory barriers.

Therefore when marketing efficiency improves and producer revenues increase, it is more likely that resulting higher producer revenues will accrue directly and immediately to males who handle market transactions. If the reforms increase the overall productivity of the systems and encourage modernisation and expansion of the production and processing systems, they will likely increase demand for higher levels of processing. But if such processing requires working in factory environments, then the immediate beneficiaries are again likely to be males, given the social restrictions on females working in factory settings, though overall household incomes and welfare may be enhanced.

However, as the case of Nestle dairy project suggests, such constraints need not be insurmountable; carefully formulated programmes and measures, involving not only government interventions but also private sector initiatives, that are tailored to the specific crops and circumstances may be able to ensure that women can capture the benefits from improved productivity and modernisation. Horticultural sector market reforms may offer innovative private firms to combine corporate profit goals with community development objectives to design pragmatic labour market solutions and help improve conditions of rural females. Female participation in processing, for instance, could be facilitated if rural women are able to work in a factory setting designed in such a way so as not to conflict immediately with existing norms. On the other hand, improvements in horticultural markets that facilitate

integration of farmers into modern value chains will also have an impact on existing social norms constraining female access to markets and involvement in market transactions. Over time, the dynamic of increased female labour force participation is likely to result in greater female empowerment and produce changes in social attitudes. We explore these issues in more depth and detail in ongoing research.

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