



Technology in Action: Good Practices in Science, Technology and Innovation Policies for Women in South Asia



UNCTAD CURRENT STUDIES ON SCIENCE, TECHNOLOGY AND INNOVATION. N°12





Technology in Action: Good Practices in Science, Technology and Innovation Policies for Women in South Asia



UNCTAD CURRENT STUDIES ON SCIENCE, TECHNOLOGY AND INNOVATION. N°12



Note

The United Nations Conference on Trade and Development (UNCTAD) serves as the lead entity within the United Nations Secretariat for matters related to science and technology as part of its work on the integrated treatment of trade and development, investment and finance. The current UNCTAD work programme is based on the mandates set at quadrennial conferences, as well as on the decisions of the General Assembly of the United Nations and the United Nations Economic and Social Council that draw upon the recommendations of the United Nations Commission on Science and Technology for Development (CSTD), which is served by the UNCTAD secretariat. UNCTAD's work programme is built on its three pillars of research analysis, consensus building and technical cooperation, and is carried out through intergovernmental deliberations, research and analysis, technical assistance activities, seminars, workshops and conferences.

Pursuant to the mandate of the Economic and Social Council in its resolution 2011/17, this new series of publications elaborated by the CSTD aims to provide a forum, in collaboration with its Gender Advisory Board (GAB), to share good practice examples and lessons learned in integrating a gender perspective in science, technology and innovation policymaking and implementation.

The term country as used in this study also refers, as appropriate, to territories or areas. The designations of country groups are intended solely for statistical or analytical convenience and do not necessarily express a judgement about the stage of development reached by a particular country or area in the development process. Mention of any firm, organization or policy does not imply endorsement by the United Nations.

The designations employed and the presentation of the material do not imply the expression of any opinion on the part of the United Nations concerning the legal status of any country, territory, city or area, or of authorities or concerning the delimitation of its frontiers or boundaries.

Material in this publication may be freely quoted or reprinted, but acknowledgement is requested, together with a copy of the publication containing the quotation or reprint to be sent to the UNCTAD secretariat.

Reference to dollars (\$) means United States of America dollars.

UNCTAD/DTL/STICT/2013/3

Acknowledgements

This report was prepared by Claudia Contreras under the supervision of Padmashree Gehl Sampath, and the direction of Anne Miroux, Director of the Division on Technology and Logistics.

Valuable comments and feedback were provided at various stages of preparation from Arun Jacob, Jason Munyan, Tansug OK and Mesut Saygili.

Nadège Hadjémian designed the cover and Deniz Barki edited the report.

Table of Contents

Acknowledgements.....	iii
Abbreviations and acronyms.....	vi
1. Introduction.....	1
2. Gender disparities in South Asia.....	3
2.1. Gender disparities in health and survival.....	4
2.1.1. Women and nutrition.....	6
2.2. Gender disparities in literacy and education.....	7
2.3. Gender disparities in labour force participation and quality of work.....	10
2.3.1. Women in informal markets.....	12
2.3.2. Women and empowerment.....	12
3. Good practices in STI policies for women.....	14
3.1. STI to improve the livelihoods of women.....	15
3.2. STI as complementary tools for the development of skills.....	20
3.3. Financial innovations: Microcredit and creation of entrepreneurial skills.....	21
Bibliography.....	26

Tables

Figure 1: Comparison of 1990 and 2010 MMRs (maternal death per 100,000 live births) in countries in South Asia and selected developing regions	5
Figure 2: Mortality rate, girls and boys under five years of age (per 1,000 live births), 1990–2010	6
Figure 3: Literacy rate, adult women and men (percentage of men and women ages 15 and above), 2000 and 2011	7
Table 1. Primary, secondary and tertiary education enrolment rates, girls and boys, 1998 and 2012.....	9
Figure 4: Labour force, women, 2000–2011 (proportion of total labour force)	10
Table 2. Distribution of total employment by sector of employment (percentage) by gender, 2009.....	12
Figure 5: Women legislators, senior officials and managers (percentage of total)	13

Boxes

Box 1. Afghanistan: Dairy goat-related technologies	16
Box 2. Bhutan: Off grid power generation and technical knowledge to women in rural villages.....	18
Box 3. Nepal: Training women farmers in new products and techniques	19
Box 4. Sri Lanka: Secondary towns and rural community-based water supply and sanitation	20
Box 5. Bangladesh: Aponjon (mHealth)	21
Box 6. Pakistan: Mobile-based post-literacy programme (mobile telephones as tools for illiterate women).....	22
Box 7. India: Mobile ICT for rural women	23
Box 8. Islamic Republic of Iran: Microcredit – the experience of the Agricultural Bank.....	24

Abbreviations and acronyms

ADB	Asian Development Bank
DESA	United Nations Department of Economic and Social Affairs
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
GII	gender inequality index
ICT	Information and communications technology
ICRW	International Centre for Research on Women
IER	Information Economy Report
IFAD	International Fund for Agricultural Development
ILO	International Labour Organization
MDG	Millennium Development Goal
MMR	maternal mortality ratio
NGOs	non-governmental organizations
OECD	Organization for Economic Cooperation and Development
RMFSP	Rural Microfinance Support Project
SEWA	Self Employed Women's Association
SGs	Solidarity groups
SIGI	social institutions and gender index
SMEs	small and medium-sized enterprises
STI	science, technology and innovation
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UN-Women	United Nations Entity for Gender Equality and the Empowerment of Women
WEF	World Economic Forum
WHO	World Health Organization

1. Introduction

Women do not enjoy the same opportunities in any society (UNESCO, 2003). They work longer hours and are paid less; and girls' life choices are more restricted than boys' (UNESCO, 2003:3). This discrimination spans the world and affects not only access to resources but also related social institutions such as family codes, civil liberties and ownership rights (OECD, 2010). As mentioned by the United Nations Conference on Trade and Development (UNCTAD), empowerment and informed choice are critical for gender equality and human development (UNCTAD, 2011a). Indeed, gender equality and women's empowerment constitute a Millennium Development Goal (MDG) themselves and are also important in terms of reaching the rest of the MDGs (UNCTAD, 2011a and UNDP, 2005). In addition, gender equality and women's empowerment are important for sustainable development and the progress of countries (World Bank, 2012a and WEF, 2012) and for achieving an inclusive and people-centred development, which is a priority of the post-2015 development agenda (UNDESA, 2012 and United Nations, 2013a).¹

Gender equality can also provide a range of economic and social multiplier effects (UN-Women, 2009). For instance, some of the outcomes of increasing gender equality are the enhancement of women's ability to increase the productivity of their livelihoods and allocate the saved time and energy to invest in their own personal development, in their children's health and education and in participation in community activities (UN-Women, 2009). At the same time, reducing

the gender divide in access and control of resources strengthens the pool of labour and talent of economies and increases national productivity (UN-Women, 2009). Studies considering long-term periods have found that women's access to resources such as education, paid work, credit, land technology and other productive assets has strong positive effects on child survival, welfare and education than resources in men's hands (Quisumbing and Maluccio, 2000).

Improving women's absolute and relative status also contributes to other development outcomes, including those of their children. In addition, providing equal access to opportunities for women and men to become socially and politically active may contribute to more representative institutions and policy choices and thus to a better development path (World Bank, 2012a).

In the last decades, the world has achieved significant progress in enhancing gender equality in several areas. For instance, in many countries there have been important advances in reducing the gender gap in education not only at primary but also at secondary and tertiary levels. Indeed, in many countries, the gender divide is actually reversing at tertiary levels, with young men at a relative disadvantage (World Bank, 2012a). There have also been advances in terms of women's participation in the labour force, whose growth has expanded women's economic opportunities. This progress has been largely explained by the evolution in the interaction between households, markets and institutions (World Bank, 2012a). However, there are many dimensions in which the enhancement of gender equality has been very slow if not non-existent (World Bank, 2012a). Some of these areas are the health and mortality of girls and women, segregation in economic activities, gender gaps in earning, responsibilities for the home and care work, ownership of assets and women's agency in public and private spheres (World Bank, 2012a:13).

¹ Gender equality refers to the equal rights, responsibilities and opportunities of women and men and girls and boys (OSAGI, 2001). This does not mean that women and men will become the same. It means that their rights, responsibilities and opportunities will not depend on their gender at birth (OSAGI, 2001). Gender equality implies that all men and women are free to develop their personal abilities and make life choices without the limitations set by stereotypes or prejudices about gender roles or the characteristics of men and women (ILO, 2007:91).

Science, technology and innovation (STI) have the potential to improve the livelihoods and development of women (UNCTAD, 2011a). In particular, the improvement of women's access to technologies has the potential to spur their economic development and foster broader economic growth (ICRW, 2010). There is growing international recognition of the potential of STI to contribute to improve quality of life and the socioeconomic and environmental situations of countries, as well as to address internationally agreed development goals (UNESCO, 2007 and UNCTAD, 2011a). The rapid pace of STI advances presents great potential to improve the lives of people from developed and developing countries, yet despite some advances the benefits of science and technology have only reached part of the world's population (UNESCO, 2007). Consequently there is important potential for STI to contribute to reducing the gender divide.

This publication is the first in a new series launched by UNCTAD to explore and share good policies that can contribute to the improvement of the lives and livelihoods of women through STI. This new initiative undertaken by UNCTAD is designed based upon the findings and lessons learned from the UNCTAD publication *Applying a Gender Lens to Science, Technology and Innovation*, published in 2011 as part of the Current Studies on Science, Technology and Innovation series.²

This publication is focused on policies and initiatives carried out in countries in

South Asia that show how STI can help the condition of women in this region.³ Focusing the analysis on regional levels allows for the consideration of existing commonalities across countries in different geographical regions in relation to gender equality and the different circumstances across and within countries.

This report was elaborated based on a comprehensive analysis of secondary literature on programmes and policies on gender, STI and other sectors conducted in the region by local governments in collaboration with international agencies and other organizations. The experiences presented in this report show that STI policies usually contribute to improving the livelihoods of women and enhancing gender equality through the following mechanisms: introducing and diffusing technological and scientific developments that improve the life of women; creating and strengthening, both directly and indirectly, capacities related to STI; and introducing financial innovations such as microcredit and related skills for entrepreneurs.

Following this introduction, this report is structured as follows: Chapter 2 discusses the nature of gender disparities in South Asia and analyses the current situation and the main challenges in this region in terms of the gender divide; chapter 3 presents a compilation of STI policies and initiatives implemented in this region aimed at improving the situation of women; and chapter 4 presents the main conclusions from the analysis.

² See http://unctad.org/en/docs/dtlstict2011d5_en.pdf.

³ The countries considered in this study are the following: Afghanistan; Bangladesh; Bhutan; India; the Islamic Republic of Iran; Maldives; Nepal; Pakistan; and Sri Lanka.

2. Gender disparities in South Asia

South Asia has a combined population of 1.7 billion people and, in 2011, had a gross domestic product (GDP) per capita of \$1,640. The latest estimations indicate that 36 per cent of people in South Asia live on less than \$1.25 (purchasing power parity). According to the World Bank, this region has one of the highest gender inequality in the world and is home to 44 per cent of the developing world's poor (World Bank, 2013b).⁴ Of the total population of this region, 67.4 per cent live in rural areas, which is also where the largest proportion of poverty is concentrated.⁵

Although this region has experienced important economic growth, with an average GDP growth of 7.1 per cent in the period 2001–2010, and has made important advances in terms of gender equality, especially in access by girls to primary education, it is still a region that faces important challenges in this area.⁶ This gender divide is reflected in the poor performance of this region in the international rankings that measure gender equality across countries and regions such as the gender inequality index (GII) constructed by the United Nations Development Programme and the social institutions and gender index (SIGI) elaborated by the Organization for Economic Cooperation and Development (OECD), which measures the social institutions that produce gender inequalities (OECD, 2010).

