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Linking social protection and water security to empower women and girls

Christy Lowe, Eva Ludi, Miriam Denis Le Sève and Josephine Tsui

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Key messages

- Water insecurity is a significant, heavily gendered and growing driver of poverty, vulnerability and risk in many low- and middle-income countries. Without urgent action, its prevalence and impact will only increase, as climate change and rapid urbanisation exacerbate existing water security challenges.
- Water insecurity weakens the ability of social protection to promote gender equality and female empowerment. The burden of water collection and lack of water facilities can restrict female participation in some types of social protection programmes and in the education and employment opportunities they aim to promote. Water insecurity also undermines social protection efforts to promote health, nutrition and food security.
- Social protection has the potential to support gender-sensitive improvements in water security. To realise this potential, programmes need to explicitly acknowledge and address both water insecurity and its gendered effects in programme objectives, targeting criteria, design features and monitoring mechanisms.
- In addition to addressing chronic poverty and vulnerability, social protection can effectively support households affected by fluctuating and evolving risks, including rising water insecurity driven by climate change and informal settlement growth. For example, social protection can help those vulnerable to climate change to anticipate, absorb and adapt to droughts, floods and other climate-induced shocks.
- Coordinated action is needed across sectors to drive progress on gender equality and female empowerment, as well as sustainable reductions in poverty, vulnerability and water insecurity. This requires thoughtful collaboration between social protection, water and gender agencies, alongside those responsible for climate change, disaster risk management and urban development.

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Acronyms

ATU	A Trabajar Urbano (Peru)
CLP	Chars Livelihood Programme
IBT	increasing block tariff
KSh	Kenyan Shilling
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act (India)
OHCHR	United Nations Office of the High Commissioner for Human Rights
PPWSA	Phnom Penh Water Supply Authority (Cambodia)
PSNP	Productive Safety Net Programme (Ethiopia)
R4	Rural Resilience Initiative
UN	United Nations
WASH	water, sanitation and hygiene

Executive summary

Social protection aims to reduce poverty and vulnerability, and to support people to manage risks throughout their lives, with a particular focus on disadvantaged groups. It is also associated with a number of 'transformative' goals, including the promotion of gender equality and the empowerment of women and girls. Yet there has been increasing recognition that social protection on its own is limited in its ability to achieve these objectives, highlighting the need for coordinated action across sectors.

One relevant sector that has yet to be considered in depth in relation to social protection's objectives is the water sector, and the services and infrastructure aimed at promoting water security. Water security is a universally important goal, but one with particular gendered significance. Since women and girls carry the bulk of the water collection burden in most low- and middle-income countries, they are subject to substantial physical and psychological strain, and lose billions of hours that could otherwise be spent on other productive and valued activities, including schooling or employment. Gaps in water facilities also particularly hinder women and girls' ability to meet their reproductive and menstrual hygiene needs, and increase their exposure to gender-based violence risks when walking to, waiting for or using public facilities. Furthermore, water-related shocks such as droughts and floods tend to most adversely affect women and girls, as their assets and nutritional intake are typically sacrificed first, and they have lower access to resources, migration opportunities and other coping mechanisms.

Left unaddressed, the negative impacts of global water insecurity on women and girls will only increase, as climate change and concentrated population growth exacerbate existing water security threats. Water insecurity is, therefore, a significant, heavily gendered and *growing* driver of poverty, vulnerability and risk in many low- and middle-income countries. This makes it an important concern for those aiming to tackle the long-term drivers of poverty, vulnerability, risk and gender inequality – including those working in the social protection and gender sectors. Yet to date, there has been limited focus within these fields on the importance of water security for the reduction of gendered poverty and vulnerability, or on the role that social protection could play in addressing gendered water security risks.

This paper aims to fill this gap by providing an initial exploration of the key linkages between the social protection, water and gender sectors. We consider the impact of water security on gendered outcomes of social protection, the role of social protection in addressing gender inequalities related to water security, and the potential benefits of coordinated action across these domains, including in response to increasing pressures caused by climate change and rapid urbanisation.

Key findings

Our review identifies several ways in which water insecurity hinders social protection's ability to promote gender equality and empower women and girls. First and foremost, the burden of water collection is a major drain on the time and energy of women and girls in poor households, which can restrict their participation in some social protection schemes, as well as in the school or work opportunities that social protection often aims to promote. Progress towards female empowerment is also hindered by inadequacies in water and sanitation facilities, which reduce female attendance rates at school and work participation, thereby reducing women and girls' eligibility for education- and employment-related

social protection schemes. Water insecurity also directly undermines social protection's efforts to improve the health, well-being, and food security of beneficiaries (which often have a focus on women and girls). Overall, water insecurity – whether chronic or intermittent – represents an important cause of vulnerability with heavily gendered impacts, and therefore warrants far greater consideration in the design and targeting of social protection schemes.

To date, however, few social protection programmes have explicitly acknowledged, aspired to achieve or evaluated improvements in water security, resulting in significant evidence gaps on how social protection can best support women and girls in water insecure households. The literature that is available suggests that social protection does have the potential to support gender-sensitive improvements in water security. But to realise this potential, social protection schemes need to more carefully consider and address both water insecurity and its gendered effects.

In exploring this potential, we focus first on the role of four key social protection instruments in improving access to water for the benefit of women and girls. We find that where the main barrier to water security is affordability, **cash transfers** can improve access, but only if the needs of women and girls are prioritised in transfer expenditure. This in turn often requires more overt efforts to empower women in household decision-making. Where there are gaps in the availability or quality of water supply, cash transfers alone can do little to facilitate water access. Here, specific projects are needed to extend or improve water supply networks. While **public works** often feature projects to extend or enhance water infrastructure, such programmes have frequently failed to achieve these aims because of a lack of focus on the quality, durability and principal beneficiaries of the constructed assets. Meanwhile, **water subsidy schemes** have strong potential to improve the affordability and availability of water sources. However, the emphasis on quantity-based consumption subsidies for the piped water network has generally penalised poor households where multiple families share the same residence, and has excluded marginalised households that are not yet connected to the network. Subsidising the water sources actually used by poor people (such as water kiosks) or subsidising their connection to the piped network tend to be more effective in extending water access, but public investment in network expansion is also required to ensure that households in unserved areas benefit. Ultimately, there is a clear need for more **multisectoral programming**, requiring integrated working between agencies responsible for social protection, water security and gender projects.

We also consider the role that social protection can play in improving women and girls' capacity to manage water-related risks, through an analysis of two rising, gendered water security threats: climate change and rapid urbanisation.

In response to water-related risks linked to **climate change**, we observe that a wide range of social protection programmes can look to improve women and girls' resilience to droughts, floods and other climate-induced shocks. For example, public works programmes and weather-indexed insurance can help anticipate and mitigate the physical and livelihoods threats typically associated with water-related shocks. Cash transfers can help absorb the impact of such shocks after they occur, while asset transfers can help women and girls to adapt their livelihoods strategies in places where climate change threatens the sustainability of existing ways of life. However, for any of these schemes to achieve their potential for women and girls, they must do more to incorporate gender perspectives, including by actively involving women and girls in scheme design and implementation and by taking account of gender-specific time, resource, mobility, and information constraints.

In response to the practical, legal and financial barriers to water security that emerge in informal settlements following rapid **urbanisation**, water subsidy schemes can play a key role but must be designed to actually reach women and girls in these settings. Social protection may also be able to help improve water provision by engaging marginalised women and girls in community groups that advocate for and input into urban planning initiatives.

Our overall conclusion is that the linkages between social protection, water and gender concerns are stronger than previously recognised and will only become further entrenched as the effects of climate change and urbanisation intensify. Failure to explicitly acknowledge and address these existing linkages and evolving risks could hinder progress across sectors, while improved cross-sectoral understanding and action can generate more sustainable reductions in gendered poverty, vulnerability and water insecurity – and help lay the foundations for broader female empowerment gains.

1 Introduction

Access to 'sufficient, safe, acceptable, physically accessible and affordable water' is a basic human right, adopted by the United Nations (UN) General Assembly in 2010 (UNGA, 2010). It is also a precondition for poverty reduction, social development and sustainable growth. Yet 2.1 billion people around the world still lack access to safely managed drinking water (WHO and UNICEF, 2017).

The burden of this water scarcity falls disproportionately on women and girls, who are responsible for water collection in 8 out of 10 households that do not have access to water on their premises (UN, 2015; WHO, 2017). As a result, women and girls in many low- and middle-income countries walk for an average of 6 kilometres each day to collect water (UN, 2010). In sub-Saharan Africa alone, the time cost of water collection has been estimated at 40 billion hours per year (Lenton et al., 2005). This burden takes time and energy away from education, employment and other income-generating activities. It leaves women and girls less time to undertake other valued activities, such as care for children or older people, and for leisure and rest. It also exposes women and girls to significant physical and psychological strain, as well as risks of gender-based violence while walking to or collecting from water source locations (Graham et al., 2016).

