Gender Assessment

FP108: Transforming the Indus Basin with climate resilient agriculture and water management

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GREEN CLIMATE FUND

1. INTRODUCTION

1.1. Project Introduction from Gender Perspective

The proposed project, "Transforming the Indus Basin with Climate Resilient Agriculture and Climate-Smart Water Management," aims to strengthen the resilience of agricultural producers in Pakistan's Indus River Basin in the face of climate change. The Basin spans over 18 million hectares, the vast majority of which is rural. The world's largest continuous irrigation system is found in the Basin, which contributes to 90 percent of Pakistan's food production. The Basin is inhabited by more than 90 million people, and approximately half of them are women. The project will target the most vulnerable districts of the two major provinces of the Basin, Punjab and Sindh.

At the national level, the project will endow the government institutions responsible for monitoring weather and climate change with tools and mechanisms to gather, interpret and disseminate information related to climate change. The information will be shared with the authorities, in charge of agriculture and water management of the River Basin, for their activities to promote resilience to climate change. Female officials with technical background are very few at the relevant institutions, and the female technical community has to be strengthened.

Trainings on on-farm techniques will benefit 100 000 farmers from the target districts and emphasise adaptive management to the changing climate. All major crops and animals are taken care of jointly by women and men through mostly segregated tasks, but most interventions rarely give satisfactory attention to distinct contributions of women farmers and to the benefits of coordination between women and men.

Livestock is a neglected sub-sector compared to crop agriculture, but a very important one in terms of national economy as well as food, nutritional and financial security of the farmers. Although women are in charge of the animals on a daily basis with little involvement of men, it is the latter that hold the decision-making power. The crops considered of little financial importance are in the exclusive care of women. Field consultations strongly suggest that female farmers are more open than men to cultivating new crops and raising livestock whose economic significance is yet unproven, as long as they do not need to sacrifice other responsibilities.[1] Vegetables, which provide significant improvement in nutritional security, are such crops and have been embraced already by some women farmers in the region. They offer valuable entry points for diversification: one of the key elements in adaptation to climate that is no longer predictable. One of the largest obstacles in leveraging these aspects of female farmers is their meagre access to knowledge and resources, which is linked to their weak social capital.

The project will promote the distribution of timely information on climate and agriculture as well as sharing of knowledge and skills obtained by famers through their direct involvement in the project with other farmers in the Basin. The rural Pakistani society considers certain modes of communication suited for men; but not for women. It also sees diminished importance of education for women than for men, leading to a gender gap in the practical capacity of utilising technology. Despite the acknowledgement by the National Climate Change Policy of the importance of gender mainstreaming, recently launched activities, such as mobile-phone based information services, appear geared exclusively toward men in its content and skills required for access. These factors create gender-differentiated preferences in terms of mode of communication, which need to be taken into account for effective implementation of the project. Young women have skill sets different from those of older women, in particular with respect to information technology; they represent valuable assets that the entire female community can benefit

[1] This is probably due to the fact that, compared to men, their socioeconomic condition is considerably worse and hence they feel stronger needs to improve their lives.

from.

The project will also raise awareness on various subjects related to adaptation to climate change, including gender, along the entire value chain – from policy, public administration, education to agricultural input, product, credit and insurance and consumption – so that adaptation to climate change by farmers will be socioeconomically feasible, and hence sustainable.

Climate resilient agriculture will contribute to food and nutritional security, leading to climate resilient communities. Women empowered through more dynamic participation in agriculture would result in more gender-neutral food distribution within households and better health for both women and children, especially for girls, reducing malnutrition and stunting that prevail in the rural areas of Pakistan.

1.2. Objectives of the Assessment

1.2.1: Rationale

Gender equality and women's empowerment constitute fundamental dimensions of human development. If a significant portion of the humanity does not enjoy progress, we cannot claim to have achieved human development.[2] The importance of engaging all stakeholders – women, men, minority groups and youths – has been increasingly recognised around the world for any social intervention to be sustainable, and Pakistan has ratified many international agreements and goals related to the subject, including the Universal Declaration of Human Rights, the Convention on the Elimination of All Forms of Discrimination against Women, and adopted the Sustainable Development Goals. The country has thus officially committed itself to achieving gender equality in all facets of life.

The Food and Agriculture Organization of the United Nations (FAO) recognizes that gender equality is key to its mandate to achieve food security for all. As evidenced by *FAO Policy on Gender Equality*[3] and *Regional Gender Strategy for Asia and the Pacific*,[4] the Organization further sees rural women as agents of change whose engagement is indispensable to meet the Sustainable Development Goals (SDGs), not only the one on gender, but any of the 17 SDGs.

1.2.2: Objective

The objective of the Gender Assessment is to provide the foundation for effective gender mainstreaming in the Green Climate Fund (GCF) project, "Transforming the Indus Basin with Climate Resilient Agriculture and Climate-Smart Water Management." The Analysis examines the socioeconomic conditions of women and men targeted by the project and elucidates gender-specific roles, constraints and needs, thereby allowing a strategic approach to the integration of gender dimensions into the project, summarised as the Gender Action Plan (GAP). The underlying theory of change is: the project will create effective opportunities to empower women through paying sufficient attention to existing gender differences, which will allow communities in the Indus Basin to adapt to climate change in a sustainable manner.

2. METHODOLOGY

The Gender Assessment focuses on the situation of rural women in the areas targeted by the project: Punjab Districts of Dera Ghazi Khan, Khanewal, Lodhran, Multan, and Muzaffargarh, and Sindhi Districts of Badin, Sanghar and Umerkot.

[2] United Nations Development Programme, 2016. *Human Development Report 2016: Human Development for Everyone*. New York: UNDP.
[3] Food and Agriculture Organization of the United Nations, 2013. *FAO Policy on Gender Equality: Attaining Food Security Goals in Agriculture and Rural Development*. Rome: FAO.
[4] Regional Office for Asia and the Pacific, FAO, 2017. Regional Gender Strategy and Action Plan for Asia and the Pacific 2017-2019. Bangkok: FAO.

It draws on the information obtained through consultations with farmers and provincial government officials, gender analyses of the country recently produced,[5] and other relevant information sources – such as research articles, policies and statistics on agriculture, climate change and gender – and contributions from the FAO Pakistan Offices and Regional Office for Asia and the Pacific (RAP).

The purpose of the consultations was to extract key issues pertaining to the lives of female farmers in the rural areas through basic questions on the topic (see Section 8.1). The key issues were then assessed in detail with the aid of literature search, whose results are summarized in Sections 5 Gender in Rural Pakistan: Overview and 6 Gender in Punjab and Sindh. The detailed assessment led to identification of risks and opportunities for female farmers facing climate change, and contributed to project formulation, establishment of implementation modalities and specifying beneficiaries (see Section 7).

A total of 696 farmers in the target districts were consulted, of which 343 were women. Women's views on various issues were collected through meetings exclusively for women, participants and organisers alike. Institutional meetings were held at national, provincial and district levels. At the national level, the institutions consulted were the Ministry of Climate Change (MoCC), Irrigation Research Institute, International Food Policy Research Institute (IFPRI), National Agriculture Research Council (NARC), International Labour Organization (ILO), International Union for Conservation of Nature, National Rural Support Program (NRSP), Potohar Organization for Development Advocacy, Pakistan Poverty Alleviation Fund (PPAF) and Hashoo Foundation.[6] Provincial and district level consultations were held with Irrigation Departments (Punjab and Sindh), On-Farm Water Management Department in Multan (Punjab), Agriculture Extension Wing of Department of Agriculture in Multan (Punjab), Livestock and Dairy Department in Dera Ghazi Khan (Punjab), Forest Department (Sindh), and selected non-government organizations (NGOs) working in the target districts (see Section 8.2).

To the greatest extent possible, the Assessment is based on official statistics and published research results pertaining to target districts and field consultations conducted in those districts. Where relevant information could not be found, it relies on that of the rural areas of the target provinces, of the entire target provinces, or of the whole nation. Where no such information is available, the Assessment may refer to the general consensus among the professionals in the field or anecdotes.

3. Religious, Legal and Administrative Framework

3.1. Protection of Women and Gender Equality: Pakistan

The holy Qur'an establishes complete and genuine equality between women and men.[7] Not only the holy Qur'an, but also Hadith and other Islamic guidance indicate that women have a right to inheritance. The Pakistan Ordinance (1947) established Pakistan's nationhood, and at the same time, granted full suffrage to women. The Interim Constitution of Pakistan (1953) reaffirmed the right of women to vote in national elections, and the Constitution of Pakistan (1973) defined that there will be no discrimination on the basis of sex alone and that "steps shall be taken to ensure full participation of women in all spheres of national life."[8] Pakistan is a signatory to the United Nations Convention on the Political Rights of Women (1952),[9] the International Covenant on Economic, Social and Cultural Rights (1966), the Beijing Platform of Action

[5] Food and Agriculture Organization of the United Nations, 2018. *Gender Stocktaking Exercise* (draft).
Samee, Duree *et al*., 2015. *Women in Agriculture in Pakistan*. Islamabad: FAO.
[6] Hashoo Foundation aims to serve marginalised communities particularly women, children and young people across its targeted areas. (Hashoo Foundation, About Us, 2018.http://hashoofoundation.org/about-us/ accessed 3 June 2018)
[7] Al Khayat, M. H., 2003. *Woman in Islam and her role in human development*. Cairo: World Health Organization Regional Office for the Eastern Mediterranean.
[8] Articles 25(2) and 34, respectively.
[9] It stipulates full suffrage for women.

(1995),[10] and the United Nations Convention for Elimination of all forms of Discrimination against Women (1981).

In 2000, the National Commission on the Status of Women was established for mainstreaming gender aspects in policies, laws and justice.[11] The awareness by politicians that violence against women is a provocative subject led in 2002 to formal enunciation of the National Policy for Development and Empowerment of Women.[12] The momentum was further strengthened by Criminal Law (Amendment) Act (2004) on honour killings, Protection for Women (Criminal Law Amendment) Act (2006), and Criminal Law (Second Amendment) Act (2011) on acid crimes, and Domestic Violence (Prevention and Protection) Act (2012).[13] Sexual harassment has been addressed by: Criminal Law Amendment Act (2010); Protection against Harassment of Women at the Workplace Act (2010); and, Prevention of Anti Women Practices - Criminal Law (Third Amendment) Act (2011).[14, 15] Gender Crime Cell was established within the National Police Bureau in 2006 to gather, collate, and analyse data on gender-based violence, but it does not widely publicise the data.[16] The government has recognized the high vulnerability of women and children to climate change events and created Gender and Child Cells in the National Disaster Management Authority and its provincial counterparts.[17] The Child Marriage Restraint Act has existed since 1929.

Pakistan Vision 2025: One Nation – One Vision proposes seven pillars for the future of the country, the first of which is "People First: developing social and human capital and empowering women" associated with SDG goals of poverty, health, education and gender.[18] A comprehensive national policy on gender, however, does not exist to date.

3.2. Protection of Women and Gender Equality: Punjab and Sindh

The Punjab Government created a Women Development Department in 2012, together with its first Women Empowerment Packages, in order to address the social and economic issues faced by women in the province. The actions taken include: (i) the amendment of Land Revenue Laws to facilitate the accession of title of inherited property; (ii) the promulgation of the 2016 Punjab Prevention of Violence Against Women Act; (iii) the enactment of the 2014 Punjab Commission on Status of Women Act; and, (iv) the subsequent establishment of the Commission. While initiatives for non-farming women outnumber those for farming women in the Packages of 2016, 3 000 women participated in veterinary training, and 12 000 heifers and sheep/goats were distributed to them. In addition, 110 000 plots were allocated on joint ownership of husbands and wives.[19]

In 1979, the Women Development Cell was established in the Planning and Development Department of Sindh with the aim to address women's issues through an institutionalised system. Following its downsizing, the Women Development Department was created in 2003 to focus on women's empowerment and gender equality; it has produced a Provincial Policy for the Development of Women

[10] Both specify that women have a right to inheritance.
[11] National Commission on the Status of Women, 2009. http://www.ncsw.gov.pk/ (accessed 2 May 2018)
[12] Bashir, Ahmad *et al*., 2010. *National Policy for Development and Empowerment of Women: A study of its efficacy in the elimination of Violence Against Women.* Saarbrucken: VDM Verlag Dr. Müller.
[13] United Nations Women, Asia and the Pacific, undated. *Legislation on Violence against Women and Girls.* http://asiapacific.unwomen.org/en/countries/pakistan/evaw-pakistan/legislation-on-vaw (accessed 2 May 2018)
[14] *Legislation on Violence against Women and Girls. ibid.*
[15] Anti-Terrorism Act 1997
This Act provides for the prevention of terrorism and sectarian violence and for speedy trial of heinous offences (such as kidnapping for ransom). The law covers *issues of child molestation and gang rape* (*Legislation on Violence against Women and Girls. ibid.*)
[16] The data remain unavailable to policy makers, program administrators, the media, or funding or service provision agencies.
[17] Asian Development Bank, 2016. *Pakistan Country Gender Assessment, Volume 1 of 2: Overall Gender Analysis*. Manila: Asian Development Bank.
[18] Ministry of Planning, Development and Reform, 2014. *Pakistan 2025: One Nation – One Vision*. Islamabad: Government of Pakistan.
[19] Women Development Department, undated. *Punjab Women Empowerment Package 2016*. https://wdd.punjab.gov.pk/system/files/pwei2016.pdf (accessed 29 March 2018)

and a Gender Reform Action Plan.[20] The Sindh Rural Support Organization[21] runs Union-Council Based Poverty Reduction Programs for underprivileged communities in the rural areas, which remain as some of the major actions of its kind in the province. The Programs focus on women and poor households identified through a Poverty Scorecard Survey and provide access to community-managed microloans and grants for income generation.[22] Some create employment opportunities by training youth in technical skills.[23]

3.3. Crop Agriculture, Livestock and Climate Change Policies on Gender

3.3.1: Gender and Agriculture Policy

The draft Agriculture and Food Security policy defines the government's primary function as a regulator and facilitator, which creates an enabling and proactive environment for the following goals: (i) inclusive growth that draws in vulnerable group such as small farmers, sharecroppers and non-agriculture workers; (ii) improvement of resource scarcity and degradation issues particularly related to land and water; and, (iii) rapid reduction in hunger and malnutrition. Although it does not contain an independent section on women or gender, it suggests targeted productivity enhancement programs for landless, small farmers and livestock breeders with a special focus on women: rural poultry, bee keeping, certified nurseries, tissue culture, goat enterprise, mushroom production and seed enterprises.[24] These activities are indeed well known around the world as tasks compatible with women's household responsibilities.

3.3.2: Gender and Livestock Policy

In comparison with crop agriculture, livestock tends to be neglected, although half of value-added in the agriculture sector is owed to livestock.[25] It also serves as a life-saving mechanism for many rural farmers by acting as: savings; readily accessible cash source; and, means for food and nutrition security.[26] Most of the regulatory framework of the sector dates from the 19th century, however, when rural and market contexts were vastly different from those of today.[27] No clear strategies, policies or operational guidelines exist on vaccination, breed improvement or veterinary health maintenance. [28]

3.3.3: Gender and Climate Change Policy

The National Climate Change Policy formulated in September 2012 recognises women as powerful agents of change, in addition to the importance of the participation of women and female gender-experts in all policies, initiatives and decisions relating to climate change. At the same time, it acknowledges the vulnerability of women during extreme weather events and disasters, and consequently, the need to address this vulnerability. It emphasises mainstreaming gender perspectives into efforts on climate change adaptation at national and regional levels, motivated by its recognition of women's contribution to natural resource management. [29]

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[20] Women Development Department, Government of Sindh. http://www.sindh.gov.pk/dpt/WDD/index.html (accessed 29 March 2018)
[21] A not-for-profit organization established in 2003 with the funds of the Government of Sindh. http://www.srso.org.pk/intro.htm#bgr (accessed 4 May 2018)
[22] Union Council Based Poverty Reduction Programme, undated. *Union Council Based Poverty Reduction Programme (UCBPRP): Monthly Progress Report (Month of February 2018).* http://www.srso.org.pk/reports/monthly/EUCBPRP_Feb-2018.pdf (accessed 29 March 2018)
[23] *Union Council Based Poverty Reduction Programme (UCBPRP): Monthly Progress Report (Month of February 2018). ibid.*
[24] Ministry of National Food Security and Research, undated. *Agriculture and Food Policy (draft).* http://mnfsr.gov.pk/mnfsr/userfiles1/file/Policy%20Draft%2029%20September.pdf (accessed 18 April 2018)
[25] Amin, Humera *et al*., 2010. Gender and Development: Roles of Rural Women in Livestock Production in Pakistan. *Pakistan Journal of Agricultural Sciences*. Vol. 47(1), 32-36.
[26] *Women in Agriculture in Pakistan. ibid.*
[27] *International Fund for Agricultural Development, Asia and the Pacific Division, Programme Management Department, 2013. Livestock and Access to Markets Project – Design completion report: Main report and appendices. Rome: IFAD.*
[28] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*
[29] Ministry of Climate Change, 2012. *National Climate Change Policy*. Islamabad: Government of Pakistan.

