RESEARCH REPORT 9

FEMALE WATER ENTREPRENEURS IN CAMBODIA

CONSIDERING ENABLERS AND BARRIERS TO WOMEN'S EMPOWERMENT

JUNE 2018

ENTERPRISE IN WASH

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"Enterprise in WASH" is a joint research project led by the Institute for Sustainable Futures (ISF-UTS) at the University of Technology Sydney, which investigates the role of private and social enterprises in the delivery of water, sanitation and hygiene (WASH) services for the poor.
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ABOUT THE AUTHORS
The Institute for Sustainable Futures (ISF-UTS) was established by the University of Technology Sydney to work with industry, government and the community to develop sustainable futures through research and consultancy. Our mission is to create change toward sustainable futures that protect and enhance the environment, human well-being and social equity.

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Executive Summary

> *"Women can show their courage, success and involvement in the development of the economy, society and country as a whole."* - Female water entrepreneur, Cambodia

Introduction

Small-scale privately owned and operated water supply schemes are playing an increasing role in rural Cambodia, particularly in rural growth centres. Yet little is known about the different experiences of men and women in the sector, or how gender norms influence their experiences and business opportunities.

In 2015 there were an estimated 300 privately managed water supply schemes in rural Cambodia, serving over one million people (World Bank, 2015, p. 15). In recent years, a range of policies has been put in place by the Cambodian Government to promote gender equality within the rural water and sanitation sector. One such policy is the Cambodian National Strategy for Rural Water Supply (2011–2025), which includes provisions to increase gender equality. One of the ways the Strategy aims to do this is by: 'Mainstream[ing] gender in the [rural water supply] sector' (Cambodian Government, 2011, p.10).

However, there are major knowledge gaps related to how gender norms intersect with the rural water sector, and with the growth of water enterprises in Cambodia. These gaps include: a lack of knowledge about how gender influences who becomes a water entrepreneur; what the experiences, challenges and opportunities of water entrepreneurs are; and how water entrepreneurship relates to women's empowerment, including economic empowerment.

To begin to address these knowledge gaps, this study examined the extent to which women's ownership and management of water supply schemes led to their empowerment, including economic empowerment. This study, and a related concurrent study in Indonesia, are the first of their kind to systematically look into the experiences and needs of female water supply scheme entrepreneurs (henceforth referred to as "entrepreneurs"), and the first to explore their experiences with reference to women's empowerment frameworks.

The research was a collaboration between the Institute for Sustainable Futures-University of Technology Sydney (ISF-UTS), East Meets West (Cambodia) (EMW), and the Cambodian Water Supply Association (CWA).

The purpose of the research was to inform and support NGOs, donors and Cambodian government agencies to develop an enabling environment which is not gender blind, can support women's empowerment, and will contribute to sustainable piped water services in rural areas.

The research questions are shown in Box 1

Box 1. Research questions

Research Question 1

To what extent are women empowered through their management of water supply schemes in Cambodia?

a) What are common barriers and enablers for female entrepreneurs managing water supply schemes in Cambodia, and how do these relate to an understanding of women's empowerment?
b) To what extent does women's involvement in managing water enterprises in Cambodia facilitate their empowerment, including economic empowerment?
c) What is the relationship between the barriers and enablers faced by female entrepreneurs in other sectors in Cambodia, and the barriers and enablers faced by women managing water enterprises in Cambodia?

Research Question 2

What needs to be done, and by whom, to support female water entrepreneurs in Cambodia to achieve empowerment, including economic empowerment, outcomes?

a) What strategies exist to support female water entrepreneurs in Cambodia?
b) What measures do female water entrepreneurs want introduced to support their water supply schemes, and who do they want to introduce these measures?
c) What do these support needs and wants mean for the WASH-enabling environment in Cambodia with respect to supporting female water entrepreneurs?

Methodology

A collaborative approach was employed for this research to facilitate engagement between researchers and practitioners. This enabled the co-creation of the research methodology. This study adopted a primarily qualitative methodology, but included some quantitative approaches. In total, 27 structured interviews were conducted with female water entrepreneurs, commune council members, and provincial and national stakeholders.

The research was conducted in eight provinces of Cambodia: Koh Pong, Battambang, Kampong, Kampot, Sihanouk, Takeo, Kandal and Kratie. The water supply schemes included in this study ranged from schemes with 600 connections to a scheme with 2910 connections. They were in rural contexts and were established between 2001 and 2017.

The interview guide focused on barriers and enablers to establishing and managing water supply schemes, and was informed by a review of the literature on female entrepreneurship in Cambodia, Lao PDR and Indonesia (Leahy et al., 2017). The analysis framework drew on conceptions of women's empowerment, including economic empowerment, which view empowerment as a process of transforming power relations in ways which promote women's rights and social justice. This conceptualisation of empowerment considers four types of power: 'power within', 'power to', 'power over' and 'power with' (Eyben, Kabeer & Cornwall, 2008; Taylor & Pereznieto, 2014), as discussed below.