Global water insecurity is only set to increase, as climate change and concentrated population growth exacerbate existing threats to the accessibility, availability, affordability and quality of water services. Poor households in low- and middle-income countries – and poor women and girls in particular – will bear the brunt of this growing water insecurity (UNDP, 2010; Parker et al., 2016). More arduous water collection, more limited supplies of water and the degrading quality of water for domestic and productive use all put households at risk of falling further into poverty and intensify the social and economic vulnerabilities faced by women and girls in their struggle to access this vital resource.

Water insecurity is, therefore, a significant, heavily gendered, and growing driver of poverty, vulnerability and risk in many low- and middle-income countries. This undermines the achievement of the main objectives of social protection: to reduce poverty and vulnerability, particularly among disadvantaged groups, and to enhance people's capacity to manage economic and social risks throughout their lives.

In 2007, the UN Committee on Economic, Social and Cultural Rights (CESCR) explicitly recognised the link between social protection and water security, specifying that social security should provide, at the very least, a minimum essential level of benefits that enables all individuals and families to access basic water and sanitation (alongside essential healthcare, basic shelter and housing, food and basic education) (CESCR, 2008). To date, however, there has been little focus within the social protection field on the importance of water security for the reduction of poverty and vulnerability, or on the role of social protection in addressing water security risks. Furthermore, while both social protection experts and water experts have highlighted the importance

Box 1 Water security

Water security is defined as:

- the availability of an adequate quantity and quality of water for health, livelihoods, ecosystems and production, and the capacity to access it; coupled with
- an acceptable level of water-related risks to people and environments, and the capacity to manage those risks

Source: Calow et al., 2013

of, and potential for, addressing gender inequalities and empowering women and girls through their respective fields, linkages across social protection, water security, and gender equality and female empowerment domains have not been well established. This gap is in part, the result of the pervasive challenge of institutional 'silos', but also reflects the relatively recent emergence of social protection on the global development agenda (Devereux et al., 2016) and on the policy agendas of countries where water security is low.

This paper aims to build an understanding of these linkages by considering the role of water security in improving the gendered outcomes of social protection, the role of social protection in addressing gender inequalities related to water security, and the potential benefits of coordinated action across the three domains. We argue that there are important interactions between efforts to promote social protection, water security, and gender equality and female empowerment. Failure to acknowledge this interplay could hinder progress in all three areas, while unleashing their synergies could generate more sustainable reductions in gendered poverty, vulnerability and water insecurity, and help to dismantle existing inequalities and propel broader gains in female empowerment.[1]

1.1 Conceptual framework

Our conceptual framework (see Figure 1) starts from the recognition that both social protection systems and water sector projects often acknowledge gender inequalities within their spheres, and state aims relating to the empowerment of women and girls (see GWTF, 2006; Holmes and Jones, 2013; UN Women, 2018; SPIAC-B, 2019). But the efforts of social protection and water programmes to address gender inequalities and empower women and girls do not operate in isolation. Section 2 of this paper analyses the two main pathways through which the fields interact.

Pathway 1: relates to how water security affects the ability of social protection to reduce female poverty and vulnerability and to enhance women and girls' capacity to manage risks. We explore four potential channels of impact:

- the effects of water-related time poverty on women and girls' ability to participate in – and be empowered by – social protection programmes
- the obstacles that poor water facilities may create for social protection's efforts to promote female access to education and employment

Box 2 Gender equality and the empowerment of women and girls

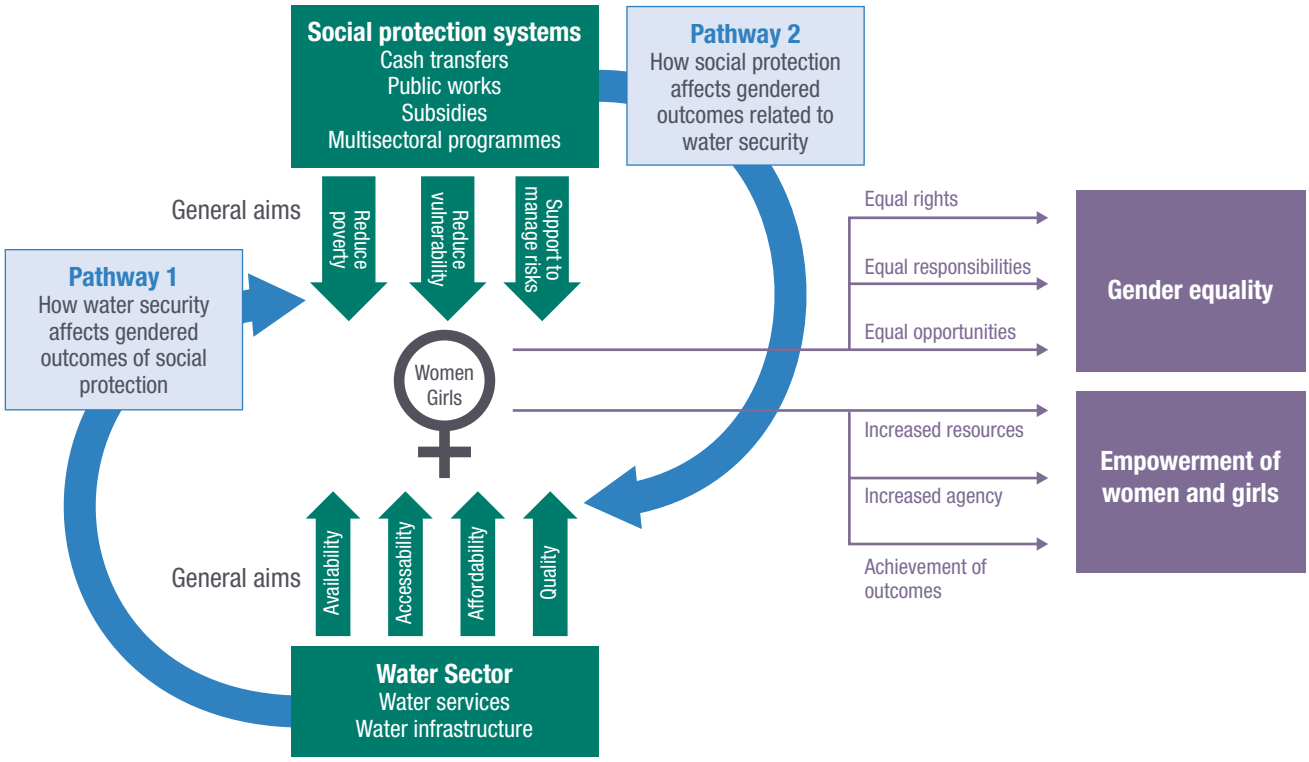
Gender equality refers to 'the equal rights, responsibilities and opportunities of women and men, and girls and boys' (UN Women, n.d.).

The empowerment of women and girls refers to the 'process by which those who have been denied the ability to make strategic life choices acquire such an ability' (Kabeer, 1999: 435). This ability incorporates three interrelated dimensions:

- **Resources:** access to current resources and claims on future resources
- **Agency:** the ability to use resources to define and act on goals or choices
- **Achievements:** the extent to which women and girls are able to use their resources and agency to live the lives they want.

1 We recognise that there are also important linkages between social protection, gender and sanitation/hygiene, but we have focused on water in this paper, rather than the broader field of water, sanitation and hygiene (WASH), for two reasons. First, maintaining the focus on one area within the WASH sector enables us to explore in greater depth the nature and impact of the cross-sectoral linkages with social protection and gender – the paper's primary purpose. Second, gender considerations tend to be more commonly recognised and discussed in relation to sanitation and hygiene (particularly in relation to menstrual hygiene management), whereas gender issues and impacts may be less prominent in social protection policy-makers' and practitioners' considerations of water services and infrastructure.

Figure 1 Conceptual framework



Evolving landscape: increasing pressures from climate change, and concentrated population growth in urban areas

- the impact of inadequate water supply on the efforts of social protection programmes to improve food security, health and nutrition (often with a focus on women and girls)
- the extent to which water security is – or should be – considered explicitly in the targeting of social protection support.

Pathway 2: relates to the role that social protection plays – or could play – in improving water security for women and girls, and addressing gender inequalities related to water access. We acknowledge that the universal realisation of the right to water is a vast and complex goal, requiring significant investments in water service and infrastructure expansion, and involving a wide range of stakeholders and sectors. Social protection can, therefore, play only a modest part in a much larger-scale effort. Nevertheless, social protection's focus on supporting the most vulnerable makes it a valuable potential contributor to the expansion of water security. Our exploration of Pathway 2 in Section 2 looks at the role that four key social protection instruments play – or could play – in improving access to water to benefit women and girls (see Box 3). We consider access to water in terms of four criteria that are often used to assess the right to water: availability, accessibility, quality and affordability (OHCHR, n.d.).[2]

These interactions are taking place in an evolving landscape. In Section 3, we highlight two drivers of rising water insecurity – climate change and concentrated, unplanned growth in urban areas. We consider the role that social protection can play in building women and girls' capacity to manage shocks and stresses caused by these growing, gendered threats to water security.