4. Social Participation of Pakistani Women

4.1. Rural Women's Voice in Politics

About a fifth of parliamentary seats is held by women in Pakistan; women's political representation is relatively strong in the region.[30] The female parliamentarians have been instrumental, together with nongovernmental advocates, in supporting new legislation to prevent attacks using acid against women,[31] but further integration of female farmers' concerns and needs into the political agenda remains insufficient. In October 2017, Islamabad hosted the 10th Annual Conference on Rural Women, whose participants demanded that the government give official recognition to women working in farms or with livestock as agriculture workers and called for the development of a rural women manifesto before the next elections.[32] No tangible results have come about as of early 2018.

As the Ministry of Finance put it, "agriculture is the lifeline of Pakistan's economy,"[33] contributing to 19 percent of the Gross Domestic Product.[34] When we consider its role in providing raw material, such as cotton, to value-added sectors, its weight in the economy is far lager; in 2015, garment, textile and footwear exports totalled nearly USD 13.6 billion, equal to 61 percent of all merchandise exports.[35] No major crop is cultivated and harvested by men alone, and crop harvesting is almost exclusively done by women. As one rural woman in Sindh remarked, a household no longer functions properly when the women are absent while that cannot be said for the absence of men.[36] Existing policies, plans and programmes and institutional arrangements, however, take contributions and needs of women farmers rather perfunctorily into account, if at all. In the rural areas, the landowners, who are all male, exercise power and influence over small landholders and landless tenants, as financial and other resources are concentrated in their hands. They are also very active in the political system of the country; more than half of the total seats in the national assembly are claimed by them.[37]

4.2. Community-Based Organizations

Social capital, which includes social community networks, is crucial in bringing about changes to women's lives; it gives bargaining power in formal negotiations, pooled resources, a base for bartering and information exchange,[38] and experience in organization management and planning. However, community networks are largely absent in the rural areas among women.[39]

In the targeted districts of Punjab and Sindh, 22 709 Community-Based Organizations (CBOs) and 56 Local Support Organizations (a designation used interchangeably with CBOs and Grass Root Level Organizations in Pakistan)[40] had been developed by various NGOs at the most local administrative level (Union Council) with a cumulative membership of 540 005 in 2016-17.[41] The organizations may be segregated by gender or mixed; among the CBOs, 12 percent were exclusively for women, 78 percent mixed, the rest were for

[30] UNDP Pakistan, undated. *Gender Equality*. http://www.pk.undp.org/content/pakistan/en/home/ourwork/gender-equality.html (accessed 10 April 2018)
[31] Quoted in *Human Development Report 2016. ibid.*
[32] Kundi, Asma, 2017. Greater role for rural women in decision-making demanded. *Dawn*, October 17, 2017.
[33] Ministry of Finance, the Government of Pakistan, undated. *Pakistan Economic Survey 2015-2016*, Chapter 2, Agriculture. http://www.finance.gov.pk/survey/chapters_17/02-Agriculture.pdf (accessed 1 May 2018)
[34] Ministry of Finance, the Government of Pakistan, undated. *Pakistan Economic Survey 2017-2018*, Chapter 2, Agriculture. http://www.finance.gov.pk/survey/chapters_18/02-Agriculture.pdf (accessed 10 May 2018)
[35] International Labour Organization, 2017. *Asia-Pacific Garment and Footwear Sector Research Note*. Issue 7, February 2017. Geneva: ILO.
[36] Field Consultation, February-March 2018.
[37] *Women in Agriculture in Pakistan. ibid*
[38] Agha, Nadia, 2017. Women farmers. *Dawn*, 17 September 2017. https://www.dawn.com/news/1358150 -- accessed 6 May 2018.
[39] Women farmers. *ibid*
[40] Pakistan Centre for Philanthropy. Assessment of Community Organizations (COs) http://www.pcp.org.pk/lso.html (accessed 8 May 2018)
[41] National Rural Support Programme, 2017. *23rd Annual Progress Report, 2016-2017.* Islamabad: NRSO.
Union Council Based Poverty Reduction Programme (UCBPRP), undated. *Monthly Progress Report (Month of February 2018).*
Rural Support Programme, 2017. *Outreach*. #34, July – September 2017.
Thardeep Rural Development Programme, 2018. *Realizing Rural Potential: Together We Can, Annual Report 2016-2017*. Karachi: TRDP.

men only. [42] The organizations segregated by gender were all concentrated in the Badin District of Sindh; other districts did not have any.

During the consultations, female farmers expressed their satisfaction for Women Open Schools not only in terms of enabling them to engage in vegetable production, but also as opportunities to socialise.[43] The Schools have thus shown potential as the base for networks that encompass broader actions.

4.3. Female Professionals

In accordance with the social status of women and the opportunities that it grants, female professionals are scarce in technical fields related to the project. The government jobs related to gender are also dominated by men.

4.3.1: Climate and Water Resources Management

The Ministry of Climate Change employs 4 female and 39 male professionals at the national level.[44] The Pakistan Meteorological Department, which operates at the national level, has 5 female and 95 male staff members.[45] Pakistan Council of Research in Water Resources has 4 female and 18 male professionals at the Headquarters, no female and 10 male professionals in Punjab, and no female and six male professionals in Sindh.[46] The Indus River System Authority counts no female and four male professionals.[47] Eleven female and 32 male managers work for Punjab's Environmental Protection Department, Head Office in Lahore, [48] and 1 female and 35 male district officers are deployed at district level.[49] No female and six male managers work for the Environment Protection Agency in Sindh.[50] No female irrigation professional is employed at the Irrigation Departments of Punjab.[51]

The teaching staff at the Faculty of Agriculture Engineering of Sindh Agriculture University, Tandojam with six Departments (Irrigation and Drainage,[52] Land and Water Management,[53] Farm Power and Machinery,[54] Energy and Environment,[55] Farm Structure,[56] Basic Engineering[57]) counted 3 female and 28 male members.

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[42] National Rural Support Programme, 2017. *23rd Annual Progress Report, 2016-2017*. Islamabad: NRSO.
Union Council Based Poverty Reduction Programme (UCBPRP), undated. *Monthly Progress Report (Month of February 2018).*
Rural Support Programme, 2017. *Outreach*. #34, July - September 2017.
Thardeep Rural Development Programme, 2018. *Realizing Rural Potential: Together We Can, Annual Report 2016-2017*. Karachi: TRDP.
[43] Field consultation, February-March 2018.
[44] Ministry of Climate Change, 2018. Contact Us. http://www.mocc.gov.pk/frmDetails.aspx (accessed 21 May 2018)
[45] Capacity Building of Meteorological Department, undated. Higher Education. http://www.pmd.gov.pk/cbp/index.php?type=f (accessed 27 April 2018)
[46] Pakistan Council of Research in Water Resources, 2017. Technical Staff. http://www.pcrwr.gov.pk/about.php?view_members (accessed 4 April 2018)
[47] IRSA, 2011. Indus River System Authority. http://www.pakirsa.gov.pk/IRSAAuthority.aspx (accessed 4 April 2018)
[48] Environment Protection Department, 2018. Contact Directory – EPA. http://epd.punjab.gov.pk/contactus_contact_directory_epa (accessed 19 May 2018)
[49] Environment Protection Department, 2018. Contact Directory – Districts. http://epd.punjab.gov.pk/contactus_contact_directory_districts (accessed 19 May 2018)
[50] Environment Protection Agency Sindh, undated. Contact Us. http://epasindh.gov.pk/html/contactus.html (accessed 19 May 2018)
[51] Irrigation Department, undated. Contact Us. http://irrigation.punjab.gov.pk/Correspondence/Contact_Us.aspx (accessed 9 April 2018).
No comparable data is available for Sindh.
[52] Sindh Agriculture University, Tandojam, Faculty of Agriculture Engineering, Department of Irrigation and Drainage, 2018. http://fae.sau.edu.pk/id/index.php (accessed 26 April 2018)
[53] Sindh Agriculture University, Tandojam, Faculty of Agriculture Engineering, Department of Land and Water Management, 2018. http://fae.sau.edu.pk/lwm/index.php (accessed 26 April 2018)
[54] Sindh Agriculture University, Tandojam, Faculty of Agriculture Engineering, Department of Farm Power and Machinery, 2018. http://fae.sau.edu.pk/fpm/index.php (accessed 26 April 2018)
[55] Sindh Agriculture University, Tandojam, Faculty of Agriculture Engineering, Department of Energy and Environment, 2018. http://fae.sau.edu.pk/ee/index.php (accessed 26 April 2018)
[56] Sindh Agriculture University, Tandojam, Faculty of Agriculture Engineering, Department of Farm Structure, 2018. http://fae.sau.edu.pk/fs/index.php (accessed 26 April 2018)
[57] Sindh Agriculture University, Tandojam, Faculty of Agriculture Engineering, Department of Basic Engineering, 2018. http://fae.sau.edu.pk/be/index.php (accessed 26 April 2018)

4.3.2: Information Technology

The Ministry of Information Technology and Telecommunication has 2 female and 29 male professionals.[58] Among the managers at Punjab Information Technology Board, one of total 12 is female, who is the Chief Finance Officer.[59] No similar Department appear to form part of the Government of Sindh.

The female-male ratio at the Department of Computer Sciences, University of Agriculture, Faisalabad, was 1 to 14 for teaching staff,[60] but 1 026 to 1 218 for students, close to an even distribution between genders.[61] Information Technology University has over 5 female and 28 male members in the IT field among its 59 teaching staff.[62] University Institute of Information Technology at Pir Mehr Ali Shah Arid Agriculture University Rawalpindi has 8 female and 12 male teaching staff.[63] The Department of Statistics and Computer Science of the University of Veterinary and Animal Sciences, Lahore-Pakistan counted no female and 10 male teaching members.[64] The data indicates that the younger generation is likely to become much more gender balanced in the IT professional arena.

4.3.3: Agriculture Sector

One female and 44 male professionals constitute the cadre at the Ministry of National Food Security and Research, which is in charge of food grain and agriculture.[65] No women is among the 11 senior management of the Pakistan Agricultural and Research Council.[66] The National Agriculture Research Centre is home to 15 female and 37 male professionals.[67]

In Punjab, all 44 manager positions in relation to agriculture extension are taken up by men.[68] We find 85 female and 299 male Agricultural Technical Officers at the headquarters in Lahore, no female and 36 male Agriculture Officers at the district Level, in addition to no female and 2 970 male Field Assistants.[69] At the Agriculture, Supply and Prices Department of Sindh, which includes the Agriculture Extension Wing, all 80 managerial functions are given to men, and female professionals are 44 Researchers and 1 Price Inspector (while there are no male Researchers and 46 male Price Inspectors). [70] The Punjab Food Department counts 2 female and 102 male employees.[71]

The Livestock and Dairy Development Board counts one female and seven male managers,[72] while at the

[58] Ministry of Information Technology and Telecommunication, 2018. Ministry Officials. http://www.moitt.gov.pk/frmDetails.aspx# (accessed 5 April 2018).
[59] Punjab Information Technology Board, undated. Organogram. https://www.pitb.gov.pk/organogram (accessed 6 April 2018)
[60] Department of Computer Science, University of Agriculture, Faisalabad, 2018. Employee's Directory. http://www.uaf.edu.pk/employees.aspx?param=DEPT&id=12&id1=24 (accessed 10 May 2018)
[61] Personal communication with University officials, May 2018.
[62] Information Technology University, 2018. Faculty. https://itu.edu.pk/faculty-itu/ (accessed 10 May 2018)
[63] University Institute of Information Technology at Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, 2015. Faculty. http://www.uaar.edu.pk/uiit/faculty.php?dept_id=31
[64] Department of Statistics and Computer Science of University of Veterinary and Animal Sciences, Lahore-Pakistan, undated. Faculty. http://www.uvas.edu.pk/academics/faculties/FLSBM/bio-stat-comp/faculty/ (accessed 11 May 2018)
[65] Personal communication with Ministry officials in April 2018.
[66] Pakistan Agricultural Research Council, undated. Senior Management. http://parc.gov.pk/index.php/en/senior-managements (accessed 5 April 2018)
[67] Scientific Staff, undated. Listed on each page of the 15 Institute found at http://www.parc.gov.pk/index.php/en/research-institutes-narc (accessed 9 April 2018)
[68] Personal communication with Punjab Government officials in October 2017.
[69] Personal communication with Punjab Government officials in October 2017.
[70] Personal communication with Sindh Government officials in October 2017.
[71] For Core Team: Punjab Food Department, Government of Punjab, Core Team, 2015. https://food.punjab.gov.pk/core_team (accessed 31 May 2018)
For Secretariat: Punjab Food Department, Government of Punjab, Contact Us, 2015. https://food.punjab.gov.pk/system/files/Annex-D1.pdf#overlay-context=contact_us (accessed 31 May 2018)
For Directorate of Food: Punjab Food Department, Government of Punjab, Contact Us, 2015. https://food.punjab.gov.pk/system/files/Annex-E1.pdf#overlay-context=contact_us (accessed 31 May 2018)
For Food Department: Punjab Food Department, Government of Punjab, Contact Us, 2015. https://food.punjab.gov.pk/system/files/Annex-F1.pdf#overlay-context=contact_us (accessed 31 May 2018)
[72] Livestock and Dairy Development Board, undated. Board of Directors. http://lddb.org.pk/board-of-directors/ (accessed 6 April 2018)

provincial level 5 female and 141 male managers work for the Livestock and Dairy Development in Punjab.[73] Comparable data was not available from the Livestock and Fisheries Department of Sindh. The teaching staff and other professionals involved in pedagogy at the University of Veterinary and Animal Sciences, Lahore consists of 33 female and 160 male members.[74]

The University of Agriculture, Faisalabad has seven faculties, including Veterinary Sciences and Animal Husbandry, and among its teaching and other professional staff 130 are female and 538 are male.[75] At the same University, 9 657 female and 14 174 male students were enrolled during 2015-2016.[76] At the Sindh Agriculture University, Tandojam, the Faculty of Animal Husbandry and Veterinary Sciences counted 6 female and 44 male, the Faculty of Agricultural Social Science 2 female and 21 male, the Faculty of Crop Production 21 female and 44 male, and the Faculty of Crop Protection 3 female and 22 male teaching staff members.[77] Judging from the numbers of students above, the coming generation is expected to be much more gender balanced in agriculture related fields.

4.3.4: Gender

The Women Development Department of Punjab has a female Secretary, but the total number of female professionals is three as opposed to five for men.[78] No comparable data is available for the Women Development Department of Sindh.

5. Gender in Rural Pakistan: Overview

The vast majority of the rural population in Pakistan depend on natural resources for their livelihood, but rural women generally do not have assets to their names, productive or non-productive, unlike other segments of the population. They do not assume official roles and have little decision-making power in the public as well as in the private sphere; they are obliged to abide by the rules of a patriarchal society. The practice prevails due to cultural traditions that accord unequal opportunities along the gender line throughout life since birth. It results in a low literacy rate and scant exposure to the outside world, further exacerbating the gap with the rest of the population. Their lives are characterised by: (i) poverty from exploitative wages; (ii) ill health from indoor use of solid fuel for cooking, lack of safety measures when exposed to hazardous chemicals, unsatisfactory access to health facilities, and disadvantaged position in food distribution within households; (iii) insufficient exploitation and appreciation of their knowledge, skills and contributions; and, (iv) lack of autonomy.

The Human Development Index (HDI) is at 0.550, 147th among 188 countries and territories.[79] The Gender Inequality Index value is 0.546, 130th out of 159 countries; the Gender Development Index value is 0.742, placing Pakistan in Group 5, composed of countries with the lowest equality in HDI achievement between men and women. [80] Given that these measurements are for the

[73] Personal communication with Department officials in April 2018.
[74] University of Veterinary and Animal Sciences, undated. UVAS List. http://www.uvas.edu.pk/tel-index.htm (accessed 8 May 2018)
[75] University of Agriculture, Faisalabad, 2018. Employee's Directory – Complete List. http://uaf.edu.pk/employees.aspx?param=AZ (accessed 26 April 2018)
[76] University of Agriculture, Faisalabad, undated. *Annual Report 2015-16.*
[77] Sindh Agriculture University, Tandojam, Faculty of Animal Husbandry and Veterinary Sciences, 2017. Department faculty lists available through http://fahvs.sau.edu.pk/ (accessed 10 May 2018)
Sindh Agriculture University, Tandojam, Faculty of Agricultural Social Science, 2017. Department faculty lists available through http://fass.sau.edu.pk/ (accessed 10 May 2018)
Sindh Agriculture University, Tandojam, Faculty of Crop Production, 2017. Department faculty lists available through http://fcpd.sau.edu.pk/ (accessed 10 May 2018)
Sindh Agriculture University, Tandojam, Faculty of Crop Protection, 2017. Department faculty lists available through http://fcpt.sau.edu.pk/ (accseed 10 May 2018)
[78] Women Development Department, 2013. Core Team. http://wdd.punjab.gov.pk/core_team (accessed 30 April 2018)
[79] *Human Development Report 2016. ibid.*
[80] *Human Development Report 2016. ibid.*

entire country, we expect the rural conditions to be much less favourable for women.