When analysing the characteristics of the gender divide it is important to acknowledge that it does not exist in isolation but is influenced by the cultural, social and religious dimensions of the countries. In this region, the gender divide interacts not only with the socioeconomic characteristics of the region but also with cultural and traditional

views of the society and religion. In South Asia, women face multiple constraints to exercising their agency, including social norms and legal factors. These interact with other social, cultural and religious dimensions, which result in women's restricted economic participation, social exclusion and limited rights, especially in the areas of land and inheritance rights, family law and child custody practices (Solotaroff et al., 2012 and UN-Women, 2009).⁷ Although levels and patterns of women's autonomy vary within the region, the cultures of South Asia are largely gender stratified. That is, they are characterized by the practice of women's seclusion, patrilineal principles of descent and inheritance, patrilocal principles of marriage, strict patriarchal structures within the family, succession and inheritance practices that exclude women and hierarchical relations in which the patriarch or his relatives have authority over family members (Kabeer and Mahmud, 2004 and Sudarshan, 2010). These social norms and legal constraints have largely framed women's agency in the region. These cultural patterns limit the mobility of women and consequently reduce their options in terms of occupational alternatives. The patriarchal characteristics of this region have often excluded women from family decision-making, limited women's access to and control of resources, restrained women's freedom of movement and caused women to face threats and violence in their households (Morrisson and Jütting, 2005, Das Gupta M et al., 2003 and Jejeebhoy and Sathar, 2001).

This chapter describes the main trends of the gender divide in South Asia in the following sectors: health and survival, including nutrition; literacy and education; labour force participation and quality of work; and empowerment.

⁴ The poor are considered to be living on less than \$1.25 a day. This estimation does not consider the Islamic Republic of Iran.

⁵ World Population Prospects: The 2012 Revision. Available at <http://esa.un.org/unpd/wpp/index.htm>.

⁶ World Development Indicators Database. Available at <http://databank.worldbank.org>.

⁷ Patrilocal residence means that a married couple resides at the man's house (Das Gupta M et al., 2003:160).

2.1. Gender disparities in health and survival

The gender-related literature has largely considered gender inequality in access to health services as a proxy for the health status of women. In this area, South Asia has experienced a striking reduction in maternal mortality. This region reduced its maternal mortality ratio (MMR), which measures the number of maternal deaths per 100,000 live births, by 63 per cent between 1990 and 2010. This region also has one of the highest reduction levels in the developing world; only North Africa and Western Asia surpassed South Asia in reducing the number of maternal deaths during this period. Unfortunately, the substantial drop has not been enough to achieve a reduction of three quarters by 2015, which was the MDG related to maternal health.⁸ One of the factors regarded as important in the performance of countries in terms of MMR is poverty, which is a cross-country characteristic of the countries in South Asia. This region is home to 44 per cent of the developing world's poor (World Bank, 2013b). Additional factors contributing to maternal death in this region include poor access to reproductive health services, lack of emergency obstetric care and skilled personnel, especially at the community level and early marriage (ESCAP, 2010 and Solotaroff et al., 2012). In addition, gender discrimination in relation to gender-selective abortions, neglect of girl children and poor access to health care for girls and women have also been mentioned as reasons for gender-related disparity in health in South Asia (Fikree and Pasha, 2004).

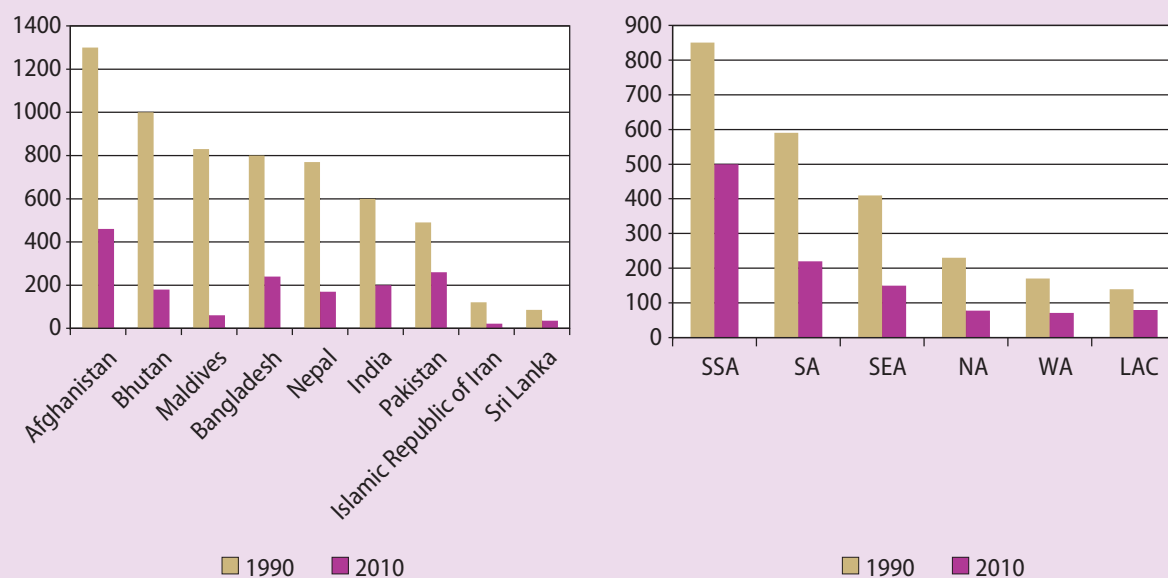
Figure 1 shows the large disparities between countries in South Asia in terms of maternal death. The Islamic Republic of Iran and Sri Lanka are the highest performers, while Bhutan, Maldives and Nepal are on track to achieve their respective goals in this area. By contrast,

Afghanistan, Bangladesh and Pakistan are the lowest performers in the region, with MMRs higher than the average for South Asia, while India's average maternal death is 10 per cent below the average for the region. It is important to consider that there are also large disparities within countries, between people with high and low incomes and between urban and rural areas. For instance, the decline of maternal mortality in the Islamic Republic of Iran is due to a number of successful policies related to population control and family planning. These policies have produced a significant decline in the total fertility and birth rates over the last 30 years (Trend, 2013). Bhutan has also achieved important advances in health during this period and maternal mortality has been significantly reduced. One factor that may explain this reduction is the implementation of a policy to provide human resources for the health master plan and free maternal healthcare. In terms of the provision of medical services, it is relevant to note that in this country midwives receive free education under a national accredited scheme and are offered employment upon graduation (UNFPA, 2011:46).

One possible explanation for the low performance of Afghanistan in this area is the combination of the lack of adequate provision for trained women birth attendants and traditional customs that limit the mobility of women. According to the United Nations Children's Fund (UNICEF), this situation especially affects women living in rural areas, which are sometimes inaccessible by road and are often blocked by floods and avalanches (UNICEF, 2009). Traditions largely forbid women to travel without men companions and few women in rural villages deliver outside their homes in facilities with trained attendants. However, a more problematic consequence of certain traditions is the discouragement of the treatment of women by men doctors despite the fact that there are a limited number of women attendants (UNICEF, 2009).

⁸ United Nations, 2008.

Figure 1: Comparison of 1990 and 2010 MMRs (maternal death per 100,000 live births) in countries in South Asia and selected developing regions



Note: SSA: sub-Saharan Africa; SA: South Asia; SEA: South-East Asia; NA: North Africa; WA: Western Asia; LAC: Latin America and the Caribbean.

Source: UNFPA et al., 2012.

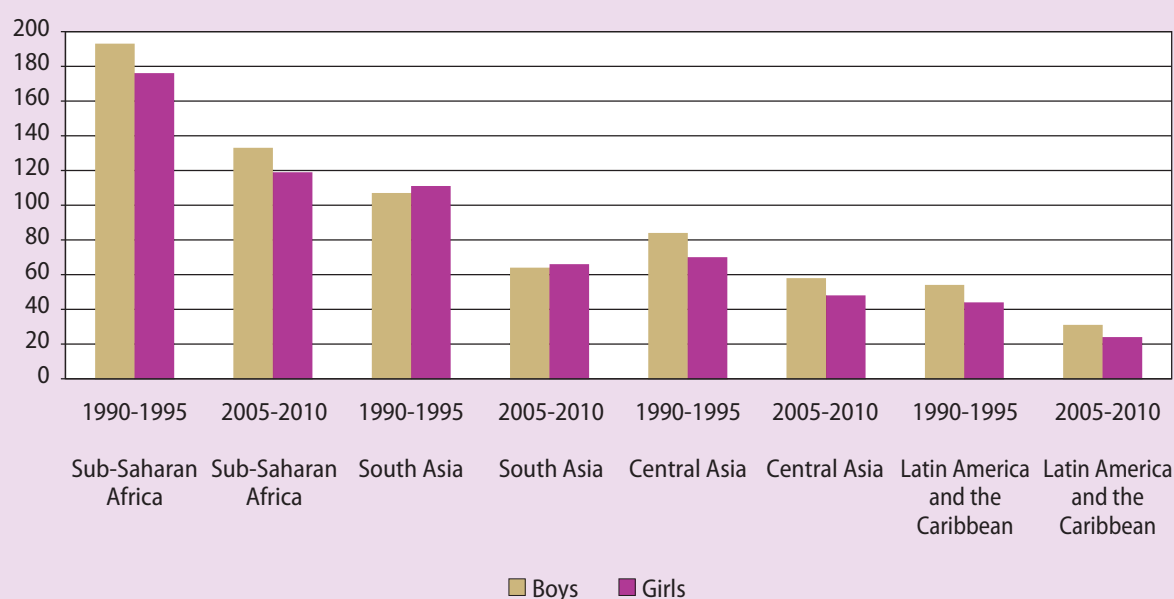
An additional indicator of the status of women in terms of health and mortality is the mortality rate of girls at birth. The performance of countries with regard to this indicator may be associated with discrimination in the household and is also a consequence of poor institutions that limit the choices of households and force them to choose among inadequate options, especially in terms of water and sanitization (World Bank, 2012a). This means the status of women in terms of health and mortality is also result of poor institutions (World Bank, 2012a). Consequently, the excess of girls mortality in comparison to boys in South Asia is the result of the combination of a preference for sons, declining fertility and the development of technologies that allow parents to learn the gender of a child before birth (World Bank, 2012a).

Figure 2 shows the mortality rates of girls and boys under five years of age in the period 1990–2010. The data show that although this region made important

advances in the reduction of mortality rates for children under five years of age, it was the only region in which this rate was higher for girls than for boys. It is important, however, to acknowledge that in all countries in this region except for India, the mortality of boys was higher than the mortality of girls. In India, the mortality of girls under five years of age was 67 out of 1,000, while it was 62 out of 1,000 for boys of the same age range.⁹

The existence of gender selection and lack of care during infancy in this region, which skews the gender ratio across a large part of South Asia, may have not only economic consequences, such as significant loss in terms of human capital, but also lead to a significant part of the population of men being unable to marry or have children due to the scarcity of women of marriageable age (Solotaroff et al., 2012:18).

⁹ World Population Prospects 2012 Database, available at <http://esa.un.org/wpp/>.

Figure 2: Mortality rate, girls and boys under five years of age (per 1,000 live births), 1990–2010

Source: Population Division of United Nations Department of Economic and Social Affairs (DESA), World Population Prospects: The 2012 Revision, <http://esa.un.org/unpd/wpp/index.htm>

2.1.1. Women and nutrition

The gender divide in South Asia has been noted as an important factor influencing the high rates of malnutrition in this region (World Bank, 2012). In this sense, the low nutritional, educational and social status of woman is considered an important factor in explaining the prevalence of undernourished children under five years of age and poor nutrition in the region despite its economic growth (Solotaroff et al., 2012:26). The statistics for South Asia show that the proportion of undernourished children has fallen from 26.8 to 17.6 per cent in the last twenty years, with 304 million people currently undernourished (FAO, 2012), yet this reduction is not enough to meet the MDG in this area (United Nations, 2013c). One of the linkages between gender and nutrition is the relationship between women's status and nutrition through the care pathway. This intermediary factor affects both dietary intake and disease, which are the immediate determinants of undernourishment (World Bank, 2012b). Malnourished children face

three important problems: they are more susceptible to disease and death; they have difficulties learning in school; and they are less productive as adults. Consequently, undernourished women are less empowered and children born to undernourished mothers transmit undernourishment to the next generation.