More specifically, this paper explores the interactions between separate efforts of the

2 The rights to water and sanitation were recognised together by the UN General Assembly's Resolution 64/292, and the same criteria are used to determine access to both rights. The full list of criteria also includes cultural acceptability, but the OHCHR notes that concerns about this criterion relate more to the right to sanitation, so it is not discussed in our paper (OHCHR, n.d.).

water and social protection sectors to support women, girls and shifts in gender relations (the pathways on the left-hand side of the diagram in Figure 1) and the evolving landscape in which they operate. Using a multisectoral lens, we aim to build on and help to connect the existing research across the two sectors and to stimulate new thinking on potential synergies to promote gender equality and female empowerment.

Box 3 Social protection instruments that relate to water security

Social protection refers to the policies and programmes designed to reduce and prevent poverty and vulnerability throughout the life cycle (ILO, 2017). Social protection is commonly grouped into three categories (World Bank, 2012a): (1) social assistance, which provides support on a non-contributory basis; (2) social insurance, which tends to consist of contributory schemes that provide protection against particular life-cycle risks such as illness or unemployment; (3) labour market interventions, which help workers find jobs or enhance their skills or productivity.

While water insecurity may affect women and girls' access to all forms of social protection (because, for example, the time taken to collect water reduces the opportunity to participate in any of the schemes outlined), only a subset of social protection instruments are likely to be relevant to water security goals.

Section 2 considers social protection instruments that have the potential to improve the capacity to access water of an adequate quality and quantity. These include:

- **Cash transfers:** cash payments to individuals or households, on a regular or emergency basis. Cash transfers have the potential to improve water security by increasing the recipients' ability to purchase more or better-quality water or invest in water infrastructure.
- **Public works programmes:** provision of cash or food payments to participants in return for their labour to build or develop community assets. These programmes have the potential to improve water security if the constructed assets improve water conservation or collection infrastructure, or improve resilience to droughts or floods. In addition, the wages that public works participants earn may be paid in cash, increasing households' purchasing power in the same way as standard cash transfers.
- **Water subsidies:** government schemes to make water access more affordable and accessible. These can directly subsidise the cost for households to connect to or consume from the water supply, or indirectly subsidise water access through public financing to expand the water supply network.
- **Multisectoral programmes:** the provision of a standard social protection intervention (e.g. a cash transfer) in combination with components from or linkages to other sectors. These include 'cash-plus' programmes, where the 'plus' component links to programmes or services in sectors other than social protection.

Section 3 considers additional social protection instruments, with potential to improve capacity to manage water-related risk, notably **weather-indexed insurance** (schemes that make payouts for potential production losses when weather patterns deviate from historical trends by a pre-agreed threshold).

2 Social protection, water security and the empowerment of women and girls

To build on the synergies between social protection, water security and gender equality initiatives, it is important to first understand existing linkages between these three areas. This section considers: (1) how water security affects the gendered outcomes of social protection, and (2) how social protection affects gendered outcomes related to water security.

2.1 Pathway 1: How water security affects social protection's impact on women and girls

2.1.1 Time poverty as a barrier to participation

The many billions of hours that women and girls spend each year on water collection are a major cause of their time poverty. This time poverty limits their ability to participate both in social protection programmes themselves, and in the education and employment activities that social protection often aims to promote.

Research on social protection participation has shown that time poverty often hinders women's ability to fulfil time-intensive requirements of conditional cash transfer schemes (Cookson, 2018). Their domestic workload also presents a common obstacle to their participation both as workers on public works projects and in the community meetings where decisions are made about the assets to be constructed through the public works programme (Devereux and Solomon, 2006; Gutierrez et al., 2010; Zaidi et al., 2017). A study of 43 public works programmes in 27 countries found that only 16% acknowledged women's time poverty, suggesting that the vast majority of programmes overlook this significant constraint in their programme design and implementation (Tanzarn and Gutierrez, 2015).

Even when women do participate in social protection schemes, there is a risk that the water collection burden may simply be passed on to their daughters. For example, when women participated intensively in the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) public works programme in India, the eldest daughters were found to spend fewer hours in school. This was attributed to their increased responsibility for household chores in the absence of their mothers (Bárcia de Mattos and Dasgupta, 2017).

The burden of water collection, therefore, affects female participation not only in social protection programmes but also in school, employment and other income-generating activities. Promoting access to these opportunities is one principal way in which social protection tries to rectify gender inequalities and empower disadvantaged women and girls. Water-related time poverty therefore hinders both the immediate gendered outcomes of social protection in terms of

female participation rates, as well as its longer-term impacts on gender equality and the empowerment of women and girls.

2.1.2 Inadequate water facilities as a cause of missed school and work, and, therefore, social protection eligibility

Access to an adequate water supply, alongside decent sanitation and hygiene facilities, is important for sustained female attendance in school and work. This attendance is often a goal of and, in some cases, a direct requirement for social protection participation.

While WASH facilities are important for everyone, they are particularly vital for women and girls because WASH is essential for menstrual hygiene management (UNICEF and WHO, 2018). WASH facilities also matter for women and girls because they face greater risks of gender-based harassment when private WASH facilities are lacking (WaterAid, 2018).

In many cases, however, WASH facilities are either not available or not in an adequate condition as a result of poor design and maintenance. A World Bank study in Cambodia, for example, found that one-quarter of all workplaces did not have toilets (World Bank, 2008), while a global study in 2016 found that 34% of schools lacked basic sanitation facilities, and 36% lacked handwashing facilities with water available (UNICEF and WHO, 2018).

Inadequate WASH facilities can force women to miss work or girls to miss school, particularly when they are menstruating. One study from the Philippines, for example, estimated that each year, poor sanitation facilities caused 13.8 million workday absences for women across the country (World Bank, 2008). Another study found that 1 in 10 school-age girls in sub-Saharan Africa miss school during menstruation (WHO and UNICEF, 2013) and this irregular attendance can lead to lower grades and higher rates of school dropout (WSCC, WaterAid and Unilever, 2013).

Higher rates of absence from work or dropout from education may, in turn, have a direct impact on the eligibility of women and girls for various social protection benefits. These may include school meals schemes, cash transfers that require certain school-attendance levels or employer-subsidised health insurance.

2.1.3 Water security as a determinant of social protection's impact on health, nutrition and food security

Water insecurity can undermine the effectiveness of social protection schemes in several key domains. Many social protection programmes, for example, aim to improve food security, health and nutrition (often with a specific focus on women or girls). But water availability is essential to meet food production, health and nutritional needs, while the quality of the water supply determines exposure to water-borne diseases, which have a direct impact on nutrition and health.

If safe drinking water is unaffordable or inaccessible, women and girls will often resort to collecting water from unsafe sources, with a negative impact on their health and the health of their families. As a result, the attempts of social protection to improve health, nutrition, and food security are all less likely to succeed if participants do not have reliable access to an affordable supply of safe water for consumption, food preparation and hygiene practices (Marcus et al., 2004).

This impact has been noted in several evaluations of social protection programmes. In Zambia, for example, research on the Child Grant Programme found that its impact on child nutrition outcomes was severely reduced where beneficiary households lacked access to safe drinking water (Seidenfeld et al., 2014).

Similarly, an evaluation of Ethiopia's Integrated Nutrition and Social Cash Transfer Pilot identified water scarcity as a critical factor that constrained the programme's ability to improve well-being (Roelen et al., 2017). To help address child malnutrition, the pilot included specific behavioural change communication materials on water, sanitation and hygiene. Yet participants were unable to implement the guidance because of severe water shortages following a drought. Broader research on conditional cash transfer schemes has also concluded that women's ability to meet programme conditions related to health, nutrition and hygiene is heavily constrained by inadequate access to potable water facilities (Cookson, 2018). Without consistent access to water of sufficient quality, women cannot

correctly implement many of the health, nutrition and hygiene practices advised by the schemes.

2.1.4 Water insecurity as a potential indicator of social protection eligibility

Poor water security can be an important indicator of the need for social protection as it suggests both current deprivation and increased vulnerability to future shocks, such as ill health or malnutrition (Marcus et al., 2004; Calow et al., 2010). Some long-standing cash transfer programmes consider water access as part of their eligibility criteria and assess community or household access during their targeting process. Mexico's Prospera cash transfer programme, for example, used various socioeconomic indicators in its proxy means testing, including a variable that assesses whether the household has exclusive access to a toilet with running water (Dávila Lárraga, 2016). However, water access is often not a static measure. This means that targeting mechanisms also need to account for fluctuations in water security, identifying vulnerability to droughts, floods or other water-related shocks.