5.1. Basic Statistics

5.1.1: Population

Women in Pakistan represent 49 percent of the population,[81] and well over half of the women live in the rural areas,[82] comprising nearly one-third of the total population.

5.1.2: Literacy and Education

The urban and rural gap in literacy appears widening, as well as that of gender.[83] Girls' education is limited, and many, particularly in the rural areas, have access only to basic religious teachings.[84] The proportion of the national population, aged ten years and older and have ever attended schools, was 62 percent in 2014-15: in urban areas 77 percent and in rural areas 53 percent, and 51 percent among women and 72 percent among men.[85] In 2016, the national estimate for out-of-school rate for primary-school age children was over 20 percent and that for girls nearly 30 percent.[86] Over a quarter of adult women reach at least a secondary level of education, compared to 46 percent among men.[87] The Right to Free and Compulsory Education Act enacted in 2012 mandates school attendance and guarantees free education until 16 years of age.

5.1.3: Poverty and Wealth

Poverty reduction in the country has not seen a steady decline in the past five decades, and a large proportion of the population hovers around the poverty line; more than a half of the national population had experienced poverty[88] in ten years prior to 2012.[89] Poverty and wealth in the rural areas are household issues, rather than individual. When a household loses the male head, the widow assumes the role, aided by male relatives who accompany her when the need arises, such as traveling.[90] The most fundamental, productive asset in agriculture is land. In general, higher poverty is observed among sharecroppers (who are without land) than among landowners, and the majority of the rural poor are landless.[91] Sale and purchase of land are rare, and unequal landholding has remained more or less unchanged from the 1970s to the 2000s.[92] As of 2004-2005, per-capita income inequality was widening in all provinces. Income inequality within rural areas as well as that among urban residents were also deteriorating.[93]

5.1.4: Marriage

Many girls are married off at a young age to much older men without their consent, particularly in the rural areas. In 2016, 19 percent of women aged 18-22 in the country (urban and rural Pakistan) were married before turning 18, albeit a dramatic decline over time.[94]

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[81] The World Bank. *Population, female (% of total population)* https://data.worldbank.org/indicator/SP.POP.TOTL.FE.ZS (accessed 2 May 2018)
[82] The World Bank. *Rural population (% of total population)* https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS (accessed 10 May 2018)
[83] Raizul Haq, 2017. Literacy rate in Pakistan slips by 2%. *Dawn*, 26 May 2017. https://tribune.com.pk/story/1419396/economic-survey-literacy-rate-pakistan-slips-2/ (accessed 1 May 2018)
[84] *Women in Agriculture in Pakistan. ibid.*
[85] *Pakistan Social and Living Standards Measurement 2014-2015. ibid.*
[86] UNESCO Institute for Statistics, undated. *Education: Number of out-of-school children of primary school age* http://data.uis.unesco.org/index.aspx?queryid=123 http://data.uis.unesco.org/Index.aspx?queryid=121 (accessed 3 May 2018)
[87] Food and Agriculture Organization of the United Nations Pakistan, 2018. *Gender Stocktaking Exercise* (draft).
[88] Defined as less than 2,350 calories intake per adult equivalent per day.
[89] G. M. Arif, G. M. and Farooq, Shujaat, 2012. Dynamics of Rural Poverty in Pakistan: Evidence from Three Waves of the Panel Survey. Islamabad: Pakistan Institute of Development Economics.
[90] Field consultation, February-March 2018.
[91] Ahmed, Syud Amer and Gautam, Madhur, 2013. *Agriculture and Water Policy: Toward Sustainable Inclusive Growth*. Washington, D.C.: The World Bank.
[92] *Agriculture and Water Policy: Toward Sustainable Inclusive Growth. ibid.*
[93] Jamal, Haroon, 2009. *Income Inequality in Pakistan: Trends, Determinants and Impact*. Islamabad: UNDP.
[94] Malé, Chata and Wodon, Quentin, 2016. Basic Profile of Child Marriage in Pakistan. Health, Nutrition and Population Knowledge Brief. Washington, DC.: the World Bank.

The birth rate is 38.7 per 1,000 women aged 15-19, and for every 100,000 live births in the nation, 178 women die from pregnancy related causes. [95] The statistics for rural women are unavailable but considering their significantly more constrained access to education and health care, most likely higher percentages of them marry and give births early in their lives and die from complications caused by child birth.

5.2. Labour Division and Decision Making

Gender roles in agriculture differ within and across districts and households, depending on several factors: age and matrimonial status (unmarried, married, widowed); household composition (number, age and gender of members, and existence of women engaged in income-generating work); location of the activity; household's economic situation; education received; social restrictions; and economic returns of particular activities. Economic reasoning may occasionally play a larger role than cultural norms in determining the allocation of labour; a widow with no other sources of income will carry out agricultural work generally performed by men. Age differentiation in activities occurs more among women than among men.

Women who participate in agricultural work in Pakistan are not officially registered as farmers, unlike men. All adult and able-bodied female members of farm households are usually fully engaged to tend landowner's or family farms. Their contribution as formal labour force is severely underestimated; 73 percent of Pakistani women are engaged in agriculture,[96] but nationwide, slightly over a quarter of female population belong to the formal labour force,[97] while 83 percent of men do.[98] Women are largely employed by the informal sector, especially in rural areas, which disadvantages women in terms of wage and legal protection.[99] Work for landowners belongs to the informal sector, where the mode and value of payments are decided verbally and without consideration of the national minimum wage.[100]

5.2.1: Crop Agriculture

A common framework exists for division of labour according to gender, although no household may be exactly alike. While some work may be performed by both women and men, certain tasks are often considered exclusively men's: input purchase, pesticide application, machinery use, and on-field irrigation. Gender-based segregation of roles appears the strictest for machine use, and women's tasks become men's after a machine for that task become available to the villagers: ploughing, tilling, planting, field watering, etc. Men tend to be more involved in the early stages of cultivation and animal raising, whereas women focus more on later stages and tasks that require hand dexterity or are time consuming: planting, transplanting and harvesting crops; tending animals; and, food and seed processing and storage.

5.2.2: Livestock

Rural women carry heavy responsibilities in management of livestock, which contributes to nearly half of the total agricultural value added nationally;[101] milk and meat are the two main products of livestock sector that makes up 11 percent of GDP.[102] Many products are exported, where "meat & meat preparations (HS 0201 to 0210 & 1602)" represented the largest value with US$ 167 million in 2011 and achieved an average per-annum growth rate of 39 percent; the trade is mainly with the Gulf region to

[95] *Gender Stocktaking Exercise. ibid.*
[96] The World Bank, 2017. *Employment in agriculture, female (% of female employment) (modeled ILO estimate).* https://data.worldbank.org/indicator/SL.AGR.EMPL.FE.ZS?view=chart (accessed 1 May 2018)
[97] The World Bank. *Labour force participation rate, female (% of female population ages 15-64) (modeled ILO estimate)* https://data.worldbank.org/indicator/SL.TLF.ACTI.FE.ZS (accessed 1 May 2018)
[98] The World Bank. *Labour force participation rate, male (% of male population ages 15+) (modeled ILO estimate)* https://data.worldbank.org/indicator/SL.TLF.CACT.MA.ZS?page=1 (accessed 1 May 2018)
[99] *Gender Equality*, *Ibid.*
[100] Women farmers. *ibid.*
[101] Amin, Humera *et al*., 2010. Gender and Development: Roles of Rural Women in Livestock Production in Pakistan. *Pakistan Journal of Agricultural Sciences*. Vol. 47(1), 32-36.
[102] Rehman, Abdul et al., 2017. Livestock production and population census in Pakistan: Determining their relationship with agricultural GDP using econometric analysis. *Information Processing in Agriculture*. No.4, 2017. 168-177.

satisfy demand for *halal* products.[103] Almost all of the national milk output is consumed in the villages or sold in the cities through middlemen, who often hand smallholders around half the final retail price.[104]

With respect to livestock, men are in charge of fodder production, feed and medicine purchase, stallfeeding, animal sale, breeding and curing.[105] Women clean the animal sheds, collect fodder, water the animals, oversee cattle grazing, collect and process dairy products and manure.[106] Dairy and other goods processed or produced by women are usually sold by men, who keep the cash generated.

5.2.3: Household Chores

Pakistani women in the rural areas spend on average 85 hours per week on household chores.[107] The unequal burden between women and men of household work starts early in life around the world and is more pronounced in some regions. In the Middle East, North Africa and South Asia, girls aged 5-14 spend close to twice as many hours per week on household chores as boys of the same age, whereas the world average is that girls aged 5–9 and 10–14 spend 30 percent and 50 percent more of their time, respectively, than boys of the same age.[108] Household responsibilities deprive girls of important opportunities to learn, grow, and enjoy their childhood.[109] They also perpetuate the gender stereotypes and the burden on women and girls.[110]

5.2.4: Supplementary Income

Both women and men in rural areas supplement household income by working as day-labourers in agriculture and non-agricultural jobs. The overwhelming majority of women's such jobs involve harvesting, in particular cotton. As a rule, rural children participate in the family's income-generating activities.

The society does not allow women to relocate to the cities for work, and they engage in construction works and tile making,[111] provided that the commute to the location does not compromise their household responsibilities. Such opportunities are difficult to find, and the lack of employment for women causes severe impacts on family expenditure, savings and debt position.[112] In 2011, only 4 percent of rural women aged 18-60 had worked as non-agricultural employees.[113] In the off-season, some rural women and children go to nearby better-off villages and cities to beg for food and money.

5.2.5: Decision Making

Generally in South Asia, women are much more likely to be involved in decisions that are perceived as routine in the family economy, such as food purchases, than those that are considered major events.[114] There appears no differences in women's decision-making power among Hindus and Muslims in the Region.[115]

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[103] Trade Related Technical Assistance Programme, United Nations Industrial Development Organization, undated. *Enhancing Livestock Sector Export Competitiveness: Policy Recommendation Paper*. UNIDO

[104] *International Fund for Agricultural Development, Asia and the Pacific Division, Programme Management Department, 2013. Livestock and Access to Markets Project – Design completion report: Main report and appendices. Rome: IFAD.*

[105] *Women in Agriculture in Pakistan. ibid.*

[106] *Women in Agriculture in Pakistan. ibid.*

[107] Nazli, Hina, *et al*., 2012. *Pakistan Rural Household Panel Survey 2012 (Round 1) - Household Characteristics*. Washington, D.C.: International Food Policy Research Institute.

[108] United Nations Children's Fund, 2016. Harnessing the Power of Data for Girls: Taking stock and looking ahead to 2030. New York: UNICEF.

[109] Reuters, 2016. Girls spend 40 per cent more time on unpaid household chores than boys: report. The Express Tribune, October 7, 2016.

[110] . Girls spend 40 per cent more time on unpaid household chores than boys: report. *ibid.*

[111] NoorMmemon, Irfana *et al*., 2015. Women Labour Participation of Agricultural Production in Sindh Pakistan. *Journal of Resources Development and Management*. Vol. 10, 2015, 87-97.

[112] Women Labour Participation of Agricultural Production in Sindh Pakistan. *ibid.*

[113] Pakistan Rural Household Panel Survey 2012 (Round 1) - Household Characteristics. *Ibid.*

[114] Jejeebhoy, Shireen J. and Sathar, Zeba A., 2001. "Women's Autonomy in India and Pakistan: The Influence of Religion and Region." *Population and Development Review* Vol. 27, No. 2, December 2001, :687–712.

[115] Women's Autonomy in India and Pakistan: The Influence of Religion and Region. *ibid.*

Whereas 83 percent of women in urban parts of Islamabad Capital Territory consulted family members on education of children, 40 percent of rural women of the Territory did so;[116] this may be because of lack of involvement of rural women in such matters. Control over household budget was reported by 11 percent and 5 percent of urban and rural women in the Territory,[117] and slightly over half of rural husbands and over two-thirds of urban husbands were open to accepting wives' points of view.[118]

Women in rural Pakistan make financial contributions through farm work and household work (which is essential, but only indirectly related to income), but do not derive any additional autonomy as a result.[119] Water User Associations, which determine the allocation of irrigation water, are formed by registered landowners who are all men.[120] Migration of men for supplementary income and their absence confers women additional decision-making power, but at the same time, it may bind them to extended-family living arrangement and limit their authority.[121] Women's cash income generation, on the other hand, has a greater potential for increasing their decision-making power in the household.[122] Subtle differences exist within regions, however, and possibly among communities as well.[123]

5.3. Agriculture Resources and Service

5.3.1: Land and Livestock

In agricultural sector, land mostly belongs to male members of the household. Women, even if they have rights, are not given access to land titles.[124] Nationwide, 11percent of urban households and 41percent of rural households own land.[125] In 2012-2013, 89 percent of ever-married women aged 15-49 did not own a house, and 96 percent did not own any land. [126]

Proportionately more of rural than urban households own livestock: 64 percent and 12 percent, respectively. The proportion of households that own livestock has decreased by 7 percentage-points in rural areas and 5 percentage-points in urban areas between 2006-07 and 2012-2013.[127] Data regarding women's livestock ownership is unavailable, but is considered to be as low as that of land.

5.3.2: Agriculture Extension Services

Agriculture extension's main objective is to transfer effectively the latest knowledge and research results to the farmers for the sake of better farm management; their services are essential for improvement of rural livelihoods and food security. Despite the decentralization of governmental functions, strong mandate of Provincial Departments concerned, and innovations recently introduced,[128] the services in

[116] Taj, Sajida, et al., 2004. "Assessment of Rural and Urban Women's Participation in the Decision Making in Family Matters." *Pakistan Journal of. Life and Social Sciences*. Vol.2, No. 1, 2004, 28-32.
[117] Assessment of Rural and Urban Women's Participation in the Decision Making in Family Matters. *ibid.*
[118] Assessment of Rural and Urban Women's Participation in the Decision Making in Family Matters. *ibid.*
[119] Sathar, Zeba A, Yesha and Kazi, Shahnaz, 2000. "Women's Autonomy in the Context of Rural Pakistan." *The Pakistan Development Review. Vol.* 39, No. 2, Summer 2000, 89–110.
[120] *Gender Analysis in Agriculture Punjab – Pakistan: Field Insights – 11-13 May 2011*. *ibid.*
[121] Women's Autonomy in the Context of Rural Pakistan. *ibid.*
[122] Women's Autonomy in the Context of Rural Pakistan. *ibid.*
[123] Women's Autonomy in the Context of Rural Pakistan. *ibid.*
[124] *Women in Agriculture in Pakistan. ibid.*
[125] *Pakistan Demographic and Health Survey, 2012-2013*. *ibid.*
[126] *Pakistan Demographic and Health Survey, 2012-2013*. *ibid.*
[127] *Pakistan Demographic and Health Survey, 2012-2013*. *ibid.*
[128] The Extension and Adaptive Research Division of the Directorate General of Agriculture in Punjab has established an institute for education in agricultural science, organized Farmer Field Schools for mango, citrus and vegetable growers, established the Plant Clinics in collabouration with CABI (Centre for Agriculture and Biosciences International). Source: Extension & Adaptive Research, Directorate of General Agriculture, Government of the Punjab, 2014. http://ext.agripunjab.gov.pk/services (accessed 18 April 2018)
The Agriculture Extension Services Sindh has given advisory services and organized awareness campaigns for modern crop production and post-production practices: information dissemination on climate change impacts and integrated pest management; introduction of new crop varieties and farm-machinery on pilot basis, etc. They have broadcasted TV programs on modern agricultural practices and weekly live radio programs. Mobile phone service has been introduced for information sharing within the department and among progressive farmers. A mobile van service with films on latest agricultural practices was launched to show at village and UC levels to both male and female framers. Source: Agriculture, Supply and Prices Department, Government of Sindh, 2017. http://www.sindhagri.gov.pk/AgricultureExtension.html (accessed 18 April 2018)

Pakistan have been deemed ineffective by many, not being able to promote sustainable agriculture and alleviate rural poverty.[129, 130]

5.3.3: Livestock Extension Services

The public livestock sector suffers from inadequate and tardy disbursement of government funds.[131] As a result, staff mobilization is limited, equipment is often out of order, and supply of vaccines and medicines is chronically insufficient.[132] To compound the difficulties, no official system exists for cost recovery for services delivered and medicines dispensed.[133] Private providers fill some of the vacuum with respect to veterinary consultations and medicines, but the farmers consider the fees charged excessive (Rs 500-1,000, roughly equivalent to US$4.3-8.6).[134] The human resources at public institutions are far from adequate; female staff members are very few, many positions remain vacant, deployment of available personnel is neither strategic nor rational (i.e., not based on animal counts, area covered, or workload), supervision and monitoring are weak, and no appropriate incentives are in place for the staff.[135]

The private sector in the field is limited to animal health, and very few private agents have been trained on livestock production extension.[136] The sector is unregulated, which leaves the competency of workers unchecked. In fact, many of the para-veterinary workers are trained through donor-funded projects and not necessarily qualified for their tasks, but charge high fees for their services.[137] Partly due to the multiplicity of factors at work,[138] farmers are often unable to tell the quality of the services provided.[139] To overcome the scarcity of trained veterinary staff,[140] the number of veterinary training institutes and universities needs to be increased, especially those for women.