Overview of findings

Barriers

Entrepreneurs reported encountering four key types of barriers to establishing and managing water supply schemes. These related to: 1) operational issues 2) government and regulations, 3) financial issues and 4) limited demand for water services.

Operational barriers included damage to pipes that occurred due to road and fence building, a lack of cooperation from households, and limitations to entrepreneurs' personal mobility. Damaged infrastructure due to construction was a particular area of concern for entrepreneurs.

"Development of the road damaged pipes and lost water… [therefore we] were unable to supply clean water to the households due to the damaged pipes". (Female entrepreneur)

Government and regulatory barriers reported by entrepreneurs included a lack of policies and regulations to support their management of water supply schemes, such as caps on water tariffs and burdensome administration.

Financial barriers included high interest rates, high expenditure on electricity and rent, and customers not paying on time.

Limited demand for water services issues included lower demand from customers during the rainy season and the perceived need for increased community understanding of the importance of clean water which could drive demand for services.

Gender related barriers

The literature review that informed this study identified barriers and enablers for female entrepreneurs within and beyond the WASH sector, and found nine key areas of typical barriers to their entrepreneurship (Leahy et al., 2017; Willetts et al., 2016):

1. regulations
2. finance
3. limited access to business development services
4. cultural values
5. networks and networking
6. education and training
7. informal fees/corruption
8. human resources
9. operational issues.

The empirical research in this study confirmed that operational issues, regulatory barriers and financial issues were key barriers to women managing water supply schemes. Limited access to business development support, cultural values (including gender norms and discrimination), human resources challenges and networking were partly confirmed as barriers, though not identified by water scheme entrepreneurs as major problems. The empirical research did not find that levels of education and training were perceived as barriers by entrepreneurs, and the empirical phase of the study did not confirm or refute the view that informal fees and corruption constituted a barrier.

Enablers

Entrepreneurs reported three key enablers which helped them to establish and manage water supply schemes: 1) social enablers, 2) economic enablers and 3) program support. Social enablers included receiving encouragement and practical help from family members and friends, as well as seeing other women succeed in the sector. Economic enablers included access to finance, including loans from financial institutions or family members. Targeted programs offered by the Cambodian Water Supply Association and provincial government agencies, such as the Provincial Department of Industry and Handicrafts (PDIH), were identified by entrepreneurs to be of great benefit.

'I received training from the Provincial Department of Industry and Handicraft on how to clean the water treatment plant, how to locate leaks in the system and administrative management'. (Entrepreneur)

Empowerment outcomes

The extent to which owning and managing water supply schemes facilitated entrepreneurs' empowerment, including economic empowerment, was analysed using a conceptualisation of four types of power: 'power within', 'power to', 'power over' and 'power with' (Eyben, Kabeer & Cornwall, 2008; Taylor & Pereznieto, 2014). '**Power within**' suggests that women feel powerful, and empowered, *within* themselves when they have a strong sense of self-esteem, a sense that they are entitled to having their rights respected, and the self-belief required to make changes in their lives. While the majority of entrepreneurs in this study displayed elements of 'power within', in terms of their perception of having the same capabilities as men to manage a water supply scheme (n= 10 of 15) and their self-belief to start a water supply scheme (n= 2 of 15), societal norms and perceptions which promote men as more mobile and stronger workers were also articulated.

'It is different for men and women to set up a water service … men do not do as much housework as women do, and men have more knowledge than women … men work faster and it is easier for them to go out and work at night [for example if pipes leak]'. (Female entrepreneur)

While entrepreneurs reported benefits from training provided by a number of organisations, and reported that this training facilitated their economic empowerment and preparedness to start a business, they also highlighted a need for continued and more targeted training.

'**Power to**' involves women feeling powerful and empowered to hold decision-making roles in the household, community and economy, and to manage financial decisions within their own enterprises. Entrepreneurs reported having 'power to' manage financial decisions and increased independence, including financial independence. All entrepreneurs were involved in decision-making roles related to household expenditure and the majority of entrepreneurs also reported managing the finances of their water supply scheme (n= 10 of 15).

"I feel confident in managing my business's financial matters because my income and expenses are okay … I want women to not rely on their husbands only". (Female entrepreneur)

Most of the water supply schemes examined in the study were family businesses, where husbands and family members also played significant roles in the water supply scheme, and joint financial decision-making was common.

'**Power over**' involves women feeling they have control over and access to financial, physical and knowledge resources. While entrepreneurs reported having confidence in managing the finances of their enterprises, they had concerns about high interest rates, access to finance, freedom of movement, and their need for additional technical training. High interest rates on loans taken out, the double burden of work (such as housework and running a business) reported by some entrepreneurs, and worries about the financial status of their enterprises, limited women's economic empowerment.