Temporary threats to water security are now being incorporated into social protection targeting mechanisms in some contexts, as when water scarcity measures are used to trigger short-term social assistance or social insurance payments. In Ethiopia, the Water Requirements Satisfaction Index measures actual and estimated rainfall in local government zones to assess whether rainfall levels meet the water needs of specific staple crops. This index feeds directly into the Risk Financing Mechanism, which can increase the duration and coverage of the Productive Safety Nets Programme (PSNP) – the country's flagship social assistance scheme – in response to a drought (Bastagli and Harman, 2014). As discussed in Section 3, there is a growing need for these shock-responsive mechanisms, to enable social protection to recognise and respond to the increasing water security risks caused by climate change.

2.2 Pathway 2: How social protection affects water security outcomes for women and girls

2.2.1 Cash transfers

Cash transfers provide income support to individuals or households to reduce their poverty or vulnerability and improve their living standards in the short or long term. Cash transfers are a popular social assistance instrument and can be found in their unconditional or conditional forms in over 100 countries, with vast variations in coverage (World Bank, 2018).

According to the World Bank's Atlas of Social Protection: Indicators of Resilience and Equity (ASPIRE) database,[3] the (relatively limited) household survey data available on cash transfers reveal that coverage of the poorest quintile of the population averaged 40% for conditional cash transfers and 23% for unconditional cash transfers but varied from 2.4% to 75% for the former and from 0.6% to close to 100% for the latter (ibid.). On average, unconditional cash transfers represented 19% of beneficiary welfare (income/consumption) for the poorest quintile, and conditional cash transfers represented 16%. However, in some countries with more generous benefit levels, the transfers represented a third or even up to half of beneficiary welfare among the poorest quintile, as in the case of unconditional cash transfers in Georgia and Rwanda (ibid.).

The key question for this paper is whether the increased purchasing power among the recipients of cash transfers translates to gender-sensitive improvements in water security. Research suggests that for many poor households, the monetary cost of accessing safe water is often well above the affordability threshold (typically set at 5% of household income), even before the vast opportunity costs of the time spent on water collection are considered (Hutton, 2012). A study of rural and peri-urban households in Burkina Faso, for example, found that the average financial expenditure on water was 25% of household

3 This database uses data from the most recent household survey in each country (with a 2008 cut-off date).

income for all households, and as high as 37% for very poor households (Schweitzer et al., 2013).

This suggests that affordability can be a significant barrier to water access for poorer households, for whom cash transfers may offer a potential solution. Yet while there is extensive evidence that cash transfers lead to increases in total household expenditure, there is little research to date that analyses their impact on households' water-related expenditure or outcomes directly (Yablonski and O'Donnell, 2009; de Groot et al., 2017; Renzaho et al., 2018).

The studies that have included water-related analysis indicate that cash transfers may in certain cases lead to improved water access, but that this depends on the size, duration and stated purpose of the transfer, and on the availability of water supply networks. In South Africa, receipt of the Old-Age Pension and Disability Grant increased the likelihood of access to piped water, but the Child Support Grant had no impact – perhaps because the transfers were diverted to other priorities for the child, such as education or nutrition (Case, 2001; Samson et al., 2004).

During a basic income grant trial in Madhya Pradesh, India, households receiving the grants saw greater increases in the installation of taps and pumps for both domestic and productive use, relative to the control group (Davala et al., 2014). Meanwhile, a survey on a national cash transfer scheme in Palestine found that many recipients relied on the transfers to pay water bills but were often still left with inadequate access because of the small transfer size, coupled with wider supply issues (Pereznieto et al., 2014). A review of 23 cash-based interventions in refugee settings concluded that such interventions have strong potential to support refugees' access to water, but only where this is a service that people pay for and the barrier to access is simply affordability (UNHCR, 2016).

In many contexts, the provision of cash transfers alone will not be enough to improve water security (Collins, 2015; Smith et al., 2018). The absence of quality water services and infrastructure at community level may mean that households cannot simply pay for increased or improved water consumption. But even where recipients could do so, it may not be a priority in a household's decision-making because of the gendered nature of the burden, which is felt most keenly by women and girls (FAO, 2016).

This may be particularly true for large expenditures, such as the installation of a piped water connection, because women tend to have less influence on decisions about major household purchases (Asim, 2008). While giving transfers directly to women may in some cases improve their bargaining power, entrenched family power dynamics still tend to drive how transfers are spent (Holmes and Jones, 2013; Hagen-Zanker et al., 2016). It should not, therefore, be assumed that cash transfers will always translate into improvements in water access for women and girls.

2.2.2 Public works programmes

There are public works programmes in roughly 100 countries, but most operate in only a limited geographical area (McCord and Slater, 2009; World Bank, 2018). A few high-profile exceptions have achieved large-scale coverage, such as India's Mahatma Gandhi National Rural Employment Guarantee Act scheme (MGNREGA), Malawi's Social Action Fund (MASAF) and Ethiopia's Productive Safety Net Programme (PSNP), which cover around 27%, 21% and 13% of the poorest quintile, respectively (World Bank, 2018). However, in most countries, public works programme coverage rates are well below these percentages.

Unlike cash transfer schemes, where water security has rarely featured in programme objectives, several public works programmes have prioritised water conservation and collection explicitly when selecting their main infrastructure projects. These initiatives have worked to improve both traditional (grey) water supply infrastructure (such as water pumps, wells and tanks), and natural (green) infrastructure (such as wetlands and watershed protection).

One core aim of Ethiopia's PSNP, for example, is to improve natural resource management, including through soil and water conservation or water harvesting, with the ultimate objective of increasing people's water and food security. Public works investments aim to address disaster risks, for example, through irrigation to manage drought impacts. In some instances, labour from the public works programme has

also been invested directly in protecting sources of drinking water. Public works investments in soil and water conservation have been identified as contributing to raised groundwater levels, enhanced spring yields and increased stream-base flow, which has allowed more construction of domestic water supply systems. Ultimately, all of these interventions are considered to have increased the resilience of people and households to the impacts of climate change (Sandford and Hobson, 2011).

Similarly, India's MGNREGA scheme, the world's largest public works programme, works to enhance sustainable rural livelihoods through rejuvenation of the natural resource base (Ziegler, 2016), with around 80% of projects linked to natural resource development (Esteves et al., 2013). The programme's water conservation and harvesting works, drought proofing, irrigation works and renovation of traditional water bodies have been found to contribute to improved groundwater levels, increased water availability for irrigation, increased area irrigated by ground and surface water sources and the improved availability of drinking water (Tiwari et al., 2011; Esteves et al., 2013). There is, however, large geographical variation in the quality of the constructed assets, as well as uncertainty about their durability (Steinbach et al., 2016). There are also concerns about who benefits from the assets generated, given that construction sometimes takes place far from workers' homes or primarily benefits households that own land (ibid.).

Concerns about the sustained environmental benefits of MGNREGA or PSNP projects are reflected in the wider literature on public works and asset creation programmes (Ludi et al., 2016; Ludi, 2017). A recent review of the literature on public works programmes in sub-Saharan Africa, the Middle East and North Africa, and India noted a clear lack of robust evidence on the medium- and long-term benefits of the constructed assets (Beierl and Grimm, 2018). The same review identified several key determinants of the sustained impacts of assets, including the importance of: prioritising the use of quality materials over local procurement goals; allocating accurate levels of labour for quality construction (even where this minimises job creation); employing sufficient technical, management and construction expertise for project planning and implementation; considering and adequately financing maintenance arrangements; and coordinating the public works programmes with local and national development plans. The review also highlighted the need for careful community engagement to ensure local input on (and ownership of) the assets created, without facilitating elite capture, exacerbating time poverty or undermining technical guidance on quality asset creation.

The need to promote effective mechanisms to engage women and other marginalised groups when planning asset creation by public works is critical because of a historical lack of inclusive design and implementation in these programmes. This has often limited consideration of whether the constructed assets are appropriate for disadvantaged groups. For example, a study of 43 public works programmes found that less than one-fifth consulted women during the project identification phase, severely limiting the potential of these programmes to ensure their interests and needs are met (Tanzarn and Gutierrez, 2015).

2.2.3 Subsidies

Subsidies are often classified as social protection instruments when they are used by governments to reduce the cost of living for poor households and improve access to essential goods and services (Norton et al., 2001; Alderman, 2002). In many countries, governments provide public finance to subsidise water access (Mason, 2009). These subsidies may focus on (1) subsidising the cost of water **consumption**, (2) subsidising the cost of **connection** to the water supply, or (3) subsidising the **expansion** of the water supply network into previously unserved areas, thereby reducing the cost of water access for marginalised households.