Agricultural growth is a recognized effective method to reduce hunger and malnutrition, especially when it is produced by productivity increases of smallholders (FAO, 2012). In most developing countries women perform most of the agricultural work. They are also responsible for the production of an important part of the world's food crops (IFAD, 2010a). Factors limiting the agricultural productivity of women farmers include the following: lack of time and limited mobility due to domestic and productive duties; limited access to assets and services; illiteracy; low participation levels and limited decision-making in producers' organizations; and socioeconomic factors affecting mobility and participation in public decision-making (World Bank, 2009:13).

According to the Food and Agriculture Organization of the United Nations (FAO) access to productive resources such as land, technology, education and financial services is essential in determining agricultural productivity (FAO, 2011). Women are less likely to have access to these inputs. They are less likely to own land or livestock, adopt new technologies or have access to financial, educational and extension services. Inequality in women's access to agricultural resources and opportunities is one of the reasons for the underperformance of the agricultural sector in many developing countries (FAO, 2011). The existence of a gender gap in access to assets hinders agricultural productivity and thereby produces social and economic costs. Recent estimations have shown that eliminating the gender gap in agriculture would increase the agricultural output in developing countries by 2.5 to 4 per cent, which could potentially

contribute to reducing global hunger by 12 to 17 per cent (FAO, 2011).

2.2. Gender disparities in literacy and education

Figure 3 shows the literacy rate of women and men in 2000 and 2011. It is possible to observe important differences in the rates of literacy between women and men, especially in Bhutan, India, Nepal and Pakistan. Only one country in the region, Maldives, has a literacy rate of more than 90 per cent, while the Islamic Republic of Iran and Sri Lanka have rates over 80 per cent. Despite the fact that important advances have been made in terms of education in South Asia, this region is still far from eliminating the gender divide in this area, especially in terms of secondary and tertiary education.

Figure 3: Literacy rate, adult women and men (percentage of men and women ages 15 and above), 2000 and 2011



Note: Data on South Asia does not include information about the Islamic Republic of Iran.

Source: UNCTAD secretariat calculations, based on data from World Bank, 2013a.

Equality in enrolment in primary education has been achieved in South Asia (United Nations, 2013b). Table 1 shows the advances made in terms of rates of enrolment in countries in South Asia from 1998 to 2012. The proportion of girls in this region enrolled in primary school increased from 65 to 87 per cent. Most of the countries in the region have already achieved gender equality in terms of enrolment in primary education. The only countries that are below the average with regard to this indicator are Nepal and Pakistan. Although the number of girls enrolled in primary education in Pakistan increased from 46.3 per cent in 1998 to 65 per cent in 2012, it is important to acknowledge that the participation of girls is still 14 per cent behind the participation of boys in primary school. The low budget allocated to education and the high levels of inequality have been mentioned as partial explanations of the performance of Pakistan in this area (UNESCO, 2012a). The low rates of enrolment of girls are also partially explained by the low quality of education, which has been found to harm the likelihood that girls will attend and complete school by making the investment not worthwhile in terms of opportunity costs, especially in the poorest quintiles of the population (World Bank, 2008).

The data show that although the enrolment of girls in secondary education increased from 32.1 per cent in 1998 to 46.4 per cent in 2012, there is still a gap of 7 per cent in comparison to enrolment rates of boys in secondary education, which reached 53.5 per cent in 2012. The countries with the lowest secondary enrolment rates of girls are Afghanistan and Pakistan. One of the tools Pakistan has

implemented to increase the enrolment of girls is cash transfers to encourage girls from poor families to attend school (World Bank, 2012a). Bangladesh has experienced important improvements which may be attributed to outcomes of Government and international initiatives (Ferdaush and Rahman, 2011). An example of these initiatives is the Bangladesh girls secondary school assistance programme, launched in 1993 by the International Development Association, which has provided tuition stipends oriented to increase the access of girls to secondary education (World Bank, 2013c). The widespread entry of girls in the education system and women in labour markets in the last two decades has produced a significant social transformation and reduction in poverty.

In terms of tertiary education, the enrolment rate of women in the region grew 2.6 times, from 4.9 per cent in 1998 to 12.6 per cent in 2012. However, the enrolment rate of men in tertiary education for 2012 was 17.5 per cent, showing that there is still a gap in this area. In analysing this indicator, it is also important to highlight the low level of tertiary enrolment of men and women in comparison to other countries and regions. For instance, the tertiary enrolment rate in middle-income countries is 25.6 per cent and the enrolment rate of OECD member countries is 61.1 per cent, which is more than double the enrolment rate in tertiary education in South Asia. This indicates that there is limited access to tertiary education, not only for women but also for men in this region. The available data show that the lowest enrolment rates of women in tertiary education are in Afghanistan, Bhutan, Nepal and Pakistan.

Table 1. Primary, secondary and tertiary education enrolment rates, girls and boys, 1998 and 2012

Countries and Regions	Enrolment in primary education				Enrolment in secondary education				Enrolment in tertiary education			
	1998 ^a		2012 ^b		1998 ^a		2012 ^b		1998 ^a		2012 ^b	
	Girls	Boys	Girls	Boys	Women	Men	Women	Men	Women	Men	Women	Men
Afghanistan	13.1	37.4	..	..	7.4	20.0	13.1	34.3	0.5	1.7	1.3	5.3
Bangladesh	66.9	78.2	..	..	39.4	41.9	50.3	44.2	3.6	7.4	8.0	13.1
Bhutan	50.8	58.8	90.1	87.9	15.2	15.4	61.7	54.0	1.9	3.2	7.1	10.4
India	72.1	85.6	91.6	92.5	..	..	..	..	7.4	11.2	14.9	20.6
Islamic Republic of Iran	84.6	88.1	95.7	97.6	..	..	..	..	16.9	21.2	48.9	48.3
Maldives	97.7	97.1	95.1	94.1	32.3	28.4	52.3	45.7	0.3	0.1	13.8	12.2
Nepal	57.0	72.7	64.0	77.9	..	..	..	39.7	2.3	5.8	5.4	9.0
Pakistan	46.3	68.9	65.0	79.0	23.8	30.8	29.2	..	2.3	2.8	7.9	8.7
Sri Lanka	99.7	99.8	94.3	93.7	..	..	..	..	3.1	6.3	20.4	10.6
Middle-income countries	81.1	87.9	89.0	90.7	47.6	53.1	62.6	64.6	11.9	13.4	26.8	25.6
South Asia	64.7	79.7	87.0	89.2	32.1	42.8	46.4	53.5	4.9	8.1	12.6	17.5
OECD member countries	96.5	97.0	97.1	97.0	82.3	82.8	88.0	87.4	50.7	46.8	72.3	61.1
World	78.8	85.2	87.8	89.8	49.5	54.1	61.1	63.5	17.1	17.6	30.3	28.0

Note 1: Data on South Asia does not include information on the Islamic Republic of Iran.

a: Data are for the most recent year available between 1988 and 1998.

b: Data are for the most recent year available between 2008 and 2012

..: not available.

Source: UNCTAD secretariat calculations, based on data from World Bank, 2013a.

2.3. Gender disparities in labour force participation and quality of work

Women's labour force as a percentage of the total labour force indicates the extent to which women are active in the labour force.¹⁰ The latest indicators available for the region

(2011) show a participation rate for women in labour markets of 27 per cent. This rate is lower than the average participation level of women in middle-income countries (38 per cent) and is also lower than the average global participation level of women in the labour force, which was 40 per cent in the same year.¹¹

¹⁰ The labour force considers people ages 15 and older who are economically active according to the International Labour Organization (ILO). World Development Indicators Database,

available at <http://data.worldbank.org/indicator/SL.TLF.TOTL.FE.ZS>.

¹¹ World Development Indicators (World Bank, 2013a).

Figure 4: Labour force, women, 2000–2011 (proportion of total labour force)

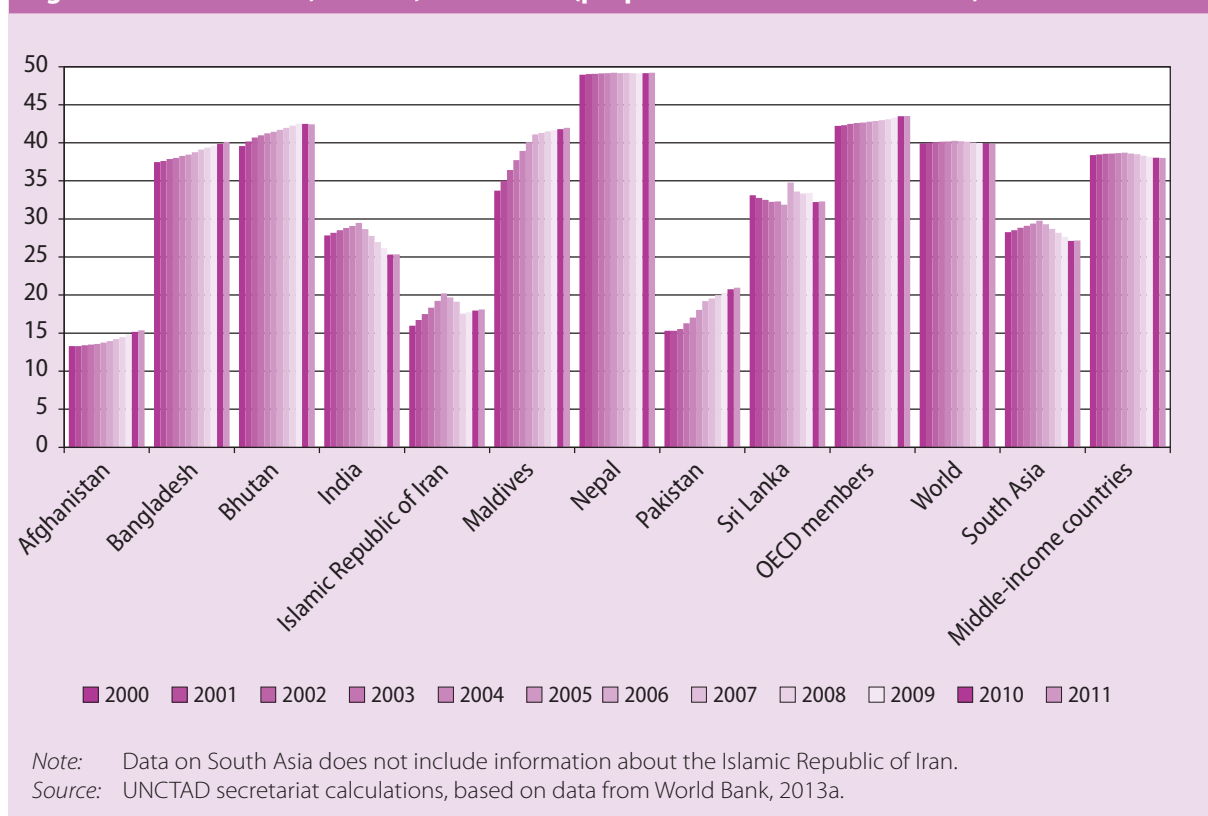


Figure 4 shows the trend in labour force participation levels of women and men in the period 2000–2011. In the period 2000–2005, there was a steady growth in labour force participation, which increased from 28.2 to 29.8 per cent. However, after 2006, there was a reduction in the participation rate of women in the labour force at a regional level. The data show that the participation rate in 2011 was 27 per cent, which was lower than the labour

force rate in 2000. One possible explanation may be the reduction in the labour force rate of women in India. In 2011, this country had a labour force participation rate of 25 per cent. By contrast, Nepal had the highest participation of women in the labour force as percentage of the total labour force. This can be partially explained by the predominance of subsistence agriculture and migration by men from rural areas, poverty and the cultural

composition of the population, of which a large proportion does not practice the seclusion of women (UNFPA, 2009:18).

In addition, it may be observed that although the levels of participation by women and men in tertiary education in the Islamic Republic of Iran are similar (though this does not indicate that all women go to university), there is a low participation of women in the labour market. One factor explaining this is discrimination in markets or societal institutions (World Bank, 2012a). The reduced participation of skilled women in the labour market produces significant inefficiency in the economy because of qualified human capital that does not contribute to the economy. It is important to consider that for an economy to be functioning at its potential it is necessary that women's talents and skills be used in activities that make the best use of those abilities (World Bank, 2012a).