5.3.4: Agricultural Credit

Pakistan has a number of financial institutions in the agriculture sector,[141] ranging from commercial banks and development finance institutions to microfinance institutions.[142] Among them, the First Women Bank promotes asset ownership by women and provides resources to business entities, where female participation and contribution are significant.[143] In collaboration with the International Labour Organization, it has provided finance to nearly 3,000 women in the rural areas to combat child labour in

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[129] Shahbaz, Babar and Ata, Salman, 2014. Agricultural Extension Services in Pakistan: Challenges, Constraints and Ways forward. https://www.researchgate.net/publication/284003781_Agricultural_Extension_Services_in_Pakistan_Challenges_Constraints_and_Ways_forward (accessed 4 May 2018).

[130] The factors responsible for unsatisfactory performance include: low extension-worker-to-farmers ratio; poor incentive mechanism for extension workers; lack of specialized knowledge and on-job trainings; and, absence of effective M&E system (*Agricultural Extension Services in Pakistan: Challenges, Constraints and Ways forward. ibid.).* The service agents themselves have identified: unavailability of field assistant's office at the Union Council level (the lowest level of government, comprising of a large village and nearby smaller ones); lack of teaching equipment, facilities, means for travel and other resources; poor coordination between research and extension organizations; insufficient knowledge of the agents on improved agricultural technologies; spatial dispersion among farmers; farmers' illiteracy; and, difficulty in communicating with farmers (Agricultural Extension Agents and Challenges for Sustainable Development (A Case Study of Peshaw Ar Valley). *ibid.).*

[131] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*

[132] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*

[133] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*

[134] Exchange took place at the rate of 115.820 Pakistani rupees/USD on 1 May 2018.

[135] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*
Enhancing Livestock Sector Export Competitiveness: Policy Recommendation Paper. ibid.

[136] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*

[137] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*

[138] Agricultural Technology Adoption Initiative, undated. Coordinating Farmers with Cellphones: Technology Innovation in Livestock Extension Services in Pakistan. https://www.atai-research.org/project/coordinating-farmers-with-cellphones-technology-innovation-in-livestock-extension-services-in-pakistan/ (accessed 6 May 2018)

[139] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*

[140] *Enhancing Livestock Sector Export Competitiveness: Policy Recommendation Paper. ibid.*

[141] Zarai Taraqiati Bank, the First Micro-Finance Bank, First Women Bank, National Bank of Pakistan, Allied Bank of Pakistan, Bank Islami Pakistan, Habib Bank, Bank of Punjab, Punjab Provincial Cooperative Bank, SME Bank, Khushali Bank, Tameer Microfinance Bank, Sindh Provincial Co-operative Bank, Muslim Commercial Bank, the Bank of Punjab, and United Bank.

[142] Economic Pakistan, 2008.
https://economicpakistan.wordpress.com/2008/01/15/banks-financial-institutions-of-pakistan/ (accessed 18 April 2018)

[143] Top Bank Profile, 2014. First Women Bank. *The Banker, Pakistan*. http://www.thebanker.com.pk/first-women-bank.html (accessed 6 May 2018)

the carpet weaving industry, but their primary focus is not the poor female farmers.[144]

It is inherently difficult to estimate the size of the informal sector in which the lenders are friends, relatives, commission agents, merchants, private moneylenders, etc., but it appears that about 50 percent of credit needs in rural agriculture is met by this sector.[145] Farmers remain reluctant to borrow from formal institutions, because of high interest rate, distance from home to bank, untimely disbursement, complex procedure, unlawful demands of officials, and lack of collateral that is asked by non-microfinance lenders. These factors are practically insurmountable for women, who usually have much less skills, knowledge, mobility and other resources related to formal financial instruments.[146] Credit for livestock is much harder to come by than for crops, and there is no credit specifically for livestock. Most livestock credit is provided by the informal sector,[147] which may be a result of accommodating female farmers who are prominent in livestock. The situation is nonetheless penalizing; commercial lenders in the informal sector are often regarded as one of the most important elements that keep farmers trapped in poverty.

5.3.5: Agricultural Insurance

Due to marginal involvement of the private sector and to lack of reliable data on calamities, cropping pattern, and so on, the agricultural insurance sector remained underdeveloped for a long time.[148] In 2008, however, the State Bank of Pakistan implemented crop loan insurance, which is mandatory for farmers requesting a loan from a financial institution for any of the five major crops: wheat, rice, sugarcane, cotton, and maize.[149] Livestock insurance is available on a limited basis and covers cattle, buffalo, small ruminants and poultry, written on a small-scale by various private insurance companies.[150]

Unfortunately, the Government's payment of premium on behalf of smallholder farmers is not done in a structured manner, resulting in delays and discouraging banks from targeting smaller farmers. [151] The claim-to-premium ratio has remained at approximately 50 percent.[152] Consequently more insurance companies are now offering crop loan insurance products. Approximately 10 insurance companies offered crop loan insurance in 2013 as compared to only four in 2008. [153]

In April-July of 2017, there were 6,347,260 micro-insurance policy holders in Pakistan, but only 1 percent were on agriculture and livestock despite the fact that half of the policy holders resided in rural areas.[154]

5.3.6: Mobile Phone and the Internet

Pakistan offered one of the most affordable mobile-broadband prices in Asia and the Pacific in 2015, despite its low Gross National Income per capita (GNI p.c.): prepaid mobile-broadband plans at prices below US$ 2 per month, representing less than 2 percent of GNI p.c. [155] However, it ranked 146th out of 175 countries in 2016[156] in terms of ICT Development Index;[157] less than 60 percent of the population

[144] First Women Bank. *ibid.*
[145] Bashir, Muhammad Khalid and Azeem, Muhammad Masood, 2008. Agricultural Credit in Pakistan: Constraints and Options. *Pakistan Journal of Life and Social Sciences*. Vol. 6, No.1, 2008. 47-49.
[146] Abdullah, *et al.*, 2015. Agricultural Credit in Pakistan: Past Trends and Future Prospects. *Journal of Applied Environmental and Biological Sciences.* Vol. 5, No. 12, 2015. 178-188.
[147] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. Ibid.*
[148] Shabbir, Al Hassan, undated. Overview of agricultural insurance: Pakistan. AgriHunt. https://agrihunt.com/articles/pak-agri-outlook/overview-of-agricultural-insurance-pakistan/ (accessed 6 May 2018)
[149] Thanvi, Kashif Umar, 2013. Agriculture Finance Support Facility. Crop Loan Insurance in Pakistan. https://www.agrifinfacility.org/resource/crop-loan-insurance-pakistan-0 (accessed 6 May 2018)
[150] Overview of agricultural insurance: Pakistan. *ibid.*
[151] Crop Loan Insurance in Pakistan. *ibid.*
[152] Crop Loan Insurance in Pakistan. *ibid.*
[153] Crop Loan Insurance in Pakistan. *ibid.*
[154] *Microwatch: A Quarterly Update on Microfinance Outreach in Pakistan. ibid.*
[155] International Telecommunication Union, 2016. *Measuring the Information Society Report 2016*. Geneva: ITU.
[156] *Measuring the Information Society Report 2016*. *ibid.*
[157] A composite index that combines 11 indicators and used to monitor and compare developments in information and communication technology (ICT) between countries and over time. (Source: International Telecommunication Union, 2018. The ICT Development Index (IDI): conceptual framework and methodology. https://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2017/methodology.aspx, accessed 7 May 2018)

owned a mobile phone in 2015 and 18 percent individuals had internet access in 2015. [158, 159]

The conservative segment of the Pakistani society is of the opinion that women would be negatively influenced by the vulgarity emitted through television and by the uncontrolled access via mobile phones to nefarious influences, which include men.[160] Slightly less than 30 percent of Sindhi women in 2014 justified domestic violence on the part of husbands if wives used mobile phone, television or social media.[161] Indeed, the gender gap in mobile-phone ownership in Pakistan (86% of men versus 27% of women) is the highest in South Asia, where the regional average gap is already among the largest in the world at 11 percentage points.[162] One of the contributing factors to the low rate is the lack of technical literacy and confidence among rural women to fully exploit the functions of a mobile device.[163]

5.3.7: Traditional Media

In 2002, the Government of Pakistan liberalized the media, which led to a sharp increase in the number of television stations and sensationalism at the expense of quality journalism.[164] Owing to the near monopoly over terrestrial broadcasting, the Pakistan Television Corporation – an autonomous public organization – remains the only accessible channel to rural viewers, most of whom are without access to cable or satellite broadcasts.[165] The mainstream media has an urban base, whose market trend and financial priorities skew the content in favour of the cities.[166] The popularity of television programs is measured among the urban audience; one of the channels was forced in 2010 to cut back on the coverage of flooding in Sindh due to its low rating.[167]

Despite the growth of television industry, FM radio is still popular in both urban and rural areas.[168] Radio Pakistan remains the primary source of news and information on radio, because privately owned radio stations are not allowed to broadcast original news and because their transmitter range is limited to 50 km. Consequently, political voices off the mainstream are seldom broadcast.[169] Pakistan Broadcasting Corporation, a public network, owns 22 of FM community stations. Aided by powerful transmitters, they target local communities and broadcast music, talk shows, as well as youth- and women-oriented programs in local languages. No other program exists in Pakistan that could be called community news.[170] The rural population constitutes a major contributor in the national economy, but their plight is rarely communicated among themselves or to the urban population who tend to have more political and financial leverage. The available literature recognizes the rural population as distinct audience, but not rural women.

5.4. Water Supply and Sanitation

The lack of safe drinking water and appropriate sanitation facilities and low-quality health services affect both women and men; the prevalence of infectious diseases,[171] especially hepatitis, in many areas is one of such consequences. Sanitation is an issue that goes beyond physical health for women and girls; lack

[158] *Measuring the Information Society Report 2016. ibid.*
[159] With respect to internet access, the country ranks 120th among 175 countries. (Source: *Measuring the Information Society Report 2016. ibid.)*
[160] Siraj, Mahrukh, undated. *A model for ICT based services for agriculture extension in Pakistan*. Rawalpindi-Pakistan: CABI South Asia.
[161] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[162] Burjorjee, Deena M. and Bin-Humam, Yasmin, 2018. *New Insights on Women's Mobile Phone Ownership*. Washington, D.C.: Consultative Group to Assist the Poor.
[163] *New Insights on Women's Mobile Phone Ownership. ibid.*
[164] International Media Support, 2009. *Between radicalisation and democratisation in an unfolding conflict: Media in Pakistan*. Denmark: IMS.
[165] Yusuf, Huma, 2013. *Mapping Digital Media: Pakistan*. London: Open Society Foundations.
[166] Riaz, Saquib. Challenges to Rural Journalism in Pakistan. *FWU Journal of Social Sciences.* Winter 2015. Vol.9, No.2. 71-81.
[167] *Mapping Digital Media: Pakistan. ibid.*
[168] *Mapping Digital Media: Pakistan. ibid.*
[169] *Mapping Digital Media: Pakistan. ibid.*
[170] *Mapping Digital Media: Pakistan. ibid.*
[171] *Health System Profile: Pakistan. ibid.*

of safe toilet facilities exposes women to risk of harassment, humiliation and assault.[172] Girls' school enrolment is positively and significantly associated with the availability of usable toilets.[173]

5.5. Health

The health of Pakistani people is characterized by high population growth rate, high infant and child mortality rate, high maternal mortality ratio, and both communicable and non-communicable diseases.[174] The total expenditure on health was 2.6 percent of GDP and that per capita $129 in 2014.[175] The total *public health expenditure* as percentage of GDP was 0.91 percent in 2016-2017,[176] whereas the average of OECD countries was reported 8.2 percent of GDP in 2013.[177]

The country's public primary care is carried out by Basic Health Units, Rural Health Centres, and Maternal and Child Health Centres; these are the institutions that provide basic obstetric care in the rural areas with community outreach programs offered through Lady Health Visitors (LHVs).[178] A large portion of medical consultations is estimated to take place in the private sector: two-thirds according to a report published in 2007.[179] Most of the private hospitals are concentrated in urban areas, and the legislations on the accreditation of doctors, nurses and LHVs are rarely enforced.

Rural women are highly susceptible to diseases, and more so than rural men, due to: higher burden of on-farm and off-farm activities; less balanced nutrient intake; and, early pregnancies. A great danger is posed to the expectant mother and the unborn child when they have to travel from the village to the nearest health facility, usually in an urban area, and on a donkey cart.[180] Malnutrition, diarrhoea, acute respiratory illness, other communicable and vaccine-preventable diseases cause high infant and perinatal mortality rates; high fertility rate, low skilled birth attendance rate (40%), illiteracy, malnutrition and insufficient access to emergency obstetric care services cause high maternal mortality.[181]

Malnutrition is widespread among children and women, especially of child-bearing age,[182] due to poor nutritional knowledge, heavy burden of responsibilities, low socioeconomic status, lack of leisure time, unequal distribution of food resources among men and women, multiple pregnancies within short intervals, big family size and poor health facilities.[183] Due to malnutrition, 30-40 percent of Pakistani children are stunted.[184]

Cooking and heating indoors constitute a major issue in Pakistan, as most rely on solid biomass fuels, such as wood, charcoal, crop waste, dung, shrubs and coal.[185] Smoke as well as various pollutants produced under incomplete combustion – carbon monoxide, polyaromatic hydrocarbons, and sulphur dioxide – are causes of ill health: acute respiratory illness, pneumonia, chronic obstructive lung disease, cancer, and

[172] Plan International, undated. Toilets keep women and girls healthy and safe. https://plan-international.org/pakistan/toilets-keep-women-and-girls-healthy-and-safe (accessed 7 May 2018)
[173] Hayat, Fatima Akram, 2017. The Relationship between Access to Toilets and School Enrollment in Pakistan. Thesis. Georgetown University, 2017. https://repository.library.georgetown.edu/bitstream/handle/10822/1044655/Hayat_georgetown_0076M_13782.pdf?sequence=1 (accessed 7 May 2018)
[174] Regional Health Systems Observatory, 2007. *Health System Profile: Pakistan*. Cairo: World Health Organization.
[175] World Health Organization. Pakistan. http://www.who.int/countries/pak/en/ (accessed 7 May 2018)
[176] Ministry of Finance, the Government of Pakistan, undated. *Pakistan Economic Survey 2017-2018*, Chapter 11, Health and Nutrition. http://www.finance.gov.pk/survey/chapters_18/11-Health.pdf (accessed 10 May 2018)
[177] Çevik, Savaş and Taşar, M. Okan , 2013. Public Spending On Health Care and Health Outcomes: Cross country Comparison. *Journal of Business, Economics & Finance*. Vol. 2, No. 4, 2013. 82-100.
[178] Quoted in *Health System Profile: Pakistan. ibid.*
[179] *Health System Profile: Pakistan. ibid.*
[180] *Health System Profile: Pakistan. ibid.*
[181] *Health System Profile: Pakistan. ibid.*
[182] Planning Commission, Planning and Development Division, undated. *National Nutrition Survey 2011*. Government of Pakistan.
[183] *Health System Profile: Pakistan. ibid.*
[184] *Health System Profile: Pakistan. ibid.*
[185] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*

possibly tuberculosis, asthma, cataracts, and low birth weight.[186] Since cooking is the responsibility of women, they run higher risks of illness from smoke than men.