Literature that provides evidence on the links between water subsidies and gender is limited. However, because women are primarily responsible for water access in many countries and they have lower incomes than men worldwide (UNDP, n.d.), any adverse change to water prices would be expected to affect them more acutely (Buvinic and Gupta, 1997). The Water War in Bolivia (1999–2000), for instance, saw a women-led citizen response to

an exponential increase in water tariffs when water services were liberalised. According to Beltran (2004), many women , as the people responsible for the daily tasks of fetching water and maintaining irrigation systems, had to adjust their budgets to pay the bills or go to distant public water.

Given the lack of specific research on water subsidies and gender, we focus below on the impact of different types of water subsidy policies for poor households. This is because poor people are typically the intended beneficiaries of social protection, and women and girls within poor households often feel the effect of subsidised water access most directly.

Consumption subsidies

Subsidies for water consumption are often incorporated directly into the water tariff structure (the water service provider's system of charges for water consumption) (Mason, 2009; Whittington et al., 2015). The increasing block tariff (IBT), used by 74% of utilities in developing countries, is the most popular tariff structure adopted by governments or water utilities seeking to assist poor households (Fuente et al., 2017).

The IBT is a quantity-based tariff, in which the payment per unit of water increases as the volume of consumption increases. Consumers face a low rate up to the first block of consumption and pay a higher price up to the limit of the second block, and so on until the highest block of consumption (adapted from Whittington, 2003). Although it has been a popular pro-poor option for policy-makers, a growing body of evidence suggests that IBT is an ineffective and often expensive way to deliver subsidies to low-income households (Whittington et al., 2015).

First, the poorest households in a community rarely have connections to the water network and cannot, therefore, take advantage of an IBT (or any other form of consumption subsidy). In fact, there are claims that suppressed tariffs decrease the likelihood of their connection in the future as they can erode the business case for network expansion (Whittington, 2003; OECD, 2015).

Second, effective targeting of IBTs is a key challenge. According to the study by Fuente et al. (2015) on IBT in Nairobi, and Whittington's assessment of households with private metered connections in South Asian cities (Whittington, 2003), the vast majority of households in these urban areas fall into the first and second blocks of the tariff structures, so most pay less than the average cost of the water service. The resulting monthly water bills are too low to cover the average financial cost of producing water. Furthermore, IBT policies assume that all customers are metered, while large numbers of households in many cities have unmetered private connections and are charged a fixed amount per month for water, regardless of the amount they use (Chenoweth and Bird, 2005). This is a particular problem wherever water supplies are scarce, because a fixed charge gives the household no incentive to conserve water (Whittington, 2003).

Lastly, many households, especially across Africa, share their housing, making it difficult to exactly estimate how much water each household is using (Boland and Whittington, 2003). Although households devise ways to divide water bills based on family size, multifamily households tend to consume a relatively large quantity of water collectively, which means that all the water consumed is charged at the more expensive tariff rate.

Taken together, these challenges have resulted in questions about the use of IBT in meeting the goals of efficiency and equity in recent years: if poorly designed, its negative impacts can nullify the desired effect on water savings. If an IBT or other quantity-based tariff structure is selected, it is vital that information is generated on household demographics, income patterns and household water consumption in informal settlements to inform better pricing and allocation policy (Chenoweth and Bird, 2005).

Rather than relying on quantity-based tariffs where consumption subsidies are allocated based on the volume of water usage, administrative targeting methods such as geographical, categorical or means-tested targeting can be used to direct consumption subsidies only to certain types of household (Ambrose, 1997; Mason, 2009; Whittington et al., 2015). If well implemented, such targeting can be effective in prioritising subsidies for the most disadvantaged households, and could take gender inequalities

into account more explicitly, for example by prioritising poor, female-headed households. However, administrative targeting can be highly expensive to develop.

Where strong administrative targeting systems are already in place for other social protection programmes, targeted water subsidies can make effective use of them, as in Chile where a means-tested water subsidy is delivered as part of a broader social protection programme (Mason, 2009). However, where the administrative targeting of other social protection programmes is weak, the development of a robust administrative targeting system solely for the water subsidy presents financial and administrative challenges. Furthermore, regardless of the targeting method, consumption subsidies only ever reach those who are already connected to the water network, thereby excluding many poor households.

Connection subsidies

Connection subsidies refer to one-time subsidies that reduce or eliminate the price paid by customers to be connected to the piped water network. Because poor households are likely to make up the majority of unconnected households, connection subsidies are typically considered to be a more effective way to support them than subsidising consumption (Komives et al., 2005).

The cost of connection is often extremely expensive for poor households and is, therefore, the biggest cost hurdle in accessing piped water. Once households are connected to the water utility, the cost of consumption tends to be much cheaper (as well as being more convenient, of a better quality and better regulated) than alternative sources, such as private water kiosks or water vendors.

In Addis Ababa, for example, high connection fees for the water network exceeded the median salary for government employees, prohibiting most poor households from connecting to the network and forcing them to consume from alternative sources such as public taps, private water kiosks and water vendors (Mason, 2009). These sources were much more expensive per unit of consumption than the cost of water from the piped network, with water vendors charging customers eight times more than the lowest tariff rate on the piped network (ibid.). Installing a household or public stand-post connection for these households to access the piped water network is likely to benefit women and girls disproportionately because the new connections reduce the time and energy they have to spend on collecting water from more distant, unreliable or expensive sources.

Connection subsidies are one-off subsidies and are much easier than consumption subsidies to target and administer (WaterAid, 2012). They can be universally targeted at all unconnected households or administered more selectively, for example by geographically targeting low-income areas. In Uganda, the National Water and Sewerage Corporation expanded coverage in urban areas through an affordable connections subsidy, which lowered the connection fee for any customer living within 50 metres of the water mains network (World Bank, 2014; WaterAid, 2016). Connections increased from 59,000 in 2004 to 146,000 in 2009, and led to an increase in water-supply coverage from 64% to 72%. There are, however, concerns about the extent to which the affordable connections subsidy benefited poor households (World Bank, 2014). First, the subsidy was not targeted, meaning that non-poor households, government and industrial customers were also able to benefit. Second, the subsidy was considered insufficient to benefit many poor households because the reduced connection fee still amounted to 74% of their average monthly income. In addition, because the subsidy was only available to households within 50 metres of the existing water mains network, many unserved neighbourhoods were neglected.

Such geographical restrictions are a common limitation of programmes that subsidise network connections. From an operational and financial sustainability viewpoint, these subsidies can only be viably offered to households near the existing mains network, but from a social protection viewpoint, this limits the ability of governments to support the most marginalised households in connecting to the network.

In the absence of infrastructure for household network connections, subsidising connection to the water sources that are available can be an important way to improve water access, provided that these sources are adequately regulated. In the Uganda example, the affordable connections

policy was accompanied by a targeted policy to subsidise connections to shared yard taps and prepaid public water points and kiosks in informal settlements in Kampala. This led to the installation of 2,500 yard taps and 660 public water points in five years, helping to increase water access in informal settlements to some degree and reducing their dependency on more expensive privately managed water points (World Bank, 2014). Subsidising access to new connections can also create new economic opportunities for women, if they are able to capitalise on opportunities in the water resale business through managing new public water points (Kariuki, 2014).

Subsidising network expansion

As demonstrated, subsidies for the household consumption of, or connection to, the water supply network requires water network infrastructure that is close to those households. However, this infrastructure is often absent in informal settlements and other marginalised areas.

The lack of financial incentives and potential doubts around legal tenure and regulatory requirements may prevent water suppliers from investing in expansion to these areas, creating a likely need for government subsidies or other public financing to support the expansion of the water supply network. From a gender perspective, increasing access to safe water in informal settlements is particularly important because they represent spaces where women and girls face interlocking time, economic and health and well-being penalties (Chant and McIlwaine, 2016).

International donors have played a role in supporting governments to deliver major increases in water production capacity and network expansion. In Dakar, Senegal, for example, the World Bank has provided critical finance to the city utility to increase its production capacity and to expand the network into poor communities, while a loan from the German Development Bank (KfW) has helped to construct a new treatment works and supported network expansion into poor areas of Nyeri, Kenya (Heymans et al., 2016). These investments develop the water and distribution networks needed to increase services for poor households, primarily by reducing operational costs.

There are, however, debates and conflicting views on whether donor money should be used to subsidise water utilities, or whether utilities should use other funding methods, such as cross-subsidising residential consumption by charging higher tariffs from commercial customers to cover operational costs. Some argue that donor money should rather be used to remove non-financial barriers such as water mafias, informality of land tenure or settlement patterns, which prevent utilities from expanding their networks and providing water services to poor areas (ibid.).

2.2.4 Multisectoral programming

Complementing core social protection interventions with broader initiatives to improve access to water and other basic services can lead to more pronounced and sustained impacts on the well-being of beneficiaries (Collins, 2015), with particular advantages for women (Plagerson and Ulriksen, 2015). These complementary interventions can focus on different types of barriers to water security by, for example, improving water accessibility, availability, affordability or quality.