'I have not made any profit because I continue to spend money on pipes for expansion, for workers to dig and lay pipes and on other materials and equipment … I have not yet felt confident because the expenses are more than income'. (Entrepreneur)

'**Power with**' refers to the capacity to collaborate with other women in a process of group mobilisation to call for their rights to be upheld, and to change labour and market conditions for all women. Some entrepreneurs reported experiencing 'power with' other entrepreneurs. They said that this resulted in women supporting each other to establish water supply schemes.

'I saw other women running this business and I love it too … I [then] studied the location, I collected data, I communicated with the commune chief to consult with him'. (Entrepreneur)

Entrepreneurs also expressed a desire to help other women establish water enterprises if they were interested and had information and financial support.

'It is a very good option for women to run the water supply scheme … I will advise them if they are interested in setting up a water service'. (Entrepreneur)

Enhancing the enabling environment for female entrepreneurs: support mechanisms

Our analysis of barriers, enablers, empowerment, including economic empowerment, outcomes made it possible for the research partnership to make recommendations for a range of actors who are part of the rural water supply enabling environment in Cambodia. These recommendations were also informed by responses from entrepreneurs, who were asked what support mechanisms they would find most useful to address the challenges that they faced. Entrepreneurs identified the need for further technical and financial support, education for communities about the benefits of clean water (to increase piped water demand), access to peer-to-peer support networks, and subsidies to

the poor and remote properties to connect to their schemes. Entrepreneurs identified the CWA, government agencies, civil society organisations, and families as being the entities best placed to provide these kinds of support to them.

Summary of findings and recommendations

Transforming power relations in ways which promote women's rights and equality, and assessing whether changes do in fact improve conditions for women, are complex challenges. While women's involvement in the water supply sector can facilitate their empowerment, including economic empowerment, the research showed that to improve women's empowerment outcomes in rural Cambodia there was a need for more support to address women's "double burden" of working in the home and in enterprises, to improve access to technical training, to improve access to low-interest credit, and to promote peer-to-peer professional support networks.

The research tabled eight key findings and recommendations for donors, civil society organisations, and government organisations in Cambodia (at the commune, provincial and national levels):

1. While **barriers related to gender norms** were not considered by entrepreneurs to be their greatest challenges, women's limited mobility (impediments to travelling far away from the home and to going out at night) and household duties were reported as concerns. These mobility and workload challenges made it harder for female entrepreneurs to manage their water supply schemes, and constrained women's attendance at meetings as well as their capacity to respond to operational issues involved in managing a piped water schemes.

   Recommendation: Donors, civil society organisations (CSOs) and government agencies should build a nuanced understanding of gender differences and challenges into their programming, so that gender norms that influence mobility, household workloads, and time constraints, for example, are carefully accounted for and managed. A continuing practice of investigating gender differences by donors, civil society organisations (CSOs) and government agencies will help to inform policy and programming.

2. **Operational challenges** were rated as the equal highest challenge (along with government and regulation challenges) that entrepreneurs face when running their water supply schemes. Operational challenges included high expenses such as electricity and rent, leaks and pipe damage, and equipment breaking down.

Recommendation: Increased communication between different levels of government and enterprises about construction works that may damage pipes/disrupt services. In addition, support is warranted for professional feasibility studies so that entrepreneurs can hire qualified companies to conduct feasibility assessments to determine the best location for the water sources and treatment plants, and plan their water schemes optimally.

3. **Government and regulation challenges** were rated as the equal highest challenges that entrepreneurs faced when running their water supply schemes. Entrepreneurs reported that constraining policies and regulations included caps on water tariffs, insufficient communication about constructions works, and inadequate compensation policies for damage to pipes as a result of road construction (for example). Government stakeholders did not rate this challenge highly, unlike the entrepreneurs, indicating that the government stakeholders may not be fully aware of the challenges that entrepreneurs face with respect to government policies and regulations.

   Recommendation: CSOs and associations can advocate to government on behalf of enterprises' needs so that their real day-to-day challenges are understood and responded to. This could include calling on the government to develop communication and compensation policies for damage to pipes and disruptions to services as a result of road construction.

4. **Financial challenges** were identified as the equal second-most significant challenge for entrepreneurs (along with limited demand for water services). In most cases entrepreneurs reported that they hadn't yet made a profit (noting that five of the water schemes were less than five years old). High interest rates were identified as a particular issue, and entrepreneurs said that they would like support to access low interest loans and subsidies to connect remote properties within their service areas.