Several factors need to be considered when analysing women's labour force participation and its implications for gender equality in South Asia. Some of these are the patriarchal structures common in the region (Ruwanpura, 2004, Kabeer and Mahmud, 2004 and Sudarshan, 2010) and the social and economic conditions of this part of the world (ADB and ILO, 2011, Das Gupta M et al., 2003 and Ghosh, 2002).

One of the consequences of the restrictions on women mobility produced by patriarchal structures is that women work either in unpaid family labour or in home-based jobs. Work within the household carried out by women may also include the processing of primary produce for family consumption, basic domestic handicraft production, services such as cleaning, childcare and others (Ghosh, 2002:30). At the same time, women may also prefer to work from home since it allows them to comply with local customs and to combine paid work with the demands of family work (Sudarshan, 2010).

The patriarchal characteristics of societies in countries in South Asia also produce occupational segregation, which reinforces gendered division of labour, pays low wages

and maintains women's economic dependence (Ruwanpura, 2004). A common example of occupational segregation is the practice of *pardah* (seclusion) in some areas of this region. These norms limit the participation of women in informal sectors, as they must avoid contact with men, which is perceived as causing a loss of respectability (Ruwanpura, 2004 and Sonalde and Lester, 2010). Segregation also makes it harder for women to work outside the home and limits their mobility and their freedom in terms of dress.

In cultures with strict norms of seclusion there is a stronger association between household poverty and women's labour force participation (Kabeer, 2012:19). This is because women have limited opportunities to leave their houses, which hinders the possibilities of their households to overcome poverty. At the same time, in South Asia, as in the rest of the world, poverty is an important factor explaining women's labour force participation rates (Kabeer, 2012). Although total unemployment is low in this region (3.5 per cent in 2011)¹², it is important to consider that in South Asia as in other developing regions there is no option for unemployment in the poorest segments of society (Chen and Doane, 2008). This means people from these segments of the society have to find any type of job to survive. In this region, material circumstances and the lack of social security systems mean that most workers must find some employment, however unremunerated (in monetary terms), in the absence of a formal job (Gosh, 2002:30).

Social and cultural practices can influence not only the participation of women in work but also how their participation in labour markets. Home-based work is part of the organization of production in traditional and non-traditional sectors in South Asia. There are several economic, technical and social factors that make home-based work economically viable (Sudarshan, 2010). For instance, sometimes it may be economically viable for women to work from home on piece-rate jobs. In such cases, subcontracting

¹² Ibid.

may be more convenient than hiring on-site workers. Usually, this type of outsourcing is seen in activities that are characterized by high volumes of work with low returns per unit and that do not require close supervision, such as rolling agarbathis (incense sticks) or beedis (indigenous cigarettes), although this sometimes also involves high value-added activities such as embroidery. In general, there is little equipment needed for such jobs and production is not characterized by rapid technological change (Sudarshan, 2010). The invisibility of this type of occupation, since it is not included in formal indicators, has produced an underestimation of the real participation of women in the labour market in this region (Kabeer and Mahmud, 2004:94).

The most important source of employment for women in South Asia is agriculture. In 2009, 71 per cent of women worked in this industry in comparison with 46.4 per cent of men, as shown in table 2. In agricultural settings, the main form of women's labour force participation is on the family farm. This work is often considered an extension of household work (Das Gupta M et al., 2003:171).

Table 2. Distribution of total employment by sector of employment (percentage) by gender, 2009

Gender	Agriculture	Industry	Services
Women	71.0	13.6	15.5
Men	46.4	21.4	32.2

Source: Asian Development Bank (ADB) and ILO, 2011.

2.3.1. Women in informal markets

It is also important to consider the participation of women in informal markets. According to UN-Women, women are overrepresented in informal and part-time work and many women in developing countries are in vulnerable forms of employment, which include unpaid family labour or own-account work (UN-Women, 2009:84). The concentration of women in this type of work can be to some extent explained by the constraints of occupational segregation and unequal responsibility for unpaid domestic

work and care work. The concentration of women in these types of activities, which are less rewarded monetarily, is indicative of their resource poverty, their lack of bargaining power and the discrimination they face in the wider economy.

In South Asia, a high proportion of non-agricultural employment is informal. For instance, informal employment represents 83.6 per cent, 78.4 per cent and 62.1 per cent of non-agricultural employment in India, Pakistan and Sri Lanka, respectively (ILO, 2012).¹³ In terms of gender differences, in 2010, informal employment for women and men respectively represented 84.7 per cent and 83.3 per cent in India, 75.7 per cent and 78.7 per cent in Pakistan and 55.7 per cent and 65.2 per cent in Sri Lanka (ILO, 2012).¹⁴ The total of informal employment (agricultural and non-agricultural) may be even higher in considering that agricultural employment is highly informal (ADB and ILO, 2011). Although in absolute terms there may be more men than women working in informal employment, women are concentrated in the most vulnerable and poorest forms of informal employment, which have high job insecurity and lack safety nets to cover low-demand periods or periods when they cannot work. This reflects the lack of gender equality not only in the quantity but also in the quality of informal employment (ADB and ILO, 2011:12).

2.3.2. Women and empowerment

In addition to education, labour force participation and positions of power in the labour market, availability of entrepreneurial opportunities influence the economic participation and opportunities of women (Nallari and Griffith 2011). Some of these factors are as follows: access to finance and credit; time constraints due to family responsibilities; restricted physical mobility; limited skills and training; and lack of access to information and communications technologies (ICTs). It is generally accepted that women have a stronger preference than men for spending on goods and services that contribute to increase

¹³ 2010 or latest year available (ILO, 2012).

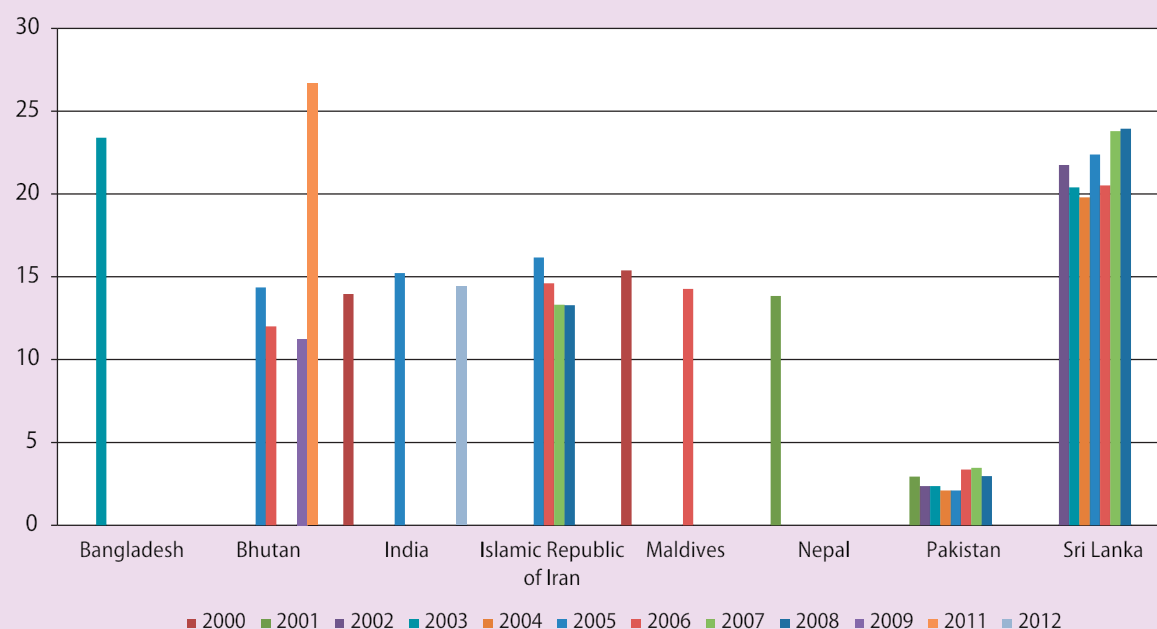
¹⁴ 2010 or latest year available (ILO, 2012).

the human capital of their children (Nallari and Griffith 2011:11). Therefore, facilitating access to funding and credit for women can contribute not only to promoting their entrepreneurial access but also to increasing the human capital of their families. According to the 2011 edition of the UNCTAD *Information Economy Report* (IER), in many countries, patriarchal social structures limit the freedom of women to engage in business activities (UNCTAD, 2011b).

Also relevant is the empowerment of women in the labour market. There is limited data

regarding the participation of women as legislators, senior official and managers in South Asia, as shown in figure 5. The data for the countries with available information show that women represent less than 30 per cent of the total of people in these occupations in the region. The country with the highest levels of women in these types of positions is Bhutan, where the participation of women as legislators, senior official and managers reaches 26.7 per cent of the total number of people with these types of positions.

Figure 5: Women legislators, senior officials and managers (percentage of total)



Note: No data available for Afghanistan.

Source: UNCTAD secretariat calculations, based on data from World Bank (2013a).

In general, countries in South Asia have made important efforts to reduce the gender disadvantages of women in terms of health and survival and also in relation to nutrition, which is directly related to the food security situations in these countries and the significance of agricultural activities for women. These countries have also in good track to achieve the MDG related to primary, and in some cases secondary, education. Important challenges remain, however, in

terms of gender equality in access to tertiary education, participation in labour markets, the quality of jobs and empowerment.

Against this background, the following chapter presents a compilation of policies and interventions designed to help improve the opportunities and livelihoods of women in South Asia, which use STI developments, either primarily or as part of greater initiatives.

3. Good practices in STI policies for women

STI advances can help to meet some development challenges such as poverty and hunger by promoting economic development, increasing agricultural and industrial productivity and creating job opportunities. STI advances can also contribute to providing sustainable energy resources, improving health, education and nutrition, providing clean water and improving soil management (UNESCO, 2007). At the most basic level, STI can benefit women by simply improving their livelihoods in terms of health, nutrition and income and even adding to their lifespans. In addition, innovations can lead to improvements in women's empowerment and agency through securing freedom and resources for women to make decisions, build confidence and act in their own interests (Malhotra et al., 2009).

Furthermore, in many countries, women have unrecognized and invaluable traditional and local knowledge and are the main producers or providers of commodities, merchandise, food, energy and water for domestic and commercial use. In a number of communities, women play an important role in the incubation and transfer of indigenous knowledge that is critical to the survival of these communities (UNESCO, 2007:21). STI can complement and enhance such traditional and local knowledge and related skills and can also contribute to increasing productivity levels and improving the monitoring and managing of ecosystems. Unfortunately, imbalances in how STI advances are allocated and applied to social development often disadvantage women in particular (UNESCO, 2007:21).

Countries in South Asia are aware of the potential contribution of STI to achieve socioeconomic development and also recognize that promoting STI with a gender perspective can contribute to improving the well-being of women and to enhance gender equality in the region. An example of this is

the national science and technology policy of Bangladesh, established as part of its prime objective to ensure the application of STI in achieving sustainable economic growth, with specific attention to achieving gender equity, fostering women's empowerment in all scientific and technological activities and ensuring women's full participation (Ministry of Finance Bangladesh, 2013). A similar example may be seen in Pakistan, where the national science, technology and innovation policy is oriented toward, among other things, human resource development and the promotion of areas such as environment, health and pharmaceuticals, energy, biotechnology and genetic engineering, ICTs, agriculture, livestock, and water (PCST, 2012). The policy objectives of Pakistan include eliminating discrimination, including gender discrimination (CEDAW, 2011)

The policies and interventions presented in the following sections are categorized according to the mechanisms through which they can potentially improve the life of women, as follows: upgrading and diffusion of STI planned to improve the livelihoods of women; introduction of STI as complementary tools for the development of skills; and implementation of financial innovations such as microcredit to promote entrepreneurial skills that contribute to enhancing the business skills of women. These three main mechanisms do not necessarily exclude each other; they may be part of a comprehensive policy intervention to enhance gender equality.

It is important to acknowledge that many of the policies do not directly target women but that women are the main beneficiaries since they are largely the ones working in these areas, as has occurred for instance with the introduction of STI in areas such as agriculture, water and energy.