To improve **water accessibility and availability**, cash transfers can be provided alongside projects to develop water supply or infrastructure in a given area. For example, the Chars Livelihood Programme (CLP) in Bangladesh combines asset transfers to poor women with a range of complementary interventions, including access to clean water and sanitary latrines. The programme has been found to produce wide-ranging positive impacts, including improving households' income, resilience to flooding and improved sanitation and hygiene practices (Goodman and Scott, 2010).

To enhance **water affordability**, social protection programmes can link beneficiaries with existing schemes to reduce the cost of water services, where available. This was a feature of Chile's Solidario programme, where cash transfers to vulnerable households were complemented with linkages to other government programmes. Designated social workers helped participants to access services and subsidies that they often did not know about, but for which they were already eligible. This included the Subsidio de Agua Potable, which fully subsidised 15 cubic metres of water consumption each month per household.

An important initial component of the programme was to ensure that the supply of services was sufficient to match the demand of participating families (Roelen et al., 2017).

To address issues with **water quality**, traditional social protection schemes can be complemented with information and materials for safe water use and treatment. In Mexico, Progresa participants who attended complementary workshops reportedly found information and guidance about safe water treatment to be both memorable and helpful (Adato and Roopnaraine, 2010). However, the benefits of such information sessions need to be weighed against the additional time burden they can create, and care should be taken to disseminate guidance and materials through approaches that are the least onerous for beneficiaries.

In our analysis so far, we have explored the role of four key social protection instruments in improving water security, by focusing primarily on its first component: the availability of an adequate quantity and quality of water, and the capacity to access it. In Section 3, we focus more closely on the role of social protection in addressing the second component of water security: the level of water-related risks, and the capacity to manage these risks. We explore this question by analysing two growing drivers of water insecurity: climate change and rapid urbanisation.

3 Current trends, future challenges

If they are to reduce individual and household-level risks effectively, social protection programmes must consider both present vulnerabilities and future threats. Water insecurity is on the rise worldwide (Mason et al., 2017), which has the potential to greatly exacerbate existing gender inequalities related to water security. This section focuses on two key drivers of increasing water insecurity: climate change, and rapid urbanisation (and expansion of informal settlements). It discusses the role of social protection in anticipating and addressing these trends in a way that reduces their gendered risks and empowers women and girls in the response.

3.1 Climate change

With the global increases in temperature, sea levels and the frequency of extreme weather events, climate change is expected to severely exacerbate existing threats to water security (UN Water, 2018). Poor households in rural areas are among the worst affected, and women in these households are disproportionately vulnerable because they tend to act as 'shock absorbers' in times of shortage (Quisumbing et al., 2008). At these times women face an increased water collection burden, and have reduced access to resources, information, decision-making and migration opportunities in response to water shocks (UNDP, 2010; Parker et al., 2016).

Climate-related disasters also expose women and girls to a greater risk of gender-based violence (CEDAW, 2018). A severe drought, for example, may require women and girls to walk longer distances to unfamiliar water sources, increasing the risk of gender-based violence on their journey. It may also damage crops or other sources of livelihoods (increasing the risk of marital conflict, or of negative coping strategies such as transactional sex, early marriage or trafficking), or it may lead to temporary or protracted displacement (increasing the risk of gender-based violence in insecure shelters) (IFRC, 2015).

While women and girls experience heightened gender-based risks related to climate change, they are also crucial contributors to disaster response and climate change adaptation efforts (Habtezion, 2012; Tschakert and Machado, 2012). Since women tend to be responsible for collecting natural resources, maintaining food and water provision, and supporting their family and community through seasonal and sudden-onset shocks, they often have deep knowledge and first-hand experience of responding to the effects of climate change. It is vital that these perspectives are carefully incorporated into resilience-building initiatives.

3.1.1 What are the implications for social protection?

Social protection is increasingly seen as a resilience-building tool for individuals, households and communities that face growing climate-related threats (World Bank, 2013). The Building Resilience and Adaptation to Climate Extremes and Disasters project (BRACED) defines resilience to climate-related threats in terms of the development of three capacities: the capacity to anticipate, absorb and adapt to climate shocks and stresses (known as the '3As' framework) (Bahadur et al., 2015).

Social protection can play an important role in building these three capacities (Ulrichs, 2016), but gender perspectives need to be more strongly integrated when designing and implementing social protection for this purpose (Alston, 2014; Holmes, 2019). This section considers examples

of how gender-sensitive social protection can support women and girls to anticipate, absorb and adapt to droughts, floods and other climate-induced threats to water security.

Anticipate the gendered risks and impacts of climate change

Social protection programmes can improve the anticipatory capacity of communities and individuals by putting in place systems that reduce the physical or livelihoods threats experienced by women and girls as a result of droughts, floods or other water security risks (Ulrichs, 2016). For example, public works programmes can improve the management of natural resources and strengthen the resilience of community infrastructure to the impact of floods or other natural disasters. Asset transfer components of 'social protection plus' schemes can ensure that poor farmers have alternative livelihood sources to depend on if droughts or floods damage their crop yields.

If these systems are not designed with a specific gender focus, however, their attempts to anticipate and reduce vulnerability can easily be undermined. Weather-indexed insurance schemes, for example, have often failed to reach women farmers because of their lower levels of land ownership, literacy and access to financial institutions, and in some cases because the limited variety of crops covered by insurance schemes does not include the crops that tend to be farmed only by women (Delavallade et al., 2015; Steinbach et al., 2016; Born et al., 2018).

Recognising this gap in gender-sensitive strategies for climate risk management, some social protection schemes have begun to adopt more inclusive approaches. For example, instead of requiring cash payments for insurance premiums, participants in the Oxfam and World Food Programme R4 Rural Resilience Initiative can pay for weather-indexed crop insurance with their time and labour by participating in public works programmes. Many of the assets created through the public works programmes aim to build infrastructural resilience to climate-related shocks that would otherwise affect women disproportionately. Meanwhile, the insurance reduces the impact of crop or livestock losses and improves participants' eligibility for microcredit loans. As additional risk management measures, R4 supports participants to join savings groups and provides training in financial literacy and livelihoods' diversification. The R4 programme includes specific outreach to women to support their registration in the insurance scheme (World Bank, 2012b) and some evaluations suggest that women have achieved the largest gains through the scheme (Madajewicz et al., 2013; Madajewicz et al., 2017).

Provide a safety net so women and girls don't act as 'shock-absorbers'

Social protection can absorb the impact of water shocks and stresses so that those exposed to them can still meet their basic needs without suffering major setbacks (Ulrichs, 2016). Providing safety nets to absorb climate shocks is particularly important for women, because they otherwise tend to absorb the shock themselves by reducing their own food consumption or selling their personal assets (Quisumbing et al., 2008).

Whether in long-running social protection programmes or emergency safety net schemes, women tend to be prioritised for the receipt of cash transfers (Akresh et al., 2016) and many public works programmes actively promote female participation; 12 of the 13 public works programmes profiled in a sub-Saharan African study had explicit quotas or targets for female participation (Tebaldi, 2016).

However, as documented in Holmes and Jones (2013) and more recently in Holmes (2019), the design and implementation of safety nets often neglects important gender considerations, which undermines their ability to support women through livelihoods shocks. For example, constraints related to information, mobility, time and documentation have been found to bar women from accessing emergency cash transfers (IASC, 2017; Holmes, 2019). Research from Niger suggests that – at least in that context (where men have a strong role in securing household food security) – women's control over the money they received in response to seasonal climate shocks was lower than their control of money from cash transfer schemes with longer-term development objectives, which encouraged women to invest the money in shared savings groups (Olivier de Sardan, 2013; Watson, 2016).

Women's participation in public works programmes designed for post-shock recovery may also be prohibited by inadequate adjustments for the heightened time or mobility constraints that they face following extreme weather events. The time and energy required for water collection, in particular, increases dramatically in the event of a drought, when standard water sources can no longer be relied upon. In Mozambique, for example, many women and girls experienced a tripling of their water collection burden as a result of the El Niño drought, with the time taken to locate and transport water increasing from two hours each day pre-drought to more than six hours each day during the prolonged drought (Fisher, 2016).

Failure to consider these time constraints meant that in Somalia, places reserved for women in a Joint Resilience Initiative Cash for Works programme after an extreme drought in 2011 were not taken up. During the design phase, community focus groups had overlooked time constraints as a consideration because women had not been consulted specifically (Lawson-McDowall et al., 2013).

Support women and girls to adapt to climate-related threats

In some areas, climate change has cast doubt on the ongoing feasibility of natural resource-dependent livelihoods, such as small-scale farming in drought-prone regions – a primary economic activity for women in many developing countries (Gollin, 2014). Successful adaptation to the physical and livelihood threats posed by climate change is a complex goal, and evidence is still needed on how social protection can best support households and communities to adapt to long-term climate risks (Ulrichs and Slater, 2016). However, some good practice examples have already started to emerge.