5.6. Coping with Negative Shocks[187]

According to a survey conducted in 2012, medical expenses represented by far the most common negative economic shocks that rural households experienced in the preceding two years, close to 60 percent of households reporting such events. The second most reported was loss of or need to repair housing due to floods in 2010 and 2011; over a quarter of households in Pakistan was affected. However, most households did not have any coping mechanism in mind for shocks to come; not to act upon the possibility of negative shocks was the strategy for most households, more than half that belonged the lowest and more than 40 percent of that made up the highest quantiles of per-capita expenditure. The tendency of no- plan was the highest for flood related shocks, and households were better prepared for wedding and medical expenses; for weddings, 26 percent of households coped with additional members of household earning income, and 12 percent decreased non-essential expenses. Other coping mechanisms included: substitution of cheaper food, reduction of food consumption, informal borrowing, and assistance from other people and organizations.

6. Gender in Punjab and Sindh

6.1. Basic Statistics – Punjab and Sindh

6.1.1: Population[188] – Punjab and Sindh

Based on the 2017 Census, Punjab has a provincial population of 110 million and Sindh has a population of 48 million. The targeted districts of Punjab and Sindh[189] contain 3.45 million households and 21.5 million people: 10.5 million females, 11.0 million males, and 739 transgenders.

In the two provinces, the average household size is 6.2 persons, with a negligible difference between urban and rural areas of the same province. The population growth rate since 1998 has averaged 2.7 percent per year. Nearly half or more of the population live in rural areas: 63 percent of households in Punjab and 49 percent in Sindh. In rural Punjab, persons aged less than 15 years of age comprised 44 percent of total in 2017, and in rural Sindh it was 46 percent in the same year.[190]

6.1.2: Literacy and Education – Punjab and Sindh

In Punjab and Sindh, the two target provinces of the proposed project, the literacy rates were considerably lower in the rural areas than the national average of 58 percent in 2016-2017 and more so for rural women: 44 percent in rural Punjab and 19 percent in rural Sindh.[191] In the rural areas of the targeted districts in Punjab and Sindh, the rates for women were in the ranges of 31-38 percent and 13-19 percent, respectively. [192] In 2014, the literacy rate among young women aged 15-24 was 76 percent in Punjab, urban and rural combined,[193] and more than half of the same group was literate in Sindh.[194] The overall low literacy rates imply that the ability of the rural female population to use information

[186] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[187] *Pakistan Rural Household Panel Survey 2012 (Round 1) - Household Characteristics. ibid.*
[188] Pakistan Bureau of Statistics, 2018. Block Wise Provisional Summary Results of 6th Population & Housing Census-2017 [As on January 03, 2018]. http://www.pbscensus.gov.pk/ (accessed 18 April 2018)
[189] Punjab (Lodhran, Dera Ghazi Khan, Muzaffarghard, Multan and Khanewal) and Sindh (Badin Sanghar and Umerkot).
[190] Pakistan Bureau of Statistics, 2018. Population by Selective Age Groups. http://www.pbs.gov.pk/content/population-selective-age-groups (accessed 8 May 2018)
[191] Ministry of Finance, undated. *Pakistan Economic Survey 2017-2018*, Chapter 10, Education. http://www.finance.gov.pk/survey/chapters_18/10-Education.pdf (accessed 10 May 2018)
[192] Pakistan Bureau of Statistics, 2016. *Pakistan Social and Living Standards Measurement 2014-2015*. Islamabad: Government of Pakistan.
[193] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[194] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*

technologies and to access information may be very limited, but the high rates for young women indicate their potential for bringing about changes.

Punjab, with 65 percent, has the highest proportion among the provinces of inhabitants aged ten years and older that have ever attended school, followed by Sindh with 61 percent.[195] When disaggregated by district, a significant difference between genders was found in some, one of which was Dera Ghazi Khan (one of our target districts) with 30 percent women and 58 percent men.[196] The same held for primary school completion rates of different districts; 23 percent among women and 54 percent among men in Dera Ghazi Khan was one of the largest discrepancies in the country.[197]

Among the children aged 5-9 years in Punjab in 2014, 58 percent were enrolled in schools corresponding to the official education level for the age group.[198] In Sindh in the same year, 45 percent of primary-school aged children were attending schools, and girls-to-boys ratio in primary schools was 86 to 100.[199] In the eight targeted districts, 15 505 schools exist, among which less than 5 000 are for girls and the rest are for boys.[200] The schools employ approximately 10 000 female and 19 000 male staff in total, and 84 percent of them are primary schools. [201] The field consultations indicated that a considerable variation exists among the villages: from the majority of children enrolled to only a couple of boys attending.[202] The overall income level appeared the most important determinant, and the common constraint for girls' education was the lack of safe transportation and reliable school facilities.[203]

6.1.3: Poverty and Wealth – Punjab and Sindh

The official statistics show that 30 percent and 18 percent of households in Punjab and Sindh, respectively, own land,[204] but those with legally recognisable ownership may be considerably less. The farmers who claim to own land may not have documents that prove the transfer of ownership, a situation that owes largely to low literacy. In one Hindu minority village, the sons of the landowner who sold the land to the farmers do not consider the sale legitimate and have demanded eviction.[205] Around 93 percent of women in Punjab and 95 percent in Sindh do not own land.[206] Among ever married women aged 15-49, 2.1 percent own land jointly and 7.8 percent own a house jointly in the rural areas of Pakistan.[207] For men, the proportions were 20.7 percent and 34.1 percent, respectively.[208] There is no household in the rural areas that is composed solely of men, and the statistics imply that women are excluded from the concept of household ownership of land and house.

Household ownership of livestock, the most common form of assets after land, is distributed between 22 percent and 52 percent in the targeted districts.[209] Livestock acts as a buffer against income fluctuation

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[195] *Pakistan Social and Living Standards Measurement 2014-2015. ibid.*
[196] *Pakistan Social and Living Standards Measurement 2014-2015. ibid.*
[197] *Pakistan Social and Living Standards Measurement 2014-2015. ibid.*
[198] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[199] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[200] Bureau of Statistics, undated. *Punjab Development Statistics 2016*. Government of the Punjab.
Sindh Bureau of Statistics, 2017. *School Education Statistics Sindh 2015-16*. Karachi: Government of Sindh.
[201] *Punjab Development Statistics 2016. ibid.*
School Education Statistics Sindh 2015-16. ibid.
[202] Field consultation, February-March 2018.
[203] Field consultation, February-March 2018.
[204]*Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.
[205] Field consultation, February-March 2018.
[206] *Women in Agriculture in Pakistan. ibid.*
[207] National Institute of Population Studies and ICF International, 2013. *Pakistan Demographic and Health Survey, 2012-2013*. Islamabad and Calverton: NIPS and ICF International.
[208] *Pakistan Demographic and Health Survey, 2012-2013. ibid.*
[209] Pakistan Bureau of Statistics, undated. *Agricultural Census 2010 – Pakistan Report*, Punjab Province Tabulation.
http://www.pbs.gov.pk/sites/default/files/aco/publications/agricultural_census2010/Tabulation%20%28TABLES%29%20of%20Punjab%20Province.pdf (accessed 14 May 2018)
Pakistan Bureau of Statistics, undated. *Agricultural Census 2010 – Pakistan Report*, Sindh Province Tabulation.
http://www.pbs.gov.pk/sites/default/files/aco/publications/agricultural_census2010/Tabulation%20Sindh-Province.pdf (accessed 14 May 2018)

and a means of investment and food security. It is also a ready source of cash for many smallholder farmers to buy inputs such as seeds and pesticides, to pay for school fees, to purchase daily groceries, medicines, and so on. Large animals can bear large family expenses: weddings and major medical treatments.[210] Unlike the cash crops, the production of milk and dairy goods (butter, ghee, cheese, yoghurt) and meat are affected little by seasonal changes.[211]

In Southern Punjab and Sindh, about two-thirds of the households were below the poverty line for one or more of the three years, 2000, 2004 and 2010; only one-third had never experienced poverty.[212] Other provinces have not had such a prevalence of poverty.[213] The wealth disparity in the rural areas is large; according to the wealth quintiles index, 39 percent of the inhabitants fell in the category of the poorest households in Sindh in 2014.[214] In other words, a large segment of the population, especially in the rural areas of Punjab and Sindh, is highly vulnerable to climate change.

6.1.4: Marriage – Punjab and Sindh

In the Provinces of Punjab and Sindh, the percentage of women aged 20-49 years who were first married before age 18 was 21 percent[215] and 31 percent,[216] respectively, in 2014. In Punjab in 2014, 19 percent of women aged 15-19 and 15 percent of women aged 20-24 were married and their spouse was 10 or more years older.[217] The proportions were 12 percent and 15 percent, respectively, in Sindh.[218]

6.2. Labour Division and Decision Making – Punjab and Sindh

6.2.1: Crop Agriculture – Punjab and Sindh

Punjab produces most of the agricultural goods in the country: 78 percent of wheat, 70 percent of rice, 69 percent of cotton, 68 percent of sugarcane, 80 percent of maize, and 87 percent of gram, 80 percent of mangoes, 77 percent of guava, and 97 percent of citrus fruits.[219] Sindh, as the second largest province in terms of agricultural output,[220] produces approximately the rest of the national production of these agricultural goods, including 25 percent of cotton.[221]

Cotton is one of the major cash crops of Pakistan and supports the vital industrial and export sector (in particular, the textile and clothing industry).[222] Of the total area dedicated to cotton production in 2011, approximately 80 percent was in Punjab and 20 percent was in Sindh.[223] An estimated 1.6 million producers of cotton are mostly small-scale farmers with less than 5 hectares of land.[224] Most rural women

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Punjab: Khanewal 35%, Lodhran 39%, Multan 37%, Muzaffargarh 26%, and Dera Ghazi Kahn 22%.
Sindh: Badin 52%, Sanghar 49%, Umerkot 26%.

[210] *Women in Agriculture in Pakistan. ibid.*

[211] *Women in Agriculture in Pakistan. ibid.*

[212] *Dynamics of Rural Poverty in Pakistan: Evidence from Three Waves of the Panel Survey. ibid.*

[213] *Dynamics of Rural Poverty in Pakistan: Evidence from Three Waves of the Panel Survey. Ibid.*

[214] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.* Comparable data was not available for Punjab.

[215] Sindh Bureau of Statistics and UNICEF, 2015. *Multiple Indicator Cluster Survey 2014, Sindh Final Report.* Karachi: Sindh Bureau of Statistics and UNICEF

[216] . Bureau of Statistics Punjab and UNICEF Punjab, 2016. *Multiple Indicator Cluster Survey 2014, Punjab Final Report.* Lahore: Bureau of Statistics Punjab and UNICEF Punjab.

[217] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*

[218] Sindh Bureau of Statistics and UNICEF, 2015. *Multiple Indicator Cluster Survey 2014, Sindh Final Report.* Karachi: Sindh Bureau of Statistics and UNICEF.

[219] *Women in Agriculture in Pakistan. ibid.*

[220] *Women in Agriculture in Pakistan. ibid.*

[221] United States Department of Agriculture, 2018. *Pakistan Cotton Production Forecast to Surpass Last Season*. https://ipad.fas.usda.gov/highlights/2018/01/pakistan/index.pdf (accessed 1 May 2018)

[222] Wheat, rice, sugarcane, maize and cotton account for 24% of the value added in overall agriculture and 4.7% of GDP (ILO, 2017).

[223] Rana, Muhammad Ahsan *et al*., 2013. *Exploring Dynamics of Cotton Seed Provision in Sindh: Informing Policy and Business Decisions*. London: International Growth Center.

[224] Shafiq Ur Rehman,2015. *Cotton and Products Annual. Global Agricultural Information Network*. USDA Foreign Agricultural Service. https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Cotton%20and%20Products%20Annual_Islamabad_Pakistan_4-1-2015.pdf (accessed 1 May 2018)

in Punjab and Sindh[225] are engaged in labour-intensive work of cotton-picking by hand at very low wages. Punjabi women's participation in work on their own farm in rainfed agriculture villages is significantly greater than that found in the irrigated villages (69% as compared to 40% in Central Punjab).[226]
For rice cultivation in Punjab, women spend 2-3 hours for every hour spent by men.[227] Women's main activities are transplanting, harvesting and threshing, all by hand. Transplanting and threshing are done by women only; harvesting is done jointly, but women put in six days whereas men spare four hours of their time.[228] Wheat is often considered men's crop, but women spend eight hours for the crop compared to men's time allocation of ten hours.[229] The task differentiation leads to that of knowledge and skills; neither men nor women can grow cash crops all by themselves.

The cultivation of rice and cotton in Sindh claims a bulk of women's time spent on agricultural activities; 39 percent and 50 percent are dedicated to rice and cotton, respectively.[230] Nearly 80 percent of Sindhi women are involved in various stages of rice and cotton cultivation and almost all of them in cotton picking, but only 33 percent participate in the selling of cotton.[231]

Women are also extensively engaged in the production of other cash crops: field preparation, seed preparation, planting, transplanting, weeding, sowing, fodder cutting, harvesting, threshing, sealing, storage and processing[232] for home use.[233] They are also in charge of the cultivation of pulses, fruits and vegetables, as well as fodder[234] collection and a very good part of livestock rearing,[235] in addition to feeding and clothing the whole family, fetching water, collecting wood and making cow dung patties for use as fuel.[236] Rural women report 12 -14 hours of work per day. Men are mainly responsible for input purchase, mechanized work, chemical handling, product sales and water management.

Work for landowners is mostly paid in kind. In northern Sindh: both male and female farmers are paid 40 kilograms of wheat upon harvesting half an acre, without which the family would not survive.[237] Small farmers tend to receive less compensation from the landowners. In a village in Badin District, farmers are expected to harvest 5 kg of rice per day and 40 kg per acre.[238] The amount beyond this quota is kept by the farmers and used to purchase medicine and other necessities. [239] In the same village, the landowner provides flour on a monthly basis, but the ration is often not enough for household consumption; the villagers must borrow extra flour from the landowner, and the amount borrowed is deducted from the following distribution of profits.[240] The tenants also borrow money from the landowner through a supervisor.[241] In some villages, landlords allow women to operate kitchen gardens on the terms that they share half of the vegetables produced with him. [242,243]

[225] In Sindh, more than 500,000 farmers work in cotton picking, majority of which are women. (Source: Call for recognizing women's role in Sindh agriculture. *Dawn*, 17 December 2014. https://www.dawn.com/news/1151239 - accessed 10 April 2018).
[226] Women's Autonomy in the Context of Rural Pakistan. *ibid.*
[227] Pennells, Linda, 2011. *Gender Analysis in Agriculture Punjab – Pakistan: Field Insights – 11-13 May 2011*. https://www.google.co.uk/#q=Pennells%2C+L.+(2011)+Gender+Analysis+in+Agriculture+Punjab+%E2%80%93+Pakistan (accessed 25 February 2018)
[228] *Gender Analysis in Agriculture Punjab – Pakistan: Field Insights – 11-13 May 2011. ibid.*
[229] *Gender Analysis in Agriculture Punjab – Pakistan: Field Insights – 11-13 May 2011.ibid.*
[230] Quoted in *Women in Agriculture in Pakistan. ibid.*
[231] *Women in Agriculture in Pakistan. ibid.*
[232] *Women in Agriculture in Pakistan. ibid.*
[233] Women are not involved in commercial processing or grading of fruits and vegetables (Source: Women farmers. *Ibid.*)
[234] Pulses: chickpea, black gram, mung bean, mash and lentil. Fodder: sorghum, millet, maize, mott grass, berseem, oats and Lucerne. Vegetables: turnip, cauliflower, okra, pea, potato, onion, chili and tomato.
[235] Cattle, buffaloes, sheep, goats, camels, horses, mules and asses.
[236] Personal communication with the Agriculture Department of Punjab officials in February 2018.
[237] Women farmers. *ibid*
[238] Field consultation, February-March 2018.
[239] Field consultation, February-March 2018.
[240] Field consultation, February-March 2018.
[241] Field consultation, February-March 2018.
[242] Field consultation, February-March 2018.
[243] Some landlords do not allow such activity at all.