In addition, some efforts are being made to promote the participation of women in

science, mainly in Bangladesh and India. For instance, Bangladesh has created special incentives for women's professions in research and development and has also implemented interventions with the aim of ensuring participation and the empowerment of women in all areas of science and technology education and research (Ministry of Finance Bangladesh, 2013). In India, the Department of Science and Technology has introduced a number of gender-sensitive initiatives aimed at gaining parity in the science sector. These initiatives include programmes designed to give opportunities to women scientists to return to careers in science after a break and scholarships for women scientists (Department of Science and Technology, 2013).

Another example of a country promoting women in STI is Sri Lanka where, although STI policies are not designed to explicitly improve the situation of women and enhance gender equality, enhancing gender equality is considered part of the goal of ensuring opportunities for all segments of the population in vocational and tertiary education in STI (National Science and Technology Foundation Commission, 2008). This involves providing initiatives that allow women to balance domestic responsibilities and professional activities, comprising measures such as flexitime, day cares in workplaces and the opportunity to work from home (National Science and Technology Foundation, 2008).

3.1. STI to improve the livelihoods of women

Among other goals, countries aim to improve the livelihoods of women through the implementation of STI developments. STI policies aimed at improving the livelihoods of women are a central part of public policy in South Asia. This section discusses STI policies and programmes implemented in the following sectors: agriculture, water, energy and planning.

For instance, the STI policies in Bangladesh contribute to the development of women by

developing their scientific and technological capacities through the use of improved technology in order to reduce their daily work hours and increase their participation in the knowledge-based labour market. These policies include promoting research and development on products and goods that women use including drinking water, household products, biogas and solar panels (Ministry of Finance Bangladesh, 2013). The STI policies that benefit women also include the promotion of biotechnology for the development of agricultural, environmental and industrial research, the promotion of women-friendly biotechnology and sustainable development and the enhanced application of nuclear technology for medical diagnosis and treatment (which has improved women's access to public services). The promotion of nuclear energy for agricultural and non-agricultural production can indirectly facilitate the advancement of women through growth in production (Ministry of Finance Bangladesh, 2013).

Another example of this approach is the science and technology policy of India. As part of the science and technology and socioeconomic development programme, the Indian Government supports the science and technology for women initiative, one of the earliest initiatives of the Department of Science and Technology, aimed at promoting research, development and adaptation of technologies to enhance the overall status of women and increase their scientific and technological development, especially in rural areas. The main goal of the programme is to support, involve and network research and development institutions, scientific institutions, universities, colleges and science and technology-based field groups (non-governmental organizations (NGOs)) in developing appropriate technology packages for women. The programme comprises the funding of individual projects for technology development, upgrading, modification and replication and also focuses on all-India coordinated programmes, women technology parks, scholarships

schemes and national awards for women's development through the application of science and technology (Department of Science and Technology, 2013).

One of the mechanisms by which STI can potentially reduce the gender divide in South Asia is the enhancement of agricultural productivity. STI can contribute to reducing the agriculture gender gap by increasing agricultural productivity, freeing women's time for more productive activities and empowering them to make better choices for themselves and their families (FAO, 2011). Investing in labour-saving and productivity-enhancing technologies and infrastructure can contribute to reducing the gender gap in agriculture. Facilitating access to and use

of technologies that improve agricultural productivity can contribute to improving women's situations and may produce significant gains for the agricultural sector and society (FAO, 2011). STI policies for women in agriculture are widely used across this region. An example of initiatives in which rural development is a priority for growth and development is the Afghanistan national development strategy, which includes the economic and social development of women as a high priority. Consequently, Afghanistan is implementing programmes to enhance women's skills in agriculture and livestock production and also providing training in skills useful for work in the rural sector, as detailed in box 1 (Ministry of Women's Affairs, 2005).

Box 1. Afghanistan: Dairy goat-related technologies

The rearing of dairy goats is a major source of income for resource-poor women in rural communities in Afghanistan. However, there are several factors, including conflict, drought and the limited availability of feed and knowledge in areas such as milk collection and processing and animal health, that have constrained the production of goats, as well as related products, including milk, meat and cashmere. In order to improve dairy goat production and thereby contribute to improving the livelihoods of poor women in remote communities, in 2006 the Afghanistan Ministry of Agriculture, in collaboration with the International Fund for Agricultural Development (IFAD) and the International Centre for Agricultural Research in Dry Areas, launched a programme to introduce low-cost technologies to this sector.

The programme included the following three main areas: capacity-building; provision of veterinary health care; and improvement of milking and dairy processing. In its three first years of implementation, the programme worked with 546 women from 14 villages in two rural provinces (Baghlan and Nangarhar). The first step of the implementation strategy consisted of integrating cultural sensitivity into the initiative. This was crucial to the success of the programme and was achieved through discussions with village leaders, which allowed approval for the interventions to be obtained. After approval for the programme was obtained, women were encouraged to form groups to participate in the different activities of the programme. The groups were led by women trained by the programme. The activities were channelled through 25–30 women per village, who attended monthly meetings and acted as focal points for the activities. Capacity-building activities were conducted in order to ensure that the research activities had an impact on the ground.

The programme improved animal health and productivity, raised milk yields, improved dairy products and improved the access of women to better markets and contributed to increased income and better nutrition. At the same time, the project involved the selection of a specific breed (Gujry, characterized by its resistance to disease and ability to produce under difficult conditions) to restock goats lost due to conflict, death and illness in young goats. In the first year, 93 women received goats and those who received a doe were required to pass on one female yearling goat to another group member after one year. Between 2010 and 2013, the program worked directly with almost 1000 women in 26 villages.¹⁵ The households participating in the project benefited from having increased flocks and milk production and reduced inbreeding.

Access to veterinary services in the project villages was limited or non-existent, as was the level of knowledge of the basic care of goats in terms of disease identification, vaccination and treatment. Therefore, the second key area of the project was the improvement of veterinary health care, which was targeted through the recruitment of veterinary workers and training in disease diagnostics and treatment. These workers were involved in vaccination campaigns organized using a goat health calendar. Village focal points were also trained in basic veterinary care, which allowed the diffusion of knowledge to more than 600 women.

Box 1. Afghanistan: Dairy goat-related technologies (cont.)

The third area of the programme was the improvement of milking and dairy processing. Women from the villages targeted by the programme did not have enough training in these areas and, therefore, both the quality and shelf life of milk were poor, especially due to unhygienic milk production processes and storage. Intervention in milking and dairy processing consisted of training women, via women trainers, in clean milk production, pasteurization, quality control and yogurt, butter and cheese making. In addition, women were provided with basic equipment such as sieves, churners and cheese making frames. The provision of new technologies, accompanied by training, increased shelf life from less than 12 hours to over 24 hours, increased the market price paid for milk and improved dairy goat production.

The project also addressed the scarcity and fluctuating supply of feed, which is an important constraint in goat production. To improve the feed resource base, several fodder crops were introduced. In addition, seeds were distributed at a subsidized cost and training was provided on techniques of plantation, irrigation and protection of trees.

Monitoring indicates that the project has had substantial impact. Economic estimates show benefits of an estimated net value of approximately \$700,000 (value of 2010). This programme shows that the introduction of economically viable and sustainable simple technologies, in combination with a large-scale training programme and full community involvement, can contribute to the development and empowerment of women in this region.

Source: European Initiative for Agricultural Research for Development (EIARD), 2013.

¹⁵

<http://dialogues.cgiar.org/blog/helping-women-help-themselves-the-gift-of-goats/>

Another example of how STI can contribute to agricultural development may be seen in Bhutan, which is focused on promoting rural development through fostering diversification in agriculture and improving alternative income-generating opportunities in rural areas. These activities contribute to the livelihoods of women, as women's participation in this sector is significant as they often stay in their villages when men their family members migrate to urban centres. Among the activities undertaken under the agricultural development policy of Bhutan are the following: ensuring food security; improving agricultural productivity by disseminating modern inputs and technology; encouraging specialization according to comparative advantages in microclimatic and ecological zones; promoting employment and income-generation opportunities in rural areas; increasing accessibility to and improving the quality of social infrastructure; intensifying the provision of rural infrastructure such as roads, bridges, irrigation schemes, electricity and ICTs; promoting the development of skills; ensuring the sustainable use of natural resources; and implementing holistic and integrated area-based development planning (CEDAW, 2007:103)

STI can also potentially contribute to infrastructure development. It is possible to observe this in the case of energy in Bhutan. Power is the most important component of the country's exports (ADB, 2013a). Most of the energy generated in Bhutan is produced from river hydropower systems and is exported to India. However, the population of Bhutan does not have full electrification. Although the Bhutanese Government has declared its goal of achieving universal electrification in 2013 instead of 2020 as previously planned, important challenges must be overcome in order to achieve this goal, such as the isolation of rural villages given the geographical characteristics of the country (ADB, 2009 and International Trade Centre, 2011). An example of the introduction of gender-related STI policy in this area is the Solar Warrior programme, which trained women in the installation and servicing of solar panels. Although this programme brought benefits to the women that participated in it, it also experienced sustainability problems following implementation, as detailed in box 2.

The creation of capabilities is relevant to ensure that women benefit from STI pro-

Box 2. Bhutan: Off-grid power generation and technical knowledge to women in rural villages.

The Solar Warriors programme in Bhutan was part of the Energy for All Initiative carried out by the ADB in collaboration with governmental and non-governmental organizations. The initiative provides access to clean energy, improves livelihood opportunities and highlights the benefits of community empowerment through development in Bhutan, the Philippines, Sri Lanka and Viet Nam (International Trade Centre, 2011).

The programme consisted of providing off grid power generation and technical knowledge to women in rural villages. This sustainable rural electrification programme trained women to be rural electricians, to install and service solar photovoltaic panels and batteries, which were provided by the programme to an average of 15 households per village (International Trade Centre, 2011).

The programme was funded by the Japan Fund for Poverty Reduction and was conducted by India's Barefoot College, which is an educational NGO that provides basic services and solutions to rural communities with the aim of making them self-sufficient and sustainable (ADB, 2009 and Barefoot College, 2013).

The programme was conducted using a bottom-up approach, in which several communities lacking electricity were visited and invited to participate and to select women to participate in training activities in India.

The selected women travelled to Tilonia, Rajasthan for six months for training at the Barefoot College in that city. The women had to overcome barriers related to language, diet and climate as well as other barriers such as self-doubt during training. After returning, the women set up workshops in their villages and in 2008, were able to install solar panels on the homes of 504 households in 46 villages across the country. In addition, they repaired solar units from a previous scheme, which had fallen into disrepair.

This programme brought important benefits to women in rural villages. The introduction of clean energy replacing kerosene and wood reduced smoke in the households. It also reduced the time spent fetching kerosene for the household. Lightning helped women to cook and children to study in the evenings. The introduction of solar power also facilitated the work of midwives, who previously had to use kerosene lamps when working at night, and also scared off snakes in homes, reducing the risk of getting bitten by snakes, some of which are venomous.

Another important benefit for women of the introduction of electricity to villages is the creation and extension of entrepreneurial opportunities. For instance, the provision of light in the evenings has enabled women to produce baskets, rope and other items for domestic use and for sale. In some villages, candle and soap-making businesses, along with businesses involving placemats, runners and towels woven from nettles, have been created or expanded because of the beneficial results of these activities in comparison to working on the farm.

However, the programme experienced sustainability problems following implementation. For instance, despite initial agreements with the communities to contribute to the service costs of the solar units, some families did not pay the solar warriors for repairs. In addition, the solar warriors did not have enough information about how much to charge for the spare parts of the solar units. The fact that the training was not performed locally constrained older women from participating in the programme because it was difficult to persuade them to leave home for several months. The training is now also offered locally. In-country training in the local language should contribute to attracting more candidates (ADB, 2009).

grammes. Often, when programmes include STI for women, the incorporation of new technologies is part of larger programmes, which also include the creation of complementary skills in addition to making STI available for women. These skills allow women to take advantage of the new technologies available to them. An example of this may be seen in Nepal. This country has implemented programmes to develop women's skills as part of special programmes to improve the livelihoods of women and disadvantaged social groups.

These programmes aim to improve the livelihood of their beneficiaries through increased access to economic resources and information, market management, technology transfer and innovation. A common characteristic of these interventions is that they involve training in and the incorporation of several technological developments that complement each other and contribute to productivity gains for many women farmers in Nepal. These training programmes have allowed women to significantly increase their income, as detailed in box 3.