One strong example of gender-sensitive, adaptive social protection is the CLP in the flood-prone fluvial islands in north-western Bangladesh. The CLP aims to build flood resilience in a holistic manner by:

- using public works projects to raise homesteads and construct flood-resistant sanitation facilities
- providing asset transfers and livelihoods-related training to help households diversify their income sources
- delivering post-disaster relief and promoting support group formation to cushion against shocks
- measuring climate resilience in its monitoring systems.

These approaches have been highly effective in adapting to seasonal risks: the plinths built during the programme, for example, protected 95% of recipients from losing their assets after a flood (Kenward et al., 2012). A 2014 impact evaluation found that women had achieved higher levels of disaster resilience than men, as measured by their knowledge of, preparedness for and response to disasters, their input into governance and their participation in risk assessments related to disaster response (Barrett et al., 2014).

This progress for women was attributed, in part, to their involvement in programme design (World Bank et al., 2013). As a result of feedback from programme participants, for example, adjustments were made to the programme design to ensure that women could benefit fully from the asset-transfer component, which builds participants' asset bases and diversifies their income source to reduce the impact of disrupted livelihoods in the event of natural hazards or climate shocks. At first, women felt restricted in spending the asset transfer because they found livestock markets to be unsafe and because male relatives were putting pressure on them about their use of the funds. In response to these concerns, female participants were supported to make informed decisions about asset purchase in social development groups and programme staff accompanied their husbands to the market to buy their wife's chosen assets (ibid.).

3.2 Urbanisation

Urbanisation, and in particular the growth of informal settlements, is another dominant trend that shapes the nature of and solutions to global water insecurity. The world's urban population has been growing rapidly, rising from 751 million in 1950 to 4.2 billion in 2018. By 2050, a further

2.5 billion people are expected to live in cities (UNDESA, 2018). Most of this rapid urbanisation will occur in developing countries, with Africa and Asia expected to account for 90% of the urban growth between now and 2050.

This trend has major implications for water access. Because of the greater use of water and energy in cities, global water demand is expected to increase by 55% by 2050 (UNESCO, 2015). While access to water is higher overall in cities than in rural areas, the speed and scale of urbanisation brings its own challenges in meeting accelerated demand for basic infrastructure.

These challenges in urban water provision are prominent in the informal settlements that are home to nearly 1 billion people, or one-third of urban residents in developing countries (UN Task Team on Habitat III, 2015). Indeed, informal settlements are, in part, defined by their inadequate access to water services (UN-Habitat, 2003a) and are often located in environmentally hazardous areas, such as riverbanks or flood-prone land (UN Task Team on Habitat III, 2015).

Technical, financial and legal barriers constrain utilities from serving informal settlements. Utilities under-provide water services in informal settlements because they either do not have a clear obligation to serve them, or do not have the authority to do so (World Bank, 2015). Even when services are available in informal settlements, household financial constraints, unmet land tenure requirements and cultural norms can make them particularly difficult for households to access. In Durban, South Africa, for example, there is access to piped supplies but increased emphasis on cost-recovery service management has led to expensive bills (Sutherland et al., 2014).

Most informal settlements have no piped water networks, forcing residents to depend on more expensive, lower quality and time-consuming alternatives, such as sourcing water from vendors or public taps (UN-Habitat, 2003b). Water from vendors costs around 10 to 100 times the unit cost of water from a piped supply, and water from public taps often costs more per unit than piped supplies, as well as requiring hours of queuing and travel time each day for residents – typically women and children – to collect it (ibid.).

The price and time costs of water collection can fluctuate dramatically. In Kibera, the largest informal settlement in Nairobi, women and girls spend just under one hour on finding a water vendor, queuing and carrying the water home – on a good day. A jerrycan costs 2 to 3 Kenyan Shillings (KSh) – at least four times the average tariff for Kenya. In times of water shortages, which happen several times each month, the price for water skyrockets to 5 KSh to 10 KSh per jerrycan and the time spent on collecting water can easily extend to a full day. If women cannot afford to spend either the time or the money to access safe water, they revert to substandard water that is not safe for drinking, taken from yard connections or natural springs (M-Maji, n.d.).

These limitations in water access present specific challenges for women and girls in informal settlements. They spend far more time and physical energy accessing basic services than women and girls in other urban areas (Avis, 2016) and also face high risks of gender-based violence when travelling to or queuing at overcrowded public standpipes (UN-Habitat, 2003b; Amnesty International, 2010).

3.2.1 What are the implications for social protection?

It is common for social safety net programmes to originate in rural areas, and coverage of the urban poor has been relatively limited to date (Gentilini, 2015; Devereux et al., 2018). This is partly because of a perception that safety nets may not be needed or appropriate in urban areas that tend to have lower overall poverty rates and higher access to labour market opportunities and the social insurance schemes associated with formal employment (ibid.).

In reality, only a fraction of poor people in urban areas are reached by social insurance programmes (3%–4%) because many are informally employed and economically insecure. In addition, while urban residents may have higher average incomes than their rural counterparts, they also face higher costs of living and stark levels of multidimensional poverty, including severe gaps in their access to water and other basic services (ibid.).

To help address these needs, a growing number of social protection programmes are

being extended to or designed for urban settings. Here, we discuss examples of how urban social protection can help women in informal settlements to securely access safe, sufficient and affordable water.

Subsidising provision in informal settlements

The lack of affordable water supply in informal settlements signals the strong case for subsidised provision to alleviate the financial burden on low-income households. In particular, subsidies can help households meet the high initial cost of establishing a connection to a piped system. In Cambodia, for example, the publicly owned Phnom Penh Water Supply Authority (PPWSA) adopted a successful pro-poor approach, making water 25 times cheaper for low-income households through connection subsidies (up to 100%), instalment options and a ban on disconnection (Albuquerque and Roaf, 2012).

To ensure that the households on the lowest incomes benefited from the programme, PPWSA was proactive in seeking them out and raising awareness about the availability of subsidies. But where the water connection network is limited, subsidising and regulating the water sources that households actually use – such as water kiosks and standpipes – may be the most appropriate approach for informal settlements, as it has been used in Kenya in recent years (UN Women, 2015).

Facilitating inclusive community participation in water projects

As well as providing subsidies, social protection policies can also support water security for women in informal settlements by promoting community participation in initiatives to increase community control of services. The facilitation of meaningful participation is no easy task. In Kenya, for example, the Nairobi Water Company brought together engineers, sociologists and non-governmental organisations to 'empower' communities and build infrastructure through initiatives to address scarce, unreliable and costly water supply in the city's informal settlements (Crow and Odaba, 2010). However, when the Company's initiatives were implemented, they encountered technical, social, political and economic resistance. Following the introduction of chamber meters in Kisumu, for example, powerful individuals and cartels took control of the billing process from the community group.

The outcomes of these types of community participation initiatives can be more positive when they engage with existing pro-poor groups or organisations, which could be developed as part of broader social protection initiatives. In India, Mahila Milan is a federation of savings groups that has negotiated with municipal governments to provide hand pumps and water taps in informal settlements (Satterthwaite et al., 2011). These groups comprise poor women who work in the informal sector and aim to address exclusion from government processes. By taking part, members gain the confidence to voice their perspectives, which boosts both their influence and their capacity to leverage support.

A growing number of social protection programmes have supported the formation of similar savings groups to extend the impact of cash or asset transfer programmes. As these savings groups become stronger, they could play an increasing role in advocating for women's water needs in the community, following the Mahila Milan example.

Considering the potential to improve water infrastructure through public works programmes

Public works programmes are far less common in cities than in rural areas, with a global coverage rate of only 0.1% in urban areas compared to 10% in rural areas (Gentilini, 2015). This can be explained, in part, by the lower urban coverage of social protection in general, but it has also been attributed to cities' more limited potential for employment generation through large-scale infrastructure projects, and the difficulty of setting a wage rate that is high enough to attract workers and address urban poverty, but not so high that it fuels rural–urban migration or encourages workers to leave their existing (likely poorly paid, informal) jobs.

The institutional coordination of public works programmes in cities may also be more complex because of the overlap between urban development and social protection agencies. In Argentina, for example, the Trabajar public works programme (from the late 1990s) operated in both rural and urban areas but struggled to

get off the ground in large urban areas because bigger municipalities found it difficult to fit its small-scale, labour-intensive projects into their complex existing infrastructure plans, which were focused on large-scale, capital-intensive projects (ibid.). The agencies responsible for public infrastructure development often concluded that the benefits from a Trabajar project were too small to justify the cost, and preferred to contract out the work rather than employ low-skilled workers who needed more supervision.