6.2.2: Livestock – Punjab and Sindh

Milking is done by rural women, and Punjab supplies most of the 40 billion litres of milk consumed in Pakistan.[244] A survey in Punjab showed that the contribution of rural women was higher in activities such as fodder offering, shed cleaning, animal watering, milking, poultry raising, ghee and egg selling and goats and sheep management, whereas the role of men was bigger in fodder cutting and transportation of fodder.[245]

Over 70 percent of the rural women in Sindh are deeply involved in livestock management; 81 percent of the women clean the animal sheds, 70 percent water the animals, 67 percent milk the animals, 77 percent process milk to extract grease, 82 percent conduct poultry husbandry, 88 percent supervise grazing, and 73 percent feed the animals.[246] The majority of households in Sindh also keep poultry, taken care of by women.[247] The women sell meat as well as collect and sell eggs.[248] As in Punjab, the overall involvement of Sindhi women in livestock is considered much bigger than men; the women are responsible for 60-80 percent of the tasks related to feeding and milking of cattle, in addition to cutting fodder, cleaning sheds, milking dairy animals, processing animal products and looking after the health of the herd.[249] In both provinces, small ruminants (e.g., sheep and goats) and poultry are owned and managed by women without the involvement of men. Women may own large livestock if it is given to them by the husband's family at the time of marriage. It is said that the animals are healthier when looked after by women.

6.2.3: Household Chores – Punjab and Sindh

All household chores fall on the shoulders of women: water fetching, fuelwood collection, care of the children and the elderly; planning for and delivering food and clothes for the entire family; cleaning the house and its surroundings; making handicraft for home use and supplementary income. For men, home is a place to relax and take a break from work.[250] It is women who ensure that this need is met, leaving little break time for themselves. Interactions outside the household are usually left to men, who sell agricultural products and purchase inputs on behalf of the family; one estimate for rice production in Punjab indicates that men spend only ten minutes to two days per year for each of these two tasks.[251] In the Chakwal District of Punjab, the overwhelming bulk of household chores were carried out by rural women, while men participated in the education and socialisation of the children, conflict management, and formal social matters.[252]

6.2.4: Supplementary Income – Punjab and Sindh

Women receive as low as PKR 150-200 (approximately USD 1.3-1.7) for picking 40 kilograms of cotton,[253] the major economic activity for women in Punjab and Sindh.

Embroidery, knitting and handicraft-making are an integral part of chores for many rural Sindh households,[254] and girls learn early in their lives to stitch *rilli* quilts[255] to support the extended family. In Sindh, temporal migration of men in search of work to urban areas has been reported during the off-

[244] Quoted in *Women in Agriculture in Pakistan. ibid.*
[245] Gender and Development: Roles of Rural Women in Livestock Production in Pakistan. *ibid.*
[246] *Women in Agriculture in Pakistan. ibid.*
[247] *Women in Agriculture in Pakistan. ibid.*
[248] *Women in Agriculture in Pakistan. ibid.*
[249] Arshad, Shafaq *et al*., 2010. Gender and Decision Making Process in Livestock Management. *Sarhad Journal of Agriculture.* Vol. 26, No.4, 2010, 693-696.
[250] Field consultation, February -March 2018.
[251] *Gender Analysis in Agriculture Punjab – Pakistan: Field Insights – 11-13 May 2011.ibid.*
[252] Nosheen, Farhana, et al., 2011. "Gender Division of Labour in Household Management and their Perception regarding Training Needs in Potohar Region." *Pakistan Journal of Agricultural. Sciences.* Vol. 48, No. 1, 83-88.
[253] Many of them are Kolhi and Bheel-minority Hindu Dalits who have less resource and access to health facilities than the other rural populations (Call for recognizing women's role in Sindh agriculture, 2014).
[254] *Women in Agriculture in Pakistan. ibid.*
[255] Traditional quilt handmade from cloth, sequins, beads and tassels, specific to Sindh.

season.[256]

6.2.5: Decision Making – Punjab and Sindh

In the case of rice in Punjab, men make the decisions at most steps during production, ranging from preparing the seedbed to selling/bartering.[257] In contrast, women make decisions regarding only 2 of the 19 steps for rice cultivation and use: grinding flour or cleaning rice for home use; and, further food preparation at home.[258] Livestock management is considered to be mainly the responsibility of women, but their involvement in decision-making appears very little, hampered by male dominance and traditional belief systems (as well as by age, if it concerns a young woman).[259]

The landowners have the final say in which crop and variety to cultivate or not, although he may be open to suggestions from the farmers who work for him. In one Sindhi village, the landowner decided against switching to *Bt* cotton based on the farmers' observation that the nearby farm with the same soil did not do well with the genetically modified cotton.[260] In another village in Sindh, the landowner did not allow female farmers to grow vegetables.[261]

It is usually men who sell dairy and other goods processed or produced by women to outsiders and keep the cash income. According to the women consulted in the field, all spending decisions are made jointly for the benefit of the entire households. In rural Pakistan, 37 percent of married women aged 15-49 reported that decisions over the wife's cash earning were made jointly (by the wife and husband) and 47 percent of the same group responded that decisions were made mainly by the wife.[262] With respect to their husband's cash earnings, the percentages dropped to 35 percent jointly and 1.7 percent mainly by the wife.[263] The comparable rates for the urban population indicated that women's decision-making power is much stronger.[264] In terms of sub-regional differences, Northern Punjabi women have weaker economic autonomy but greater mobility and decision-making power compared to women in Southern Punjab.[265]

The rural women consulted[266] did not see injustice or inconvenience in the current arrangement, but this needs to be interpreted in the context of their view of justice. In Punjab in 2014, 40 percent of women believed that a husband is justified in resorting to violence toward his wife if she goes out without telling him, neglects the children, argues with him, refuses sex with him or burns the food.[267] The gravest offense according to women was the neglect of children (27% agreed to use of violence by husbands), followed by going out without telling her husband or arguing with him (26% agreed).[268] In the same year in Sindh, 37 percent of women saw it just that husbands use violence when a wife neglects the children, 37 percent agreed to hitting and beating if she argued with him, 36 percent if she went out without telling her husband, 35 percent if she does not perform household chores, almost 30 percent if the wife refuses to have sex with the husband and about the same percentage if she burns the food.[269] To approximately 28 percent of Sindhi women, it was reasonable that husbands hit and beat their wives if they used mobile phone, television or social media. [270] When the urban and rural areas of Sindh were compared, it emerged that the rural women were more accepting of domestic violence.[271] Justification was higher among

[256] Field consultation, February -March 2018.
[257] *Gender Analysis in Agriculture Punjab – Pakistan: Field Insights – 11-13 May 2011. ibid.*
[258] *Gender Analysis in Agriculture Punjab – Pakistan: Field Insights – 11-13 May 2011. ibid.*
[259] Gender and Decision Making Process in Livestock Management. *Ibid.*
[260] Field consultation, February-March 2018.
[261] Field consultation, February-March 2018.
[262] *Pakistan Demographic and Health Survey, 2012-2013. ibid.*
[263] *Pakistan Demographic and Health Survey, 2012-2013. ibid.*
[264] *Pakistan Demographic and Health Survey, 2012-2013. ibid.*
[265] Women's Autonomy in the Context of Rural Pakistan. *ibid.*
[266] Field consultation, February-March 2018.
[267] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[268] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[269] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[270] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[271] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*

women who were from poorer households, less educated and ever married.[272]

6.3. Agriculture Resources and Services – Punjab and Sindh

6.3.1: Land and Livestock – Punjab and Sindh

The majority of women and men in Punjab (97% and 68%, respectively) and Sindh (99% and 79%, respectively) do not own agricultural land.[273] In terms of ownership by households, 31 percent in Punjab Province own agricultural land, whereas only 18 percent in Sindh.[274] The rates of livestock ownership by households range from 22 to 52 percent of agricultural households.[275]

6.3.2: Agriculture Extension Services – Punjab and Sindh

The farmers in Punjab and Sindh are almost unanimously dissatisfied with the agriculture extension services. According to them, they almost never see an extension agent.[276] One of the prominent reasons is the dearth of staff; in Punjab, each Agriculture Officer is responsible for 20-40 villages or up to 10 000 people.[277] Another is that the agents in both public and private sectors target large and medium scale farmers,[278] who are more willing to and easily take up new approaches, casting to the sidelines the bulk of the farmer population who are small and resource-poor. As a result, the poor farmers mostly depend on private companies for information who may not be well informed and are likely to promote their own business.[279]

The situation with respect to female field staff is improving, but still very few of them are active in either sector, public or private.[280] In Punjab, the first female specialist in extension was hired in 2007, and since then the number of female specialists has increased to 85.[281] While male Agriculture Officers are involved in the establishment of Farmer Field Schools, female Officers' main tasks are the training of women farmers on clean cotton picking and kitchen gardening.[282] The qualification required for the post is a diploma that is conferred after three years of study, which has discouraged women from pursing the career.[283] All positions of District Officers and above at the Extension and Adaptive Research Division in Punjab as well as that of the Director General of Agriculture – 44 in all – are occupied by men and none by a woman.[284] With respect to targeting rural women, insufficient efforts have been made on the part of extension services, in spite of their contribution to agriculture, including vegetable farming.[285]

Mobile agricultural services have gained attention lately as a promising tool to improve the efficiency and cost-effectiveness of extension efforts; the Government of Punjab developed such services called AgriSmart. The database for the application will eventually comprise of: farmer advisory services; plant clinics; crop reporting; pest scouting and warnings; farmer trainings; agricultural input monitoring; soil

[272] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[273] *Pakistan Demographic and Health Survey, 2012-2013. ibid.*
[274] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid* and *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid*
As indicated earlier in the document, legally recognizable ownership is likely to be much lower.
[275] *Agricultural Census 2010 – Pakistan Report, Punjab Province Tabulation. ibid.*
Agricultural Census 2010 – Pakistan Report, Sindh Province Tabulation. ibid.
Punjab: Khanewal 35%, Lodhran 39%, Multan 37%, Muzaffargarh 26%, and Dera Ghazi Kahn 22%.
Sindh: Badin 52%, Sanghar 49%, Umerkot 26%.
[276] Field consultation, February-March 2018.
[277] Consultation meeting with Agriculture Extension Punjab officials in October 2017.
[278] *Agricultural Extension Services in Pakistan: Challenges, Constraints and Ways forward. ibid.*
[279] *Agricultural Extension Services in Pakistan: Challenges, Constraints and Ways forward. ibid.*
[280] *Agricultural Extension Services in Pakistan: Challenges, Constraints and Ways forward. Ibid.*
[281] Consultation meeting with Agriculture Extension Punjab officials in October 2017.
[282] Consultation meeting with Agriculture Extension Punjab officials in October 2017.
[283] Consultation meeting with Agriculture Extension Punjab officials, October 2017.
[284] Personal communication with Punjab Government officials in February 2018.
[285] *Agricultural Extension Services in Pakistan: Challenges, Constraints and Ways forward. ibid.*

sampling and testing; fertilizer monitoring and testing; and, research trials.[286] The application has aided in creating an accurate record of field staff activities and reducing their time spent on departmental tasks – which comes at the expense of fieldwork – from 67 percent to 15 percent.[287] In Sindh, development of a similar service was explored under the Australia-Pakistan Agriculture Sector Linkages Programme.[288] Women continue to form a group distinct from men in the age of digitisation: (i) the rates of mobile phone ownership and literacy among women are considerably lower; (ii) female farmers need to connect with female extension workers capable of understanding their needs and communicating directly and openly; and, (iii) many rural women believe that mobile ownership is undesirable for them. Efforts of neither of the two provinces consider these aspects.

Under the name of m-Agriculture (or mAgri), major private telecommunication companies, such as Telenor and Mobilink, have launched consultancy and advisory services in collaboration with local governments. Telenor launched, *Khushal Zamindar*, a mobile information service on agriculture;[289] in Punjab, it distributed 125 000 smartphones to provide access to their mobile platform[290] with real-time information on market prices, new techniques, and weather forecasting.[291] The service of Mobilink, *Ba Khabbar Kisaan*, utilises interactive voice response technology and provides information on various topics – optimised cultivation methods, modern farming techniques, health, weather, crop insurance, and markets – and a platform for sales, in addition to a 24/7 helpline.[292] Despite the sophistication of services to be provided, none of them refer to information pertaining to agricultural tasks undertaken by female farmers; it may be a natural response to the fact that it is men who have the decision-making power. A study conducted in Sindh showed that slightly under half of farmers, who used the mobile-phone service for buying inputs and selling products, neither agreed nor disagreed as to whether the service expanded their market information.[293]

The field consultations revealed that the farmers are still exploring an effective use of these services.[294] Farmers who could sign their own names were rare among the 696 who participated in consultation meetings, and most women did not own mobile phones. Women in some villages were not allowed to, although they could borrow their husband's or children's when needed. It is unlikely that the mobile-phone services as described above can be used effectively by these women. A handful of male farmers who accessed m-Agriculture service answered affirmative to the question whether it was useful but did not volunteer to share information on how or whether they shared the information with other villagers without access. Spread of new information appeared certain only when a risk-taking farmer manages to demonstrate the improved results.

6.3.3: Livestock Extension Services – Punjab and Sindh

Considering the numerous responsibilities with respect to livestock that women shoulder as well as the fact that it is not acceptable for female farmers to interact with male outsiders, strengthening of female cadre in the field of livestock is nearly synonymous with strengthening of the sector, which is already contributing to nearly half of the total agricultural value added nationally.[295] However, the services for both women and men remain neglected, especially for women and more so than agriculture extension

[286] Punjab Information Technology Board, Government of the Punjab, undated. Modern Farmer Extension Services through Agrismart. https://www.pitb.gov.pk/agrismart (accessed 6 May 2018)
[287] Modern Farmer Extension Services through Agrismart. *ibid.*
[288] Fitzgerald, Robert *et al*., 2015. Mobile phone agriculture extension service models. *Dawn*, 16 November 2015. https://www.dawn.com/news/1219893 (accessed 6 May 2018)
[289] Baloch, Asma, 2016. m-Agriculture An emerging field to Revive Agriculture in Pakistan. *Phone World*. https://www.phoneworld.com.pk/m-agriculture-an-emerging-field-to-revive-agriculture-in-pakistan/ (accessed 6 May 2018)
[290] Telenor Group, 2016. Mobile agriculture service launched in Pakistan. https://www.telenor.com/mobile-agriculture-service-launched-in-pakistan/ (accessed 6 May 2018)
[291] Mobile agriculture service launched in Pakistan. *ibid.*
[292] Mobilink's mobile-based agricultural service launched to for Farmers across Pakistan. *ibid.*
[293] Chhachhar, Abdul Razaque, *et al*., 2017. Performance and Efforts Regarding Usage of Mobile Phones among Farmers for Agriculture knowledge. *Asian Social Science.*; Vol. 13, No. 8, 2017.
[294] Field consultation, February-March 2018.
[295] Amin, Humera *et al*., 2010. Gender and Development: Roles of Rural Women in Livestock Production in Pakistan. *Pakistan Journal of Agricultural Sciences*. Vol. 47(1), 32-36.

services.

In Punjabi districts, the animal-to-veterinarian ratios were over ten times more than what are considered acceptable internationally,[296] and the effectiveness of many Veterinary Hospitals was not up to the required levels in 2013.[297] According to the official data published by the Department of Livestock and Dairy Development, there existed 566 Veterinary Hospitals and 1 654 Veterinary Dispensaries in Punjab, where some 126 million animals received treatment, including vaccination and castration during 2014-15.[298] Comparable data for Sindh was not available.

The Livestock and Dairy Development officials for the Dera Ghazi Khan District of Punjab Province provide a contrasting picture of the sector.[299] Their recent activities include: farmer reach-out, vaccination in view of the emerging prevalence of *Haemorrhagic septicaemia* and other cattle diseases, advice on breeds and feed, and installation of a 24-hour helpline for farmers. They have established one Civil Veterinary Dispensary for each Union Council; seven female veterinarians in total are working for the Dispensaries. For each town, a Civil Veterinary Hospital has been established, and for each *kasba* (remote areas), one Civil Veterinary Centre. A 28-day training was given by veterinarians to female and male veterinary assistants, ten each, who in turn trained community members. Seven Mobile Veterinarian Dispensaries have been set up and are in service five days a week in the most remote villages. They acknowledged that more technical staff members are required for effective results.[300]

Aware of the mAgriculture trend, the Livestock and Dairy Development of Punjab is developing a mobile-based extension service in their domain. Recognising that mobile-phone initiatives to provide price, weather, crop advisories and such have had little impact on farm results, and reasoning that it may have been due to insufficiently localised information, the new service aims at establishing a crowd-sourced platform for aggregated, locally relevant and reliable information on farm inputs – including artificial inoculation – with the participation of distributed and part-time calling agents.[301] However, the prominent role of women in the dairy industry is not discussed in relation to this development.