Box 3. Nepal: Training women farmers in new products and techniques

The increasing out-migration of working-age men in Nepal has had important consequences for women. According to USAID (2012a), one in ten citizens of Nepal are employed abroad and this number increases to one in five in some agricultural districts. In Nepal, agriculture sustains nearly 80 per cent of the population and, as in many other countries, women play an important and often unrecognized role in this activity. The increase in the number of men employed abroad has led women to assume more important roles than they held before (USAID, 2012a).

Several donors, in collaboration with the Ministry of Agricultural Development of Nepal, participate in the United States of America Feed the Future global initiative. The Nepal branch of this initiative includes programmes that provide access to new technologies and productive resources in order to increase the productivity of agriculture in Nepal. The interventions of this initiative are changing the production methods of women. For instance, women have begun to use drip-irrigation technology and hybrid seeds and to incorporate pest-management methods to raise productivity. In addition to increasing the agricultural productivity of women farmers, this project empowers farmers in complementary activities. Women who receive training are able to share their recently acquired knowledge with other women, which creates a sustainable means of diffusing knowledge of agriculture and livestock practices. Some have even become local agricultural service providers and can earn additional income by charging a nominal fee for their advice services.

This project makes STI available for women farmers in Nepal as part of a comprehensive intervention that also includes providing women with access to agricultural and veterinary services, along with access to collection centres and larger markets. In terms of impact, many women have been able to triple or quadruple their incomes as a benefit of this initiative. In some cases, the increase in income has created incentives for their spouses to return from abroad and help run family farms.

Source: USAID, 2012a.

STI policies that help women through the deployment of STI advances may also be noted in the water supply sector. Not only in South Asia but generally across the world women are traditionally responsible for cleaning and cooking and are therefore highly affected by problems associated with water supply. Women are generally on the frontline of water supply problems, as they are usually responsible for fetching water, carrying heavy loads of water to the household and taking care of children if they suffer from waterborne diseases (ADB, 2013b). Limited access to clean water and sanitation produces an important burden for women and girls who manage household water for domestic duties such as cooking, cleaning and washing and for domestic hygiene (ADB, 2013b). Improving water and sanitation brings intangible benefits that are difficult to measure such as dignity, comfort, privacy, security and social acceptance. In addition, the provision of water and sanitation in schools can increase school enrolment, attendance and completion, and the deployment of water and sanitation facilities at work can increase the participation of women in the workforce (Sanitation and Water for All, 2012).

Across the world, there are important challenges in relation to gender differences in access to and control of resources, including challenges related to scarcity, deteriorating water quality, interactions between water and food security and the need for improved governance (UNESCO, 2012c). Consequently, urban development is a priority sector for several countries in South Asia, including Sri Lanka, where efforts in this area have produced significant progress in water and sanitation coverage (ADB, 2013a and Sanitation and Water for All, 2012). According to data from the Joint Monitoring Programme of the World Health Organization (WHO) and UNICEF, in urban areas, water supply increased from 92 per cent coverage in 1990 to 99 per cent coverage in 2011, while rural coverage increased from 63 per cent in 1990 to 92 per cent in 2011. Improvements in terms of sanitation have also been significant. Urban sanitation coverage rose from 78 per cent in 1990 to 83 per cent in 2011, while in rural areas, sanitation coverage rose from 65 per cent in 1990 to 93 per cent in 2011.¹⁶ An example of an STI policy that largely benefited women despite the fact that it was not explicitly designed to improve

¹⁶ WHO and UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, available at <http://www.wssinfo.org/>.

the situation of women was the introduction of supply and sanitation in Sri Lanka. This ten-year project allowed women to access technologies that contributed to improving their livelihoods by increasing their free time. Part of the success of this initiative may be attributed to the gender mainstreaming approach used throughout the different stages of the project, as detailed in box 4.

3.2. STI as complementary tools for the development of skills

Although the empirical literature has not yet reached an agreement about the causal direction between ICTs and economic development, there is clear agreement about the potential of investment in and

deployment of ICTs for the development of countries. One of the benefits of the incorporation of ICTs is its usefulness for education purposes. Mobile telephones help to connect people and may provide them with useful information (GSMA Association, 2010). This section presents two initiatives involving the use of ICTs in creating capacity, the Aponjon initiative in Bangladesh and the use of mobile telephone-based tools in literacy programmes in Pakistan.

Through the use of mobile applications to provide health advice and information via messages, Aponjon (which means trusted friend) is expected to improve the knowledge of pregnant women in relation to prenatal and newborn care and consequently improve the lives of women and children in Bangladesh, as detailed in box 5.

Box 4. Sri Lanka: Secondary towns and rural community-based water supply and sanitation

There are many projects in Sri Lanka designed to improve access to water and sanitation that are implemented and managed by the National Water Board. Some of the initiatives are co-financed by international organizations and agencies. The secondary towns and rural community-based water supply and sanitation project, funded by the ADB and the Government of Sri Lanka, was an initiative seeking to reduce poverty and promote human development by improving access to safe water and sanitation for poor populations in both urban and rural areas in Sri Lanka. It was executed by the National Water Board.

The project was agreed in 2003 and concluded in February 2013 (ADB, 2010 and ADB, 2013c). It included two main lines of action, urban and rural development. The urban component involved large-scale infrastructure development and the rural component used a community-driven approach to identify the specific needs of citizens. Some areas covered by the project were the towns of Batticaloa, Hambantota, Muttur and Polonnaruwa and the rural areas of the Polonnaruwa, Anuradhapura and Batticaloa districts

In Batticaloa, the project activities involved building a 55-kilometre water transmission system, a water treatment plant with a capacity of 40,000 cubic metres per day, seven water towers and 1,680 latrines. This town was a water-scarce area and any water available was often unsafe (ADB, 2013b). Today, as a result of the project, most of the town's residents have safe and regular water supplies piped to their homes. The project distributes subsidies for the very poor in the form of monthly payments under the State welfare system so that they may have running water in their homes.

The rural component of the project had a community-driven approach to improving water-related infrastructure. Single-gender meetings were held in the communities to identify specific needs in terms of water and sanitation. The establishment of separate subgroups allowed women to build their confidence in the identification of their needs and also prepared them to present their views to the community. The project also included the participation of women in related activities such as health and hygiene programmes and income-generating programmes (ADB, 2010).

This project allowed women to access technologies that contributed to improving their livelihoods by reducing the time they required to fetch water and care for children, thereby increasing their free time. One of the reasons explaining the positive outcomes of this program is that incorporated gender mainstreaming in the different stages of its implementation. That is, it targeted the participation of women not only as beneficiaries but also in the different units related to the execution of the project. The active participation of citizens in the design and implementation of the project allowed decision-making on the allocation of resources according to the water and sanitation needs identified by citizens. The active participation of women in decision-making as providers, users and managers of water at the household level allowed the potential benefits of the project to be maximized (ADB, 2010).

Box 5. Bangladesh: Aponjon (mHealth)

In Bangladesh, as in other low-income areas in the world, many pregnant women and new mothers lack access to timely, reliable and culturally relevant information about how to best care for themselves and their babies (USAID, 2012b). As stated earlier in this report, despite the improvement with regard to indicators related to health in this country in recent years, deaths due to pregnancy, childbirth and infancy-related causes are high in Bangladesh. According to Aponjon, in Bangladesh one woman dies every hour because of pregnancy-related complications and 15 infants two days old or younger die every hour (Aponjon, 2013). In terms of prenatal care, one in four mothers has at least four prenatal care visits. Two out of three pregnancies are not attended by medically trained personnel and one out of four women does not exclusively breastfeed for the first six months. According to the Aponjon website, 80 per cent of these deaths are preventable with basic knowledge and care.

The Aponjon initiative introduces mobile technologies for the medical care of expecting and new mothers in Bangladesh. The service was launched in 2011 and operated under a programme agreement between the Governments of the United States of America and Bangladesh. The programme is run under the auspices of the Mobile Alliance for Maternal Action (MAMA), a global development alliance founded by USAID and Johnson and Johnson with support from the mHealth Alliance, the United Nations Foundation and BabyCentre. This alliance was established to provide expecting and new mothers with vital stage-based information via mobile telephones.

Aponjon is a mobile messaging-based service that provides mothers and caretakers in their families with information about how to take care of themselves and their babies. Users registered for the service indicate their expected due date or the birth date of a newborn child and receive weekly messages according to the stage of pregnancy or age of the newborn (USAID, 2012b).

Aponjon is the first in-country programme of the MAMA initiative and is supported by USAID and D.Net as a local partner. The project is a public-private alliance conducted in partnership with the Ministry of Health and Family Welfare.

MAMA Bangladesh recognizes the necessity to link subscribers with local health services and has therefore created strong relationships with local health providers. The information sent in the messages contributes to educating people about their health, connecting them to care and changing behaviour. The pilot stage of this initiative was launched in September 2011. By April 2012, Aponjon had registered 1,800 women in three districts in Bangladesh and in December 2012, Aponjon was launched nationwide and reached more than 50,000 subscribers. This is the first-ever nationwide service in South Asia and is expected to be launched nationwide in India and South Africa as well (Aponjon, 2013).

The literature also recognizes that ICTs offer a range of opportunities to facilitate knowledge dissemination, educational development and the learning process at all levels. An important advantage of ICTs is that they allow for the provision of education to people in remote and disadvantaged communities (UNCTAD, 2012). An example of this type of STI policy for women is the introduction of a mobile-based post-literacy programme in Pakistan, which is designed to consolidate women's literacy skills by having them send and receive mobile telephone text messages, as detailed in box 6.

3.3. Financial innovations: Microcredit and creation of entrepreneurial skills

The promotion of entrepreneurial skills is also a mechanism used to contribute to the creation of business and employment opportunities for women in South Asia.

These skills complement the allocation of microcredit for women, which has a long tradition in this region and can contribute to the promotion of women's empowerment (Balasubramanian, 2013 and Kabeer, 2005).

For instance, Pakistan has programmes to promote small and medium-sized enterprises (SMEs) and entrepreneurial activities intended to enhance the empowerment of women (SMEDA, 2013). These interventions seek to create business management skills, promote networking and fill information gaps. These challenges have been identified as hindering the development of women-led business in Pakistan. In addition, Bangladesh has established programmes to support SMEs through providing necessary services and facilitating private entrepreneurship. A large proportion of the beneficiaries are women. The Ministry of Industry has promoted small and medium-sized enterprise loans. Important efforts have also been made

Box 6. Pakistan: Mobile-based post-literacy programme (mobile telephones as tools for illiterate women)

UNESCO, in collaboration with Mobilink Pakistan, the BUNYAD Foundation, the Punjab Department of Literacy and other partners, funded a mobile-based post-literacy programme. This distance post-literacy project is based on mobile technology and its objective is for women to consolidate recently gained literacy skills by receiving and sending mobile telephone text messages (The Communication Initiative Network, 2013).

The project uses ICT to strengthen the literacy skills gained in training courses in Pakistan. Pakistan, where only 40 per cent of women have literacy skills, has one of lowest literacy rates in South Asia. According to UNESCO, one of the reasons for this low literacy rate is the lack of opportunities for people who have completed basic literacy courses to practice and reinforce their literacy skills, which leads them to relapse to illiteracy (UNESCO, 2012b). This is a consequence of the inadequacy of the contents and lack of interest on the available literacy materials; newly literate people therefore find it difficult to maintain their interest in reading (UNESCO, 2012b). Maintaining the interest of those who are newly literate is necessary to consolidate their recently acquired literacy skills.

In Pakistan, about 100 million people have access to mobile telephones, and these are a means of communication for young people. In order to provide support to maintain interest in literacy and strengthen reading skills by fostering daily practice, UNESCO launched the mobile-based post-literacy programme, targeting women between 15 and 25 years of age. UNESCO launched the initial phase of this project in 2009 and in March 2012 the project began its third implementation phase (The Communication Initiative Network, 2013). It was expected to reach 4,000 women beneficiaries by the end of 2012.

The programme has two initial stages. In the first stage, daily text messages are sent to women in Urdu, and they are expected to respond. The subjects covered in the messages are relatable and of interest to the recipients, such as health-related and religious topics. The second stage involves monthly evaluations to assess the advances of the students and also includes interactive exercises and additional resources.