Given the limited number of functioning public works programmes in urban areas, there is a lack of evidence about whether such programmes can improve water security in informal settlements. However, in research on living conditions in Peru's informal settlements, slum dwellers in Lima reported that the A Trabajar Urbano (ATU) public works programme had played a role in improving water infrastructure (Calderon Cockburn et al., 2015). ATU aimed to provide temporary employment for poor residents in various cities through simple, labour-intensive public works that included building walls and ditches for the installation of water mains. However, quantitative research on the benefits of the programme does not highlight water as an important outcome, with less than 5% of participants noting 'more water' as a specific benefit (Chacaltana, 2003).

Furthermore, research on an ATU water project in Huancayo found that community access to the newly constructed potable water connection was tiered, with those who had physically participated in the project enjoying better access, while the rest of the community paid more for the water and had less access to it in times of water scarcity (Arias and Aramburu, 2003). If this pattern is widespread in public works programmes, it may have implications for their impact on gendered water security, as women made up 68% of the ATU workforce in Lima but only 37% in other urban areas (Chacaltana, 2003).

4 Policy implications and conclusion

Our review suggests that water insecurity can substantially weaken social protection's ability to empower women and girls by taking their time away from social protection activities, hindering their access to schooling and employment and undermining progress on health, nutrition and food security. As an important cause of vulnerability with heavily gendered impacts, water insecurity warrants far greater consideration in the design and targeting of social protection schemes.

Social protection has the potential to support gender-sensitive improvements in water security, but for this potential to be unearthed, social protection schemes need to more explicitly acknowledge and address both water insecurity and its gendered effects. There is also a clear need for more multisectoral programming and cross-ministerial coordination, particularly in the face of the complex emerging water security threats associated with climate change and rapid urbanisation.

Below we consider the main policy implications of these findings at the sectoral, community and intrahousehold level, and then conclude with initial recommendations for policy and programme design and implementation.

4.1 Policy implications

4.1.1 Sectoral level

Complementing core social protection interventions with broader initiatives to improve water security can have a more pronounced and sustained impact on affected populations, particularly women. Delivering transfer programmes alongside projects to build WASH infrastructure or linking cash transfer recipients with existing water subsidies can build greater resilience to economic, social and environmental risks for all household members and reduce the gendered burden of limited water security.

Cross-ministerial coordination between government agencies responsible for gender equality, water and social protection is needed to achieve these links. One increasingly popular mechanism for developing cross-sectoral linkages is the 'one-stop-shop' or 'single-window-service' model, where beneficiaries or target beneficiaries of one government service or programme receive information, assistance with applications, assessments for and/or direct referrals to other government services or programmes (Ramkissoon, 2016). In addition, where information on income level or household water access is already collected as part of the eligibility assessment for social protection programmes, this information can be used (pending the establishment of appropriate data-sharing agreements) to provide priority access to water subsidy programmes that target low-income households or neighbourhoods. Typically, these eligibility assessments also collect information on the number of people living in a certain residence, which could provide valuable data for water agencies to enable poor households that share facilities among multiple families to access water at the most affordable tariff rate.

4.1.2 Community level

When social protection schemes aspire to improve community access to water, more nuanced targeting, design, and accountability mechanisms can help to ensure greater benefits for the households in the community that are the least water secure – and for the women and girls within them.

Targeting policies and mechanisms need to go beyond assessing chronic poverty and

static vulnerability to consider short-term or intermittent risks such as droughts or floods, as well as the different gendered experiences of water insecurity. Programmes designed to respond to these risks need to incorporate a specific focus on reaching women and girls in the most vulnerable households. Public works projects, for example, can focus on reducing the water collection burden on women and girls in poor areas with high vulnerability to climate change, while subsidy programmes can better reach informal settlements by prioritising connection subsidies or subsidising the water sources that are actually used by the residents.

Inclusive social accountability mechanisms and governance structures are needed to help evaluate and improve the impact of programmes for women and girls from marginalised households. These structures can encourage women from poor households to participate, for example by holding meetings at times and in locations that suit them, promoting female leadership of meetings, and using participatory methods that create space for committee members who are more reserved to contribute to discussions. Water projects with genuine commitment to women's leadership have been associated with more cost-effective service delivery, increased access to water and less corruption in water financing (Ray, 2016).

4.1.3 Intrahousehold level

Intrahousehold dynamics determine which household needs are prioritised and how social protection benefits are shared among family members. Although cash transfers can be invested in improved water security, this may not be the case if women bear the main costs of accessing water but lack control over resource allocation. Similarly, schemes that aim to reduce drought risks may attempt to protect both male and female farmers but, unless the scheme is developed with a gender-sensitive approach, the husband's crops or livestock may be protected first.

Well-designed social protection programmes can be a useful platform for promoting discussions on unequal gender relations and shifts in the distribution of household responsibilities. For example, Peru's conditional cash transfer programme Juntos aimed explicitly to transform gender relations in the family, using programme conditions and awareness-raising initiatives to increase fathers' sense of responsibility in the domestic sphere (Jones et al., 2007). The programme increased the involvement of some men in activities that were once seen as exclusively female, including domestic work, childcare and helping children with their education. In Brazil, a companion programme to the Bolsa Família cash transfer scheme is tackling intrahousehold power relations through group education classes (Samman et al., 2016).

While these efforts to redistribute gendered domestic responsibilities have focused primarily on the childcare burden to date, there is potential for initiatives to address gender inequalities in other areas more actively, including the uneven water collection burden. Increased use of gender-disaggregated indicators in social protection programme monitoring can help assess the effectiveness of gender-sensitive programme features, and track whether women's needs and priorities are being addressed equitably through social protection schemes.

4.2 Recommendations

This paper is a starting point for considering the possible linkages between social protection, water security, and gender equality goals. Historically, these objectives have been addressed through quite separate sectors, each with their own institutional actors, programming approaches and management systems. As a result, the cross-sectoral linkages have been largely overlooked to date.

While the potential benefits of coordinated action are large, such action often incurs high initial costs to establish partnerships, redesign systems and retrain staff for a more integrated way of working. Indeed, efforts to mainstream gender effectively within *either* water *or* social protection projects have often been thwarted at an early stage by capacity constraints, coordination challenges and lack of political will.

Extending these linkages to cover all three sectors will, therefore, require concerted political commitments, adequate resourcing, and high-quality technical support and capacity-building across all three domains. It will also require more research on the causal pathways and potential

areas of integration to build a robust knowledge base on a topic that has yet to be studied in depth.

Based on this report's analysis, we present the following initial recommendations for governments and donor agencies:

- **Recognise and actively address the existing and growing interactions between social protection, water insecurity and gender inequalities.** There are already clear areas of overlap between these issues, and the links will only become further entrenched with the increased impacts of climate change and informal settlement growth. Failure to acknowledge these links and coordinate action across sectors can reduce or reverse the intended impacts of individual programmes on poverty, vulnerability, water security or female empowerment.
- **Consider and address poverty, vulnerability and water insecurity as fluctuating risks.** Social protection and water sector projects often measure and design programmes to address current, static needs, rather than considering the intermittent or evolving risks that households or communities may face. Water insecurity is a challenge that clearly requires a more holistic approach to address both current deficits and emerging threats. Programmes need to include households and communities that are projected to be affected acutely by climate change and urbanisation trends.
- **Strengthen the focus on 'leaving no one behind' in social protection and water sector projects.** It is critical to strengthen the focus on prioritising the most vulnerable, whether the goal is to ensure that cash transfers benefit women and girls within the household, that public works projects address the needs of vulnerable women and girls within the community, or that subsidies reach the most marginalised communities within a city or region.
- **Develop and publicise specific objectives to meet the practical and strategic needs of women and girls in both social protection and water infrastructure projects.** The gendered burden of water collection is a major driver of the vulnerability and time poverty experienced by women and girls, and explicit commitments to address such gender inequalities need to be stated and measured, if consistent progress for women and girls is to be achieved through these programmes. The stated objectives and subsequent programme plans should be informed by meaningful consultation with women and girls (and the wider community) in the targeted areas, to understand their needs and priorities in the local context.
- **Combine social protection and water projects with initiatives to sensitise communities about unequal gender relations, encourage gender-sensitive allocation of programme benefits and empower women in household and community decision-making.** If well designed and implemented, these programmes can provide an opportunity to shift gender norms and encourage behaviour changes. During the design and delivery phases, for example, cash transfer or public works programmes can incorporate group meetings to discuss the gendered burden of unpaid work and the potential to use the programmes to reduce and redistribute domestic tasks. Women can contribute to and lead community decision-making processes, provided that their time, mobility and social constraints are considered and addressed.
- **Measure gender-disaggregated outcomes** in social protection and water programmes, including data on water security, time poverty and household allocation of tasks.
- **Invest in further research on the effectiveness of different types of social protection and water projects in addressing gender inequalities related to water insecurity.** There is limited evidence to date on the impacts of different forms of social protection on water security in general or on gender inequalities related to water security in particular. This paper provides an initial exploration of these linkages and highlights the need for more research to develop the evidence base further.

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