6.3.4: Agricultural Credit – Punjab and Sindh

During 2013-14, a total of PKR 234 266 million (USD 2 015 million) of loans were generated in Punjab: about two-thirds by commercial banks, a quarter by one of the public banks specialising in agriculture, Zarai Taraqiati Bank, and the rest by agricultural cooperative societies.[302] Among the 78 279 farmers who were granted loans by the Bank in 2014-15, only ten were landless, the poorest farmers who are our targets. These financial institutions extend loans on guarantee and ability to repay, putting the poorest at the greatest disadvantage.[303] The same public bank disbursed PKR 12 522 million (USD 108 million) as

[296] *Livestock and Access to Markets Project – Design completion report: Main report and appendices. ibid.*
[297] *Enhancing Livestock Sector Export Competitiveness: Policy Recommendation Paper. ibid.*
[298] Bureau of Statistics, Planning and Development Department, undated. *Punjab Development Statistics 2016*. Government of the Punjab.
[299] Field consultation, February-March 2018.
[300] The training by veterinarians was given to 20 veterinarian assistants (10 male and 10 female) on feed improvement, vaccination schedule, milk products and other livestock management practices. The 28-day training included 13 days in the field. These groups in turn trained communities on vaccination, livestock management, nutritional benefits from dairy, etc. Initially it was meant for female veterinarian assistants, but male assistants were also trained; assistant couples were encouraged to participate. Twenty videos on capacity building and medicine were provided.
Under the Mobile Veterinarian Dispensary scheme, one veterinarian and two assistants provide veterinary extension services at the doorsteps of farmers in the most remote villages. Their visits are announced to the villagers beforehand.
Livestock and dairy development project using community facilitators was implemented. Resource persons were trained to look after their own village. Some 230 groups were formed, each group comprising of 20 people and covering 55 Union Councils (equal presentation by gender, but separate training was given to each gender).
[301] Coordinating Farmers with Cellphones: Technology Innovation in Livestock Extension Services in Pakistan. *ibid.*
Hasanain, Ali, 2016. Experience Pool: Crowd-souring farmer feedback about farm inputs' quality; *OpenIDEO*. https://challenges.openideo.com/challenge/agricultural-innovation/beneficiary-feedback/experience-pool-crowd-sourcing-farmer-feedback-about-the-quality-of-farm-inputs (accessed 6 May 2018)
[302] Bureau of Statistics, undated. 2016 Statistical Pocket Book of the Punjab. Lahore: Government of the Punjab.
[303] Pervaiz, Urooba, et al., 2011. Disbursement of Agricultural Loans, Constraints and It's Future Policy Implication. *Sarhad Journal of Agriculture.* Vol.27, No.2, 2011, 323-328.

loans during 2014-15 in Sindh, but no information is available on the amount of land owned by the farmers who took out loans.[304] The impact per monetary unit of credit is larger for smallholder farmers, but significantly less loans are extended to them than to large landowners.[305] Women's ability to obtain loans by themselves for agricultural production appears to depend on their association with community networks, but they are few and far between.[306]

Microfinance is much more widely available for poor farmers in both provinces.[307] In the second quarter of 2017, Punjab counted 2 417 fixed offices, 45 026 mobile offices, 3 874 304 active borrowers and gross loan portfolio of PKR 130 212 million (USD 1 120 million). For Sindh, the numbers were: 713 fixed offices, 16 676 mobile offices, 997 202 active borrowers and PKR 30 969 million (USD 266 million) gross loan portfolio. As for the number of borrowers and the amount borrowed nationwide, they were equally split between women and men. Nearly 90 percent in terms of active borrowers and gross loan portfolio amount concerned unsecured loans, indicating that the poor famers without collaterals were given the funds through microfinancing.[308]

The Connected Agriculture Platform Punjab (CAPP) program was launched in 2018: an initiative to integrate technological service provision and mobile loans to small farmers.[309] The Program aims to connect all stakeholders in the agriculture value chain, including agriculture extension workers.[310] During the first phase of the project, up to 110 000 mobile phones with the application will be disbursed, accompanied by 500 on-the-ground training sessions in 72 facilitation centres for 25 000 farmers across Punjab.[311] It is not known in what way and how many female farmers are to benefit from the programme, who are limited in ICT skills and whose access to credit is more constrained than men's.

6.3.5: Agricultural Insurance – Punjab and Sindh

During April-July 2017 in Punjab, 5 218 439 insurance policy holders were insured for the sum of PKR 134 827 million (USD 1 160 million), and in Sindh, 882 971 holders for PKR 25 781 million (USD 222 million).[312] As for insurance based on mobile technology, Telenor's CAPP does not include insurance, while Mobilink's *Ba Khabbar Kisaan* claims to provide crop insurance.[313]

6.3.6: Mobile Phones and the Internet – Punjab and Sindh

In 2010-11, Punjab and Sindh counted 62 million and 30 million mobile subscribers, 57 percent and 28 percent of the population, respectively.[314] About 17 percent of the women population in Punjab has ever used a computer, while the rate was 5.6 percent in Sindh. Regarding internet usage, 7.3 percent of the women population have ever used the internet in Punjab while in Sindh, the proportion was 2.7 percent.[315]

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[304] Bureau of Statistics, undated. Sindh Development Statistics 2016. Karachi: Government of Sindh.
[305] Kbandker, Shahidur R. and Faruqee, Rashidir, R., 2001. The Impact of Farm Credit in Pakistan. Policy Research Working Paper 2653. Washington D.C.: World Bank.
[306] Women farmers. *ibid*
[307] Pakistan Microfinance Network, 2017. *Microwatch: A Quarterly Update on Microfinance Outreach in Pakistan*. Issue 44, Quarter 2, April-June 2017.
[308] The most preferred institutions were MFBs (microfinance banks licensed and prudentially regulated by the State Bank of Pakistan to exclusively service microfinance market), followed by MFIs (microfinance institution providing specialized microfinance services), together claiming over 70% of active borrowers and 85% of gross loan portfolio amount. Eleven MFBs and 16 MFIs are operating in Pakistan. (*Microwatch: A Quarterly Update on Microfinance Outreach in Pakistan,* 2017)
[309] A fruit of collabouration among Punjab Information Technology Board, Telenor Pakistan and Telenor Microfinance Bank.
[310] Pakistan Telecommunication Authority, undated. *PTA Annual Report, 2017*. Islamabad: PTA.
[311] ProPakitani, 2018.Telenor Pakistan Launches Connected Agriculture Platform for Punjab https://propakistani.pk/2018/03/12/telenor-pakistan-launches-connected-agriculture-program-for-punjab/ (accessed 6 May 2018)
[312] *Microwatch: A Quarterly Update on Microfinance Outreach in Pakistan. ibid.*
[313] Mobilink's mobile-based agricultural service launched to for Farmers across Pakistan. ibid.
[314] Pakistan Telecommunication Authority, 2010. *PTA Annual Report, 2011*. Islamabad: PTA.
[315] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.

The young generation gives a strong prospect in this field. It is well known that mobile phone ownership is higher worldwide among younger women (15–34 years old) than older women (35 and older).[316] In Punjab in 2014, 21 percent of young women aged 15-24 used a computer during the last 12 months and 14 percent of the same group during the previous month.[317] As for internet use, the rate was 12 percent during the last 12 months. At the district level, only 9 percent of young women in Dera Ghazi Khan used a computer during the previous year, compared with 32 percent of women in Lahore District, [318] where the capital of Punjab is located.

6.3.7: Traditional Media – Punjab and Sindh

In Punjab in 2014, more than one-third of Punjabi women did not have regular exposure to newspaper, radio or television.[319] It is likely that many rural Punjabi women fall in the last category. In Sindh, the situation was similar; 70 percent of women either watched television, read a newspaper or magazine or listened to the radio at least once a week. [320]

6.4. Water Supply and Sanitation – Punjab and Sindh

6.4.1: Water Supply – **Punjab and Sindh**

The vast majority of the households in the targeted districts rely solely on groundwater from wells[321] for all uses: drinking and washing for people and livestock, as well as for cooking. Water sources are usually located at a distance that can be reached in about half an hour on foot, but each one is shared by many households; the entire task takes one hour or more if we include the time waiting in line to access the source and pumping the water. [322] The norm for water collection is twice a day, but also as the need arises.[323]

It is the responsibility of women and girls to fetch water, and some women and girls complain of headaches caused by carrying a heavy load on the head. [324] Men may be involved, if no other member in the household is available or an animal-driven cart is used for the job. [325] Water is not treated before use, and some villagers have identified it as the cause of diarrhoea, *stomach* pain and fever during summer.[326] In the entire Province of Sindh, 3 percent of households drink water contaminated by arsenic,[327] while 39 percent of households drink water contaminated by *E. coli*.[328]

6.4.2: Sanitation – **Punjab and Sindh**

A quarter of the population in rural Punjab does not have access to toilet facilities,[329] and about 35 percent of the total Sindh population are without access to improved sanitation facilities.[330] Unimproved sanitation methods mostly use open pits, open field, and buckets. Open drains do not fare better with respect to hygiene, as they typically discharge into nearby land depressions, streets, or water bodies.

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[316] *New Insights on Women's Mobile Phone Ownership. ibid.*
[317] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[318] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[319] *Multiple Indicator Cluster Survey, Punjab 2014, Final Report. Ibid.*
[320] *Multiple Indicator Cluster Survey, Sindh 2014, Final Report. Ibid.*
[321] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.
[322] Field consultation, February-March 2018.
[323] Field consultation, February-March 2018.
[324] Field consultation, February-March 2018.
[325] Field consultation, February-March 2018.
[326] The women reported that the problem is absent during winter.
[327] According to WHO, "[l]ong-term exposure to arsenic from drinking-water and food can cause cancer and skin lesions. It has also been associated with cardiovascular disease and diabetes. In utero and early childhood exposure has been linked to negative impacts on cognitive development and increased deaths in young adults." (Source: World Health Organization, 2017. Arsenic. http://www.who.int/en/news-room/fact-sheets/detail/arsenic - accessed 7 May 2018)
[328] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[329] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[330] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*

Women who participated in consultation meetings[331] voluntarily voiced their concern on sanitation, asking for aid in latrine construction and lamenting the lack of consideration among villagers who choose to defecate close to the houses of others. While it is an issue that does not merit discussion for men, women have a good reason to be interested; without safe toilet facilities, they are likely to be harassed, humiliated and assaulted by men.[332]

6.5. Health – Punjab and Sindh

According to a recent study, 41 percent of the poorest rural women in Sindh are malnourished, compared to 19 percent of the Nigerian counterparts, while the figures for the richest urban groups in the two countries are comparable;[333] the urban-rural gap is much more glaring for Sindhis in Pakistan than for Fulanis in Nigeria. Gender-disaggregated rates are not available, but they are most likely much higher for girls, due to food distribution being in favour of boys, and much more so for girls in rural areas, where traditional values persist.

Women suffer from: hand swelling, skin rash, and allergies from exposure to pesticides; and, finger cuts, body ache, hypertension and menstruation problems due to long hours of cotton-picking by hand without proper nutrition. In general, the employers provide no safety measures against chemicals; women wrap their scarves around their mouth to prevent excess inhalation.[334] Long hours in the fields leave rural women in Punjab and Sindh[335] little time for themselves and their children. It takes a toll on the women's health as well as on the children's,[336] and many children are stunted from malnutrition.[337] In Punjab, about one-third of children under five years of age were underweight and one-third were stunted (or short for their age) in 2014.[338] In Sindh, 42 percent of the same age group were underweight, 17 percent severely underweight, nearly half stunted and 24 percent severely stunted.[339] Approximately one-fifth of the same group in Punjab[340] and 15 percent in Sindh were wasted (or thin for their height).[341] The data disaggregated by wealth in Punjab showed that nearly half of the children living in the households in the lowest quintile were stunted and nearly half were underweight, compared to 17 percent for stunting and underweight in the highest quintile.[342] Malnutrition is most evident physically, but is also deeply connected to the mental development of children. The villagers reported that the LHVs visit only for polio vaccination.[343]

The majority of rural Punjabi households used solid fuel in 2014: all of the lowest-quintile and 4 percent of the highest-quintile households.[344] The situation is quite similar in Sindh: the quintile-based rates for Sindh were nearly 100 percent and 2 percent, respectively.[345]

6.6. Coping with Negative Shocks – Punjab and Sindh

Climate change prominently features in the minds of both male and female farmers, manifested as higher temperature, growing water scarcity, increasingly irregular and unfamiliar rain patterns, failure in cotton

[331] Field consultation, February-March 2018.
[332] Toilets keep women and girls healthy and safe. *ibid.*
[333] *Turning Promises into Action: Gender Equality in the 2030 Agenda for Sustainable Development*. *ibid.*
[334] Field Consultation, February – March 2018.
[335] In Sindh, more than 500,000 farmers work in cotton picking, majority of which are women. (Source: Call for recognizing women's role in Sindh agriculture. *Dawn*, 17 December 2014. https://www.dawn.com/news/1151239 - accessed 10 April 2018).
[336] Call for recognising women's role in Sindh agriculture. *ibid.*
[337] In Sindh, it is as high as 44% (Call for recognizing women's role in Sindh agriculture, 2014).
[338] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[339] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[340] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[341] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*
[342] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[343] Field consultation, February-March 2018.
[344] *Multiple Indicator Cluster Survey 2014, Punjab Final Report. ibid.*
[345] *Multiple Indicator Cluster Survey 2014, Sindh Final Report. ibid.*

ball formation, and increase of certain insects.[346] The farmers have noticed an exacerbation of waterlogging and salinity, which had been serious problems even before the onset of climate change.[347] Riverside villages are more prone to floods than before, but do not have any strategy than to flee to elevated grounds when they occur. [348]

Regional variation was reported in what constituted the major shocks in two years prior to 2012.[349] Medical expenses were the most important in Punjab (43%), followed by wedding costs (10%) and cut-off or decrease in regular remittances (3%). Floods caused loss or damage of houses to less than 3 percent of households. In Sindh, flood related shocks were considerable; lost or damaged home due to a flood (28%), loss or destruction of consumption items due to a flood (19%), and significant loss of crops due to a flood (13%). Medical expenses were regarded major shocks by 16 percent of households, and weddings by only 1 percent. As described above, more than half of the poorest households did not have any strategy to cope with floods.

7. Project Formulation and Implementation Principles

7.1. Risks and Opportunities for Farmers Facing Climate Change

Rural women constitute the most vulnerable segment of the Pakistani society; they have the least physical, human and social capital to cope with negative external shocks, such as climate change. As with any undesirable disturbance to society, climate change will widen the gap between the non-privileged and the privileged, most notably rural women and the rest, and push back any progress made with respect to human development and gender equality in the country, both of which are currently at unsatisfactory levels.

Climate change has already negatively affected water resources and agriculture and led to an increase in natural disasters that force people to evacuate in a short notice, such as floods. If the society as a whole is segregated, but the disaster shelters are not, disasters pose greater physical risks for women. If men, who tend to have more physical strength than women, are only interested in saving large livestock from floods but not the small animals owned by women, disasters pose greater financial risks for women. Empowerment of women would mitigate such risks.

As is often put, agriculture is the backbone of the national economy, and about half of the value-added in the sector is livestock derived. Nearly all of the responsibilities of livestock management fall on women, but they are without decision-making power. Simply from the production-efficiency point of view, allowing women to make decisions on livestock makes sense, as it does in terms of food and nutritional security since dairy and poultry products complement the grains. Moreover, livestock serves as assets and cash sources, smoothing the income fluctuations caused by crop-cycles and disasters, and thereby providing financial security to households. In sustainable agriculture, livestock management is more than often integrated with crop cultivation.

Vegetable cultivation is another task that is considered women's. If many more female farmers take up the practice, it will benefit the entire households' food and nutritional security. In general, women farmers are much more open than men to activities that are new and not linked to power; they provide a valuable and ready entry point for diversification, which is one of the key elements in climate-change resilience.

[346] Field consultation, February-March 2018.
[347] Field consultation, February-March 2018.
[348] Field consultation, February-March 2018.
[349] *Pakistan Rural Household Panel Survey 2012 (Round 1) - Household Characteristics. ibid.*

Women's social participation and networks are important in creating a women's voice that will be heard. The Women Open Schools under this project will not only serve as sources of agricultural information, but opportunities to meet other women and establish networks.

The cultural norm that appears accepted by many, including rural women, is that they refrain from mobile phone use. On the other hand, young women have higher rates of literacy and ownership of mobile phones than older women. By giving due attention to female youth, we would be able to transform them into catalysts of change and retain them in the rural areas for agriculture, on which the country heavily depends.

7.2. Principles of Project Formulation

7.2.1: Strengthening Female Technical Community

The number of female professionals is limited in disciplines that have traditionally been considered masculine, such as irrigation, land and water management, climatology, information technology, agriculture sciences, and animal and veterinary sciences. The project will engage female professionals wherever possible, and at the same time, train female university students majoring in the above subjects so that they are better prepared for their career development. The proportion of female students in these fields is increasing, providing an excellent opportunity to strengthen the female technical community in Pakistan.