The third phase of the programme, launched in 2012, includes the development of an additional mobile application by Nokia, e-Taleem, which is based on the contents of an interactive DVD "Becoming Literate" provided by UNESCO that was incorporated in the training programme. In addition, the third stage of the programme includes the training of rural women teachers on literacy and non-formal basic education using mobile technologies. The training is based on mobile messages on various topics such as language, hygiene, religious values and numeracy that are sent to the teachers.

In terms of impact, by April 2013, 50 additional literacy centres had been established in Pakistan.

Source: Bunyad Foundation, 2013 and UNESCO, 2013.

in training and providing assistance to industrial entrepreneurs (Ministry of Finance Bangladesh, 2013).

Policies designed to improve the entrepreneurial skills of women have also been implemented in other countries, for example in Bhutan, where increasing access to rural credit and the promotion of SMEs and cooperatives, especially cottage industries such as in textiles and handicrafts, are part of the development strategy.

STI can also contribute to foster the business and entrepreneurial skills of women. For instance, in India, the implementation of mobile technologies has allowed women members of the Self Employed Women's Association (SEWA) to obtain efficiency gains

through the use of messaging applications to improve the supply-chain management of their businesses, as detailed in box 7.

The introduction of technological developments can produce important productivity gains in already established and well-known initiatives that work on improving the condition of women, further enhancing the benefits of the programmes.

Programmes designed to foster women's empowerment are widely employed in South Asia. For instance, in Bangladesh, programmes have been implemented to ensure connection to the Internet for the population, promote the software industry, improve the training of professionals and ensure quality health care using ICT innovations. Through setting

Box 7. India: Mobile ICT for rural women

An initiative aimed at increasing the entrepreneurial capacity of women is carried out by the local government of Gujarat (India) in collaboration with the Cherie Blair Foundation for Women and Vodafone. The project developed a mobile application tailored to the needs of the women belonging to Rural Distribution Network India (RUDI). This network is formed by the Self-Employed Women's Association, commonly known as SEWA.

Although the women of the network already have mobile telephones, the project developed a special mobile service that allows them to engage in real-time communication with RUDI management, check supply levels and text orders instantaneously. This mobile application uses a Java interface through which Rudibens (the women who form the network) are able to capture sales orders and place orders for new stock using their basic-feature telephones. This information is collected and transmitted to a central database using basic text messaging. The back end of the application stores information for the financial and audit requirements of RUDI's management. The application also generates several reports for the Rudibens on their telephones, to help keep essential information about their individual businesses at their finger tips (Cherie Blair Foundation for Women, 2012).

The benefits of this project include reduced time and travel costs, as well as efficiency gains in processing time, which translates into higher income and increases the time available for women to devote to other activities, such as developing their businesses and taking care of their families. Women avoid trips to the warehouse by placing their orders through the mobile service (one trip to place an order and one to pick it up can in some cases take up to seven hours). After their orders are placed, they are packed and distributed to the women in the villages (Vodafone Foundation, 2012).

This initiative was launched in January 2013 and is expected to reach 2,000 women entrepreneurs over a three-year period.

up union information and service centres, the Government of Bangladesh has not only provided ICT services to rural areas but has also created employment for almost 4,600 women since its implementation in 2010 (Ministry of Finance Bangladesh, 2013).

Another example of a country with experience in deploying programmes oriented to promote women's empowerment is the Islamic Republic of Iran. In this country *'policies are based on equilibrium instead of gender equality and allocating appropriate status and position to people regardless of their gender'* (Centre for Women and Family Affair, 2008:77). This does not mean, however, that women's empowerment is not a priority for this Government. Through its Ministry of Science and Technology, the Islamic Republic of Iran has implemented women's research centres that train women specialists to enter legislative and executive arenas. An example of a policy oriented to promoting empowerment through the provision of microcredit may be seen in a project of the Agricultural Bank of the Islamic Republic of Iran. Through the provision of microcredit and capacity-building this project contributed to enhancing the

empowerment of rural women, as well as their self-confidence, as detailed in box 8.

The STI policies presented in this chapter share three important characteristics. First, the STI programmes consider the creation of complementary capacities and the strengthening of skills that allow making the most of STI developments. Second, the programmes use STI as tools to foster other skills and enhance the impact of larger programmes and initiatives aimed at improving the livelihoods of women. STI programmes are not isolated initiatives but are embedded in or complement development programmes as key components that allow the enhancement of the benefits and effects of the programmes on the well-being of women.

Third, it is important to recognize the importance of collaboration between different agencies and ministries when implementing STI interventions. In this sense, donors and NGOs also play a relevant role in the promotion of STI in South Asia. An important portion of the initiatives is carried out in South Asia by local NGOs in collaboration with international agencies and with the support and coordination of local governments.

Box 8. Islamic Republic of Iran: Microcredit – the experience of the Agricultural Bank

The Agricultural Bank of the Islamic Republic of Iran (Bank Keshavarzi (BK)) has a long tradition of promoting the empowerment of women through the provision of microcredit. In September 2002, in collaboration with IFAD, the bank launched the Rural Microfinance Support Project (RMFSP). The project was funded in collaboration with the Italian Government and was carried out by the International Enterprise for the Development of Rural Microfinance Services. The initiative aimed to offer microfinance services and institutional capacity in poor and deprived regions of the country in collaboration with civil society organizations. The first phase of the project targeted the provinces of East Azerbaijan, West Azerbaijan, Ardabil and Kurdistan. The project's target groups were rural women, young adults and low-income individuals.

The project tested different rural microfinance mechanisms in these regions. The design stage of the project identified that only 35 per cent of the 83 per cent of rural families that expressed a need for credit actually obtained funding. In the case of rural women and young people, access to credit was far lower; only 1.5 per cent of the sample received funding. The general objectives of the project were to increase the target groups' access to financial services through banking links and to create job opportunities for rural women and young adults, thus increasing the earnings of low-income rural households. The project was implemented through the introduction of solidarity groups (SGs). The groups were created to enable the targeted beneficiaries to access credit without the need for collateral or guarantees.

At the end of the first stage, 53 per cent of the 2,500 rural participants were women. The project established 211 SGs, a number four times higher than the target of 55, offering evidence for the SGs as a replicable model on a wider scale. In addition, the project contributed to the establishment of 25 pilot self-help groups. Following the positive results of the first stage, in April 2005, Bank Keshavarzi requested IFAD to extend the project to a second stage. The project distributed \$2.5 million to micro and small credit projects and was expected to distribute an additional \$2.0 million in the following 18 months.

The project contributed to enhancing the empowerment of rural women as well as their self-confidence. The rural microcredit programme achieved about 56 per cent participation by women, against a target of 30 per cent. In addition, more than half of those executing the project at grass-roots, middle-level and managerial positions were women. Furthermore, women increased their interest in being group leaders, reaching 40 per cent in the second phase of the project, while in the first phase of the project few women had taken a leadership role (almost 95 per cent of the groups were gender mixed). The project also contributed to empowerment by promoting the role of women as secretaries and treasurers of the groups. Almost 53 per cent of the total participants in this position were women in the second stage of the project, while in the first stage few women had assumed these responsibilities.

The project also contributed to capacity-building through the creation of new organizational roles in local NGOs (new specialized support units for micro and small-scale financial services were created at the local NGOs) and by providing training to personnel of BK through learning from the experiences of other countries.¹⁷

¹⁷ IFAD, 2006, APRACA, 2012, Seibel, 2004, Motamed, 2013, IFAD, 2005c, IFAD, 2010b, IFAD, 2005a and IFAD, 2005b.

4. Conclusion

This report presents a compilation of STI policies and interventions that can potentially contribute to the enhancement of gender equality and improve the situation of women in South Asia. In this region, the gender divide is interlinked with cultural, economic and social factors such as class, with ethnicity and with other areas of inequality in society. This interdependence needs to be considered in order to improve the conditions of women in South Asia (UN-Women, 2009). At the same time, consideration of the factors that influence the gender divide in the region allow a sharpened focus and expectations when designing interventions to improve the condition of women. In addition, in order for STI to contribute to enhancing women's livelihoods and reducing the gender gap, it is necessary that STI developments address women's needs and that women are aware of the benefits of the new technologies and have access to them (FAO, 2011).

The analysis of STI policies for women presented in this report shows that the policies can potentially contribute to enhancing gender equality and improving the life of women through three main mechanisms: introducing and diffusing technological and scientific developments that improve the life of women; creating and strengthening, both directly and indirectly, capacities related to STI; and introducing financial innovation such as microcredit and related skills for entrepreneurs. The analysis also demonstrates that there are several similar trends in the sectors in which STI policies have been deployed. There is a clear and significant connection between the main areas of need for development and the focus of the interventions. Among the areas identified by this research are agricultural development, health, literacy, sanitation and labour markets. Some of the reasons for these parallels are the similar challenges in terms of

poverty and economic development faced by countries in the region.

Although the initiatives presented here are planned to cover the particular needs of countries, they share two main characteristics that enable them to improve the conditions of women in a sustainable manner: they foster the creation of complementary capacities and the strengthening of skills that allow beneficiaries to take advantage of science and technology developments; and they use STI programmes as tools to enhance the impact of larger programmes and initiatives aimed at improving the livelihoods of women.

To conclude, the analysis has shown that in order to reap the potential benefits of technological development for women, it is not enough to introduce a technology and expect beneficiaries, in this case, women, to adopt it. Rather, training programmes designed according to the needs of the women targeted are necessary to familiarize women with the technologies and to facilitate their interest and participation. The policy and initiatives examples in this report highlight the importance of creating the skills required to take advantage of the new technologies offered (ICRW, 2010). Consequently, an important lesson learned from the research is that the creation of capabilities for women is a critical step in helping women to benefit from the new opportunities produced by the introduction of STI policies and interventions. The STI initiatives presented in this report are far from being isolated interventions that only make STI available for women. On the contrary, they are usually part of larger, comprehensive programmes and are accompanied by training interventions and complementary programmes that facilitate the creation of long-term benefits for many other beneficiaries as well as individual communities of women.

Bibliography

- ADB (2009). *Powering the Poor: Projects to Increase Access to Clean Energy for All*.
- ADB (2010). *Gender Equality Results Case Studies: Sri Lanka*. Gender Equality Results Case Studies.
- ADB (2013a). *Gender and Urban Poverty in South Asia: Proceedings Report of the 2012 Subregional Workshop*.
- ADB (2013b). Liberating Sri Lankan Lives from the Water Trap. Available at <http://www.adb.org/features/liberating-sri-lankan-lives-water-trap> (accessed 21 October 2013).
- ADB (2013c). *31501-013: Secondary Towns and Rural Community-Based Water Supply and Sanitation. Project Data Sheet (PDS): Overview*. Asian Development Bank.
- ADB and ILO (2011). *Women and Labour Markets in Asia: Rebalancing for Gender Equality*.
- Aponjon (2013). APONJON. See <http://aponjon.com.bd/Content.php?Mid=37&SubMid=33> (accessed 11 September 2013).
- APRACA (2012). *Bank Keshavarzi (Agricultural Bank of Iran) Profile and Flagship Projects*. Asia-Pacific Rural and Agricultural Credit Association (APRACA).
- Balasubramanian S (2013). Why Microcredit May Leave Women Worse Off: Non-cooperative Bargaining and the Marriage Game in South Asia. *Journal of Development Studies*. 49(5): 609–623.
- Barefoot College (2013). Available at <http://www.barefootcollege.org/> (accessed 11 September 2013).
- Bunyard Foundation (2013). *Mobile-based Post-literacy Programme*. Available at <http://www.bunyard.org.pk/Mobile%20Based%20Literacy.htm> (accessed 22 October 2013).
- CEDAW (2007). Consideration of reports submitted by states parties under article 18 of the convention on the elimination of all forms of discrimination against women: seventh periodic report of states parties bhutan. No. CEDAW/C/BTN/7. Committee on the Elimination of Discrimination against Women, United Nations.
- CEDAW (2011). Consideration of reports submitted by States parties under article 18 of the convention on the elimination of all forms of discrimination against women: Fourth periodic reports of States parties – Pakistan. No. CEDAW/C/PAK/4.
- Centre for Women and Family Affairs (2008). *Women Status in Islamic Republic of Iran*. Available at http://iranianembassy.nl/en/9_hogh_bash/zanan/93.pdf (accessed 11 September 2013).
- Chen M and Doane D (2008). *Informality in South Asia: A Review*. Women in Informal Employment: Globalizing and Organizing (WIEGO) Working Paper.
- Cherie Blair Foundation for Women (2012b). Supply chain management solutions in India (2012). Available at <http://www.cherieblairfoundation.org/supply-chain-management-solutions-in-india/> (accessed 11 September 2013).
- Cherie Blair Foundation for Women (2013). *Vodafone Sewa App*. Available at <https://www.youtube.com/watch?v=GBIXTVF7OfM> (accessed 1 September 2013).
- Das Gupta M et al. (2003). Why is son preference so persistent in East and South Asia? A cross-country study of China, India and the Republic of Korea. *Journal of Development Studies*. 40(2):153–187.
- Department of Science and Technology (2013). *Annual Report 2011–2012*. Ministry of Science and Technology. Delhi, India.
-