7.2.2: Leveraging Gender-Differentiated Tasks and Interests

Women and men are largely engaged in different tasks, and women are more willing to take up new practices. They also have stronger interests in food and nutritional security. The project will leverage these differences to introduce new agricultural products for diversification and for food and nutritional security, both of which will boost resilience to climate change and improve the health of all household members. Most importantly, children's health and development, in which balanced nutrition plays a critical role, will be positively affected.

7.2.3: Women's Participation in Coping with Negative Shocks

The poorest households lack viable means to cope with shocks that climate change has brought about. The project's goal to increase their resilience to climate change is precisely endowing them with a long-term strategy to cope with the shocks. The project will help women acquire the capacity to increase food available to each household by means of kitchen gardens and livestock rearing and to minimise the risk of having to consume less expensive food items or to eat less altogether. If the products yield cash income, it would supplement finances required for the reconstruction and repair of damages caused by floods. In addition, endowing women with the ability to bring cash home is considered the surest way to empower them.

7.2.4: Sowing Seeds for Women's Networks

Rural women face a big challenge in obtaining information, financial assistance and other resources as well as opportunities. One of the important factors in this equation is the lack of social networks; they greatly facilitate access to many kinds of resources. The project will establish Women Open Schools not only for technical information, but also as a base for networks that connect women farmers.

7.2.5: Assisting Women in Initial Investment

The lack of access to financial resources by women poses a great obstacle to picking up climate resilient agriculture, which includes vegetable production and animal raising. The project will aid in lowering the barrier by providing seed packets, small ruminants and poultry through Women Open Schools where they learn how to grow vegetables and raise and care small animals. This assistance will free women, who

receive the material for starting a new venture, from the need to borrow from commercial lenders in the informal sector, at least in connection with the new activities; the association with them is often linked to perpetuating poverty.

7.2.6: Tackling the Value Chain

No agricultural product or method is of great economic value without a value chain that accommodates it; all stakeholders from policy makers, input suppliers to landowners and so on need to be involved for the successful introduction of new agricultural methodologies and products. In mainstreaming climate policy across all policy areas, the importance of gender- and age-disaggregated data will be stressed. Landowners and farm managers will be targeted for activities to raise awareness on gender and climate resilient agriculture. Training for financial-risk evaluation officers and any other conducted by the project will include gender awareness as a topic.

7.2.7: Improving Women's Access to Information

Women do not have good access to information and information technology, and despite the inclusion of the topic gender in various policies, new initiatives are launched without the consideration of gender, especially of rural women's strengths and constraints. The project will raise awareness among policy makers and community-support professionals on women's access to information: its importance and the need for its improvement. Radio broadcasting on climate resilient agriculture will consider rural women as an important audience and produce programs that specifically target them. The establishment of female farmers' networks would also contribute to improving women's access to information.

7.2.8: Creating a Niche for Young Women

Focusing on the considerable contribution of rural women to the livestock sector, the project will train young women on improving livestock management in Women Open Schools. The project will also focus on their higher literacy, conventional and technical, and build their capacity in assisting older female farmers in utilising mobile-phone based information services. This activity will strengthen the information access of female farmers of all ages.

7.2.9: Improving Health of Girls

The empowerment of women under this project will enhance the nutritional security of women and girls; the stunting of children that prevails in the region will be reduced, and girls will be equipped with better prospects for life.

7.3. Principles of Project Implementation

7.3.1: Practical aspects of Female Farmers' Lives

The project will pay attention to the practical aspects of female famers' lives, such as their workload, restricted mobility, and vulnerability related to age. The training sessions will be organised during off season for cash crops and at the village of residence or fairly close by, especially for young women considering their high vulnerability. For older female farmers, the location will be chosen to be as close as possible to their residence, and in case they need to travel, a transportation fee will be provided for a male relative to accompany.

7.3.2: Effective Communication Methods

The vast majority of targeted women are illiterate and do not own mobile phones. Thus, the knowledge and skills will be transmitted through a female version of the Farmer Field School (Women Open School or WOS), which employs a participatory, adult learning methodology. Women from the villages not directly targeted by the project will be invited to visit nearby WOS sites for inspiration and learning by

observation and by chatting with fellow female farmers: WOS Open Days. The project will also invite female farmers, regardless of their involvement in WOS, to participate in Field Day activities, which will be organised around demonstration plots. Radio programmes (rather than television shows or podcasts) and videos (to be shown at the WOSs) will be used to raise their awareness.

7.3.3: Network Creation

Female extension workers – agriculture and livestock – will be involved whenever possible in activities for women farmers so as to create communication channels beyond their villages by utilising their mobility among villages and acting as messengers; the networks will eventually help in obtaining bargaining power in formal negotiations, pooling resources, and providing a base for bartering and information exchange.

7.3.4: Promotion of Mutual Understanding

The knowledge products produced for male farmers will be examined by female farmers and *vice versa* so that the two groups deepen their understanding of all activities in the field. The mutual understanding will avoid new activities of one group inconveniencing the other's and will raise overall productivity. It will provide a better understanding of pesticides, which is applied by men but whose toxic effects are felt mainly by women through prolonged exposure, for example, during cotton picking.

7.3.5: Monitoring and Evaluation

The monitoring and evaluation team will include a female gender and nutrition specialist who will ensure that the women farmers have the opportunity to report their own observations and frank opinions. The project will collect gender- and age-disaggregated data in connection with interventions for systematic use in analysis and reporting of project results.

7.4. Beneficiaries of the Project

Component 1 Establishment of Agriculture and Water Management Information Services for Resilience to Climate Change will directly benefit the government officials who are in charge of water resource management, agriculture and climate. Taking into account that there are next to no female government officials dealing with these issues, the project will train female university students, majoring in the related technical fields, on the systems to be developed and background science; we will initiate the long-term process of strengthening the presence and contribution of female professionals in the country.

Component 2 Building on-Farm Resilience to Climate Change will target female farmers through Women Open Schools and Climate and Business Field Schools, who will gain knowledge and skills in climate resilient agriculture, weather, soil characteristics plant development, costs and yield, farm management and marketing skills, numeracy and financial literacy. Seed packets, small ruminants and poultry will be distributed through the Schools; the project will shoulder the initial investment necessary for launching new economic activities. Women from villages not targeted by the project will be invited to visit the School farm sites for information dissemination by seeing-is-believing. Awareness raising on gender and climate resilient agriculture will be organised for landowners, farm managers, and financial-risk evaluation officers. The beneficiaries of these activities are female farmers in the rural areas, who will be empowered technically, economically and socially and will enjoy a social environment more tuned to their needs. Women empowerment will also allow true progress of the society and ultimately benefit men.

Under Component 3 Creating an Enabling Environment for Continued Transformation, young women will be the direct beneficiaries. They will be trained on assistance regarding mobile-phone based services, such as weather forecasts, early warning, and agriculture advice. The purpose of the training is to create agents who can relay the mobile information to older female farmers; the entire female farmer community will benefit. Another training targeting young women will be on livestock management, a major activity for rural women and for the national economy.

8. Field Consultation: Questions and Partners

8.1. Consultation Questions

The questions in this Section were used to identify the key issues in the lives of female farmers. Then literature search was conducted to further assess these issues in detail; the results are summarized in Sections 5 and 6. The assessment led to identification of risks and opportunities for female farmers facing climate change, and contributed to project formulation, establishment of implementation modalities and specifying beneficiaries (see Section 7).

The closer the institutions were involved with the farmers on the ground, the more they were convinced out of experience that it was a must to involve female farmers and implement gender-responsive activities for a project to succeed. They did not seem to have a systematic approach for tackling the issue, however.

Female farmers were involved in tasks that do not require muscle power or use of machinery. They were mainly responsible for work that required time and dexterity. As for livestock, they were in charge of the bulk of work related to large animals which were considered men's possessions. They also took entire care of animals considered women's, such as poultry and small ruminants. Their wages were understood to be lower than men's accomplishing the same work; it was not possible to verify this claim as work is gender segregated. Women usually handed the cash that they earned to men and trusted that men made wise financial decisions that benefitted the whole family.

Women were aware of climate change impacts, such as higher temperature and growing scarcity of water. They were also more interested than men in health, water and sanitation issues, directing the discussion voluntarily in that direction. The male farmers consulted did not speak on similar topics, except for baby delivery in the poorest Hindu village.

Access to education was positively related to the income level of village, which in turn appeared linked to proximity to urban centres. In general, women had much less access to information than men, while some widows were empowered and had as much access as men.

8.1.1: Core Consultation Questions for Institutions

- How has climate change affected your work?
- What do you think about the gender issue in relation to your work?
- What are the actions taken to incentivise female farmer participation in training?
- What is the number of female professionals at your institution?
- Why is the number of female professionals at your institution low?
- How are female professionals encouraged to work for the institution?

8.1.2: Core Consultation Questions for Female Farmers

- What are the main crops grown and women's involvement in different stages of crop production
- What type of animals do you keep?
- Who owns which animals?
- How has the farming situation changed in the past few years?
- Which everyday tasks are performed by men? By women?
- Do children attend school? How far is the nearest school?
- How far is the drinking-water source? Whose responsibility is it to fetch water? How many times a day?
- How is the condition of drinking water? Has it affected health?

- Do you treat water before drinking?
- How far is the nearest health care facility?
- What is the situation of sanitation in the village?
- Who sells agricultural and livestock products?
- Who keeps the cash income?
- Who makes the decisions on spending?
- Are you engaged in vegetable cultivation?
- Do you have a mobile phone?

8.2. Consultation Partners

8.2.1 Farmer Consultations

Date	Province	District	Union Council	Village	Consultation Type	Participants	
						Female	Male
12 October 2017	Punjab	Multan	Band Bosan	Sanbhal	Villagers, *not* segregated by gender	30	35
13 October 2017		Vehari	No. 10	Chak-206/E-B	Male members of Farmers' Integrated Development Association (local CBO)	0	32
					Female members of Farmers' Integrated Development Association	27	0
18 October 2017	Sindh	Hyderabad	Choudry Nizam Udin	Choudry Nizam Udin	Male villagers	30	0
					Female villagers	0	25
27 February 2018	Punjab	Lodran	49M	17MPR Tarbela Chak	Male villagers	0	40
				46M	Female villagers	30	0
			35M	26M	Villagers of a Christian minority village, *not* segregated by gender	26	32
28 February 2018		Muzaffargarh	Chak Farazi	Azizabad	Male villagers of Christian minority village	0	10
					Female villagers of Christian minority village	10	0
				Maqsoodpur	Male villagers of Shia minority village	12	0
					Female villagers of Shia minority village	0	12
1 March 2018		Dera Ghazi Khan	Peagah	Balouch Wala	Male villagers	0	20
				Basti Changwani	Female villagers	15	0
2 March 2018		Khanewal	98/10R	Chak 167/10R	Male villagers	0	42
					Female villagers	6	0
					Christian minority villagers	3	2
6 March 2018	Sindh	Sanghar	Pir Fakeer	Daim Thahim	Male villagers	0	18
					Female villagers	15	0
					Hindu minority female villagers with a male representative	20	1
7 March 2018		Umerkot	Walidad Pali	Walidad Pali	Male villagers	0	31
					Female villagers	48	0
					Hindu minority female villagers	24	0
8 March 2018		Badin	Qaziah Wah	Ibrahim Junego	Male villagers	0	24
					Female villagers	24	0
			Ado Kohli	Quazia Wah	Hindu minority male villagers	0	24
					Hindu minority female villagers	28	0

8.2.2 Other Consultations

Date	Province	Institution		Persons Consulted
		Name	Description	
9 October 2017	Islamabad	International Food Policy Research Institute	International agricultural research centre	Stephen Davies (Senior Research Fellow), Abdul Wajid Rana (Program Leader)
		Pakistan Agricultural Research Council (PARC) and National Agricultural Research Council (NARC)	PARC – apex agriculture research organization at the national level. NARC – a research centre under PARC	Muhammad Azeem Khan (Director General, NARC), Anjum Ali Butt (Member, Crop Sciences, PARC)
11 October 2017	Punjab	Agriculture Extension Wing	Part of the Government of Punjab, Department of Agriculture	Zafaryab Haider (Director General)
		Department of On Farm Water Management	Part of the Government of Punjab	Malik Muhammad Akram (Director General)
		Irrigation Research Institute	Part of the Government of Punjab, Department of Irrigation	Ghulam Zakir Hassan Sial (Director)
		Classic Agro Farm	Private farm aiming for climate resilience	Muhammad Fiaz (Farmer)
		Chatta Farm	Private farm experimenting on direct planting of rice	Amjad Hussain Chattah (Farmer)
13 October 2017		Haveli Canal System, District of Multan	Part of the Government of Punjab, Department of Irrigation	Tahir Anjum Qureshi (Superintendent Engineer)
		Agriculture Extension Wing, District of Multan	Part of the Government of Punjab, Department of Agriculture	Rana Munir Ahmad (Director, Agriculture Extension)
17 October 2017	Sindh	Agriculture Extension Services	Part of the Government of Sindh, Department of Agriculture	Hidyatullah Chajro (Director General) Ghulam Mustafa Nangraj (Senior Communication Specialist) Touqeer Ahmad Sheikh (Senior Extension Specialist,)
		Department of Irrigation	Part of the Government of Sindh	Dhanomal (Chief Engineer)
27 February 2018	Punjab	Lodhran Pilot Project	Local NGO for poverty reduction in Lodhran District	Nadeem Abbas (Senior Manager), Nayab Gill (Communication Officer), Sadja Perveen (Social Organizer), Baqir Ali (Social Organizer), Ijaz Ul Haq (Social Organizer)

1 March 2018		Department of On Farm Water Management, District of Dera Ghazi Khan	Part of the Government of Punjab	Anwar-ul-Haq Shahzad (Director Agriculture, On Farm Water Management), Khadim Hussain (Deputy Director, On Farm Water Management), Saifur Rehamn (former Director, On Farm Water Management)
		Department of Livestock and Dairy Development, District of Dera Ghazi Khan	Part of the Government of Punjab	Nadeem Arshad (Assistant Director-HQ), Mohammad Arif Rizwan (Veterinary Officer), Amir Mehmood (Assistant Director, Technical).
		Agriculture Extension Wing, District of Dera Ghazi Khan	Part of the Government of Punjab, Department of Agriculture	Abid Hussain (Deputy Director, Agriculture Extension), Shahid Muneer (Agriculture Officer)
		Department of On Farm Water Management, District of Multan	Part of the Government of Punjab	Zaffar Ullah Sindhu (Director, Agriculture On-Farm Water Management)
		Agriculture Extension Wing, District of Multan	Part of the Government of Punjab, Department of Agriculture	Chodrey Niaz Ahmad (Deputy Director, Agriculture Extension)
		Environmental Protection Agency, District of Multan	Part of the Government of Punjab, Department of Environment Protection	Ishaq Ahmed (Inspector)
3 March 2018		World Wildlife Fund Lodhran Pilot Project, Farmers' Development Organization, Al-Mustafa Development Organization, Concern Worldwide	International and local NGOs	Muhammad Ifran (CRCP Project Coordinator, WWF), Habib Ahmed (Director of Implementation, Lodhran Pilot Project), Ali Azhar (M&E Coordinator, Farmers' Development Organization), Gurtiaz Naqni (President, Al-Mustafa Development Organization), Khan Zada (Livelihood Consultant, Concern Worldwide)
5 March 2018	Sindh	Sindh Forest Department	Part of the Government of Sindh	Abdul Sattar Kahtri (Conservator), Abid Hussain Rind (Divisional Forest Officer)
7 March 2018		UNDP Small Grants Programme		Masood Ahmed Lohar (National Programme Manager), Sajida Sultana (PhD Candidate & Research

				Assistant, Univerity of Waterloo)
12 March 2018	Islamabad	Stakeholder meeting with Potohar Organization for Development Advocacy (PODA), National Agriculture Research Council (NARC), Ministry of Climate Change (MOCC), International Union for Conservation of Nature (IUCN), National Rural Support Program (NRSP), International Labour Organization (ILO), Hashoo Foundation Pakistan Poverty Alleviation Fund (PPAF)	Ministries, international NGOs, national NGOs for poverty reduction, UN agencies	Aftab Alam (Board Member, PODA), Noshaba Arif (PODA), Beenish Ibrahim (PODA), Yousuf Riaz (Principal Scientific Officer, NARC), Ghuulam Akbar (NARC) Mohammad Ibrahim Khan (REDD+ Officer, MOCC) Rizwan Arshad (Deputy Director, MOCC), Fauzia Malik (Manager of Islamabad Office, IUCN), Salma Khalid (Project Manager – Gender, NRSP), Naseem Khalid (Project Officer, ILO), Umama Binte Azhar (Deputy Manager-Environment & Climate Change, Hashoo Foundation), Sania Liaqat (PPAF)