- EIARD (2013). *Empowering women: Dairy goat technologies in Afghanistan*. International Centre for Agricultural Research in the Dry Areas.
- ESCAP (2010). *Women in Asia-Pacific: Challenges and Priorities Data Sheet*. United Nations Economic and Social Commission for Asia and the Pacific .
- FAO (2011). *The State of Food and Agriculture. Women in Agriculture Closing the Gender Gap for Development*.
- FAO (2012). *The State of Food Insecurity in the World 2012*.
- Ferdaush J and Rahman KMM (2011). Gender Inequality in Bangladesh. Available at <http://www.unnayan.org/> (accessed 6 September 2013)
- Fikree FF and Pasha O (2004). Role of gender in health disparity: the South Asian context. *British Medical Journal*. 328(7443):823–826.
- Ghosh J (2002). Globalization, Export-oriented Employment for Women and Social Policy: A Case Study of India. *Social Scientist*. 30(11/12):17–60.
- GSMA Association (2010). *Women and Mobile: A Global Opportunity – A Study on the mobile phone gender gap in low and middle-income countries*. GSMA Development Fund and Cherie Blair Foundation for Women.
- ICRW (2010). *Bridging the Gender Divide: How Technology Can Advance Women Economically*.
- IFAD (2005a). Challenging policy agenda facing IFAD project in the Islamic Republic of Iran. *IFAD: Making a Difference in Asia and the Pacific* . Issue 7.
- IFAD (2005b). Partnership between IFAD, the Government of the Islamic Republic of Iran, the Government of Italy, Bank Keshavarzi and NGOs. *IFAD: Making a Difference in Asia and the Pacific* . Issue 5.
- IFAD (2005c). *Rural Microfinance Support Project (RMFSP)*. IFAD Asia and Pacific Division
- IFAD (2006). Introducing a multi-stakeholder web-based database in IFAD-supporter project in the Islamic Republic of Iran. *IFAD: Making a Difference in Asia and the Pacific* . Issue 12.
- IFAD (2010a). *Promoting women's leadership in farmers' and rural producers' organizations*. Special session of the third global meeting of the Farmers' Forum in conjunction with the thirty-third session of IFAD's Governing Council. IFAD Headquarters, Rome, 12–13 February 2010.
- IFAD (2010b). Iranian experts seek lessons learned from experiences of self-help groups in India. *IFAD: Making a Difference in Asia and the Pacific* . Issue 33.
- ILO (2007). *ABC of women workers' rights and gender equality*. Geneva, Switzerland.
- ILO (2012). *Statistical Update on Employment in the Informal Economy*. ILO Department of Statistics.
- International Trade Centre (2011). Asian Development Bank's Energy for All Initiative. *International Trade Forum Magazine*. April, 2011. Available at <http://www.intracen.org/Asian-Development-Banks-Energy-for-All-Initiative/> (accessed 17 June 2013).
- Jejeebhoy SJ and Sathar ZA (2001). Women's Autonomy in India and Pakistan: The Influence of Religion and Region. *Population and Development Review*. 27(4):687–712.
- Kabeer N (2005). Is Microfinance a Magic Bullet for Women's Empowerment? Analysis of Findings from South Asia. *Economic and Political Weekly*. 40(44/45):4709–4718.
- Kabeer N (2012). *Women's Economic Empowerment and Inclusive Growth: Labour Markets and Enterprise Development*. SIG Working Paper. IDRC.

- Kabeer N and Mahmud S (2004). Globalization, gender and poverty: Bangladeshi women workers in export and local markets. *Journal of International Development*. 16(1): 93–109.
- Malhotra A, Schulte J, Patel P and Petesh P (2009). *Innovation for Women's Empowerment and Gender Equality*. ICRW.
- Ministry of Finance Bangladesh (2013). *Gender Budgeting Report 2013–2014*. Finance Division, Ministry of Finance, Government of Bangladesh.
- Ministry of Women's Affairs (2005). *National Action Plan for the Women of Afghanistan 2008–2018*. Afghanistan.
- Morrisson C and Jütting JP (2005). Women's discrimination in developing countries: A new data set for better policies. *World Development*. 33(7):1065–1081.
- Motamed AF (2013). Microfinance in the Islamic Republic of Iran with a glance at the Republic of Korea's. Available at <http://conf.mbri.ac.ir/akes/Default.aspx?PageName=Pages&ID=34> (accessed 12 September 2013).
- Nallari R and Griffitt B (2011). *Gender and Macroeconomic Policy*. World Bank.
- National Science and Technology Commission (2008). *National Science and Technology Policy of Sri Lanka*. National Science and Technology Commission. Sri Lanka.
- OECD (2010). *Atlas of Gender and Development: How Social Norms Affect Gender Equality in non-OECD Countries*.
- OSAGI (2001). Gender Mainstreaming: An Overview. Available at <http://www.un.org/womenwatch/osagi/conceptsanddefinitions.htm> (accessed 22 July 2013)
- PCST (2012). *National Science, Technology and Innovation Policy 2012*. Pakistan Council for Science and Technology (PCST) Ministry of Science and Technology, Government of Pakistan. Islamabad, Pakistan.
- Quisumbing AR and Maluccio JA (2000). Intra-household Allocation and Gender Relations: New Empirical Evidence. *World Bank Development Research Group Policy Research Report on Gender and Development: Working Paper Series, No. 2*.
- Ruwanpura KN (2004). *Quality of Women's Employment: A Focus on the South*. Decent Work Research Programme. Discussion Paper, No. DP/151/2004. International Institute for Labour Studies. Geneva, Switzerland.
- Sanitation and Water for All (2012). *Sri Lanka Briefing: Economic Impact of Water and Sanitation*.
- Seibel HD (2004). What Matters in Rural and Microfinance. Available at http://www.ruralfinance.org/details/en/?no_cache=1&src=10663&tdet=training&tdet2=&tdet3=2 (accessed 12 September 2013).
- SMEDA (2013). Small and Medium Enterprises Development Authority - SMEDA (Ministry of Industries, Pakistan), Women Entrepreneurship Initiatives. Available at http://www.smeda.org/index.php?option=com_content&view=article&id=236&Itemid=574 (accessed 22 October 2013)
- Solotaroff J, Rodella A-S and Kuriakose A (2012). *Gender in South Asia: Gaining Ground*. World Bank Working Paper 76340.
- Sonalde D and Lester A (2010). Gender Scripts and Age at Marriage in India. *Demography*. 47(3):667–687.
- Sudarshan RM (2010). Reading the Signposts: Social Protection for Home-based Women Workers in South Asia. *Social Protection as Development Policy*. Routledge.
- The Communication Initiative Network (2013). Mobile Learning: Literacy for Rural Women in Pakistan. Available at <http://www.comminit>.
-

- com/global/content/mobile-learning-literacy-rural-women-pakistan (accessed 22 October 2013)
- Trend (2013). Iranian official reveals maternal mortality rate in country. Available at <http://en.trend.az/regions/iran/2156811.html> (accessed 11 September 2013).
- United Nations (2008). Official list of MDG indicators.
- United Nations (2013a). The report – high-level panel.
- United Nations (2013b). Millennium development goals: 2012 progress chart.
- United Nations (2013c). *The Millennium Development Goals Report*.
- UNCTAD (2011a). *Applying a Gender Lens to Science, Technology and Innovation*.
- UNCTAD (2011b). *Information Economy Report: ICTs as an Enabler for Private-sector Development*. United Nations Publication.
- UNCTAD (2012). Open access, virtual science libraries, geospatial analysis and other complementary information and communications technology and science, technology, engineering and mathematics assets to address development issues, with particular attention to education. No. E/CN.16/2012/3.
- UNDESA (2012). Realizing the future we want for all: Report to the Secretary-General. United Nations System Task Team on the Post-2015 Development Agenda. New York.
- UNDP (2005). *Taking Action: Achieving Gender Equality and Empowering Women*.
- UNESCO (2003). *Gender and Education for All: The Leap to Equality*. Summary Report.
- UNESCO (2007). *Science, Technology and Gender: An International Report*.
- UNESCO (2012a). *Fact Sheet: Education in Pakistan*. Education for All Global Monitoring Report.
- UNESCO (2012b). Mobile-based Post-literacy Programme. Country Profile: Pakistan. Available at <http://www.unesco.org/ui/litbase/?menu=4&programme=125> (accessed 22 October 2013).
- UNESCO (2012c). *The United Nations World Water Development Report 4: Managing Water Under Uncertainty and Risk*.
- UNESCO (2013). Mobile Learning Projects to Empower Rural Women in Pakistan. Available at <http://www.unescobkk.org/education/ict/online-resources/databases/ict-in-education-database/item/article/mobile-learning-projects-to-empower-rural-women-in-pakistan/> (accessed 22 October 2013)
- UNFPA (2009). *Gender Equality and Empowerment of Women in Nepal*.
- UNFPA (2011). The State of the World's Midwifery 2011. Available at http://www.unfpa.org/sowmy/resources/en/country_info.htm (accessed 6 September 2013).
- UNFPA, UNICEF, WHO and World Bank (2012). *Trends in Maternal Mortality: 1990–2010*. WHO.
- UNICEF (2009). *Midwife Training Programme Aims to Reduce Maternal Mortality in Afghanistan*.
- UN-Women (2009). *World Survey on the Role of Women in Development*.
- USAID (2012a). USAID's Efforts to Empower Women through Agriculture. *Nepal Quarterly Newsletter*. USAID
- USAID (2012b). MAMA Bangladesh – Connecting Health Information and Services to Mothers Through Mobiles. Available at <http://blog.usaid.gov/2012/04/mama-bangladesh-connecting-health-information-and-health-services-to-mothers/> (accessed 11 September 2013).

- Vodafone Foundation (2012). India and Cherie Blair Foundation: Women's RUDI network (video). Available at <http://mobileforgoodvideoplayer.vodafonefoundation.org/videos/watch/india-cherie-blair-foundation-sewa-app> (accessed 11 September 2013)
- World Bank (2008). *Girls' Education in the Twenty-first Century: Gender Equality, Empowerment and Economic Growth*.
- World Bank (2009). *Gender in Agriculture*.
- World Bank (2012a). *World Development Report: Gender Equality and Development*.
- World Bank (2012b). *Gender-inclusive Nutrition Activities in South Asia*. Dissemination Note, Vol. 71669, No. 3. South Asia Social Development Unit.
- World Bank (2012c). Applying a gender lens to the Bank's work in South Asia. *South Asia Gender Initiative*.
- World Bank (2013a). *World Development Indicators*.
- World Bank (2013b). South Asia Regional Brief. Available at <http://www.worldbank.org/en/news/feature/2013/09/26/south-asia-regional-brief> (accessed 18 April 2013).
- World Bank (2013c) Bangladesh: Secondary Education for All. Available at <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTEDUCATION/0,,print:Y~isCURL:Y~contentMDK:20530056~menuPK:617572~pagePK:148956~piPK:216618~theSitePK:282386~isCURL:Y,00.html> (accessed 21 October 2013).
- World Economic Forum (2012). *The Global Gender Gap Index 2012*
-