   Recommendation: Facilitate financial advice and support for entrepreneurs to access low interest loans tailored to water supply scheme contexts. CSOs/donors/government could assist with upfront finance (to support establishing schemes and in particular service remote properties) and develop financing innovations (i.e. low interest loans and social banking options). There is also a need to educate and support entrepreneurs to better understand the financial benefits and risks of water enterprises so that their expectations of profit levels and return on investment are realistic.

5. **Limited demand for water services** was also identified as the equal second-most significant challenge that entrepreneurs encountered when managing their water supply schemes. Issues related to market access included low or irregular demand for water supply due to seasonal variations and the challenges (including high costs) of connecting to remote properties.

   Recommendation: Community education campaigns on the benefits of clean water and connection to piped water schemes (for health and convenience) are needed to boost demand for services, and to support entrepreneurs to achieve economies of scale. CSOs/ government could provide support to remote properties to connect to water supplies in order to assist water enterprises to reach more people and make scheme extensions financially viable. A number of financing options could be considered such as output- based aid and financing the extension of the main pipeline, as well as conducting feasibility studies for other decentralised solutions.

6. **Technical training and support** was identified by entrepreneurs as their greatest need (area of greatest requested support), and this included calls for training and support related to water scheme management and water quality monitoring.

   Recommendation: New and existing training programs (including formal training, mentoring and peer-to-peer learning, for example) that take account of gender differences such as child care duties, financial barriers, and limited mobility are needed. This may involve holding training in regional locations to make it easier for female entrepreneurs to attend, and support for family members to attend training together with entrepreneurs.

7. S**upport** for entrepreneurs **from their husbands, families, friends, and personal networks** was found to be a key enabler for supporting them to set up piped water enterprises.

   Recommendation: CSOs, associations and governments can involve men (particularly husbands) in the promotion and socialisation of female-led private water enterprises, recognising the importance of family in these businesses, and building on existing connections and support systems for women.

8. Entrepreneurs overall reported that they would **encourage other women to set up a water supply scheme** if they had access to information and finance. Some entrepreneurs also noted that they would offer their support and advice to other women. Financial

independence and social motivations (for example contributing to improving the health of the community) were key drivers for entrepreneurs involved in this study.

Recommendation: Support learning between water enterprise owners and staff, and possibly, support women to connect with and learn from each other. Actors will need to be conscious of not adding to women's time burdens, so such support would also need to be resourced and family and enterprise responsibilities would need to be taken into account

Further research needs

While this study was one of the first to explore the barriers and enablers experienced by female water supply scheme entrepreneurs, and how gender norms influence these barriers and enablers, additional knowledge gaps were also identified. Further research is therefore needed in the following areas:

Gender-related research

- Paid and unpaid work: the intersection between the 'double burden' of household duties (including child care) and how this impacts the management of water supply schemes, and how negative impacts can be alleviated by a range of actors (from the state to the household)
- Financial aspects: Actual financial benefits (or losses) experienced by female water entrepreneurs, and how these differ from those of other water supply enterprises. Reported high interest rates on loans taken out by entrepreneurs, and whether or not there are gender-based influences involved which limit women being able to access low interest loans
- Training needs: What types of technical training are most needed by female entrepreneurs, and consideration of gender-related barriers that may prevent women from taking up such training opportunities.
- Networks: The potential benefits of women-only forums or networks for female entrepreneurs to share experiences and support each other, in addition to existing support mechanisms provided by the Cambodian Water Association and provincial governments.

Enterprise-related research

- Government and regulation issues: Including caps on tariffs and burdensome administrative requirements, and how these impact the management of water supply schemes
- Demand creation: The potential for behaviour change communications to influence demand for piped water services.
- Service expansion: Options for connecting remote households to piped water schemes, and how entrepreneurs could best be supported to expand their schemes (including consideration of a range of water supply options via various governance models).

1. Introduction

1.1. Water supply schemes in Cambodia and their role in rural water supply

Privately owned and managed rural water schemes have been promoted by several governments in South East Asia in recent years, including the Cambodian Government. These schemes are seen as a way to leverage private funds and tap into community drive, expertise and presence in rural and remote contexts. They have also been seen as an alternative to failing community- or government-owned and operated schemes.

As a result, small-scale privately owned and operated water supply schemes are playing an increasingly significant role in rural Cambodia, particularly in rural growth centres and emerging towns. In 2015 there were an estimated 300 privately managed water supply schemes (approximately 147 licensed), serving over one million people in rural Cambodia (World Bank 2015, p. 15).

1.2. Civil society organisations supporting water supply schemes

Several civil society organisations (CSOs) have been key players in supporting privately owned small-scale water schemes in Cambodia. One of these, GRET, supported 14 privately owned and operated piped water schemes between 2000 and 2005. Each of these schemes provided between 250 and 900 household connections, benefiting a total of 25,000 people (Mahé 2006).

Between 2013 and 2017, East Meets West (EMW) worked with GRET to establish two new piped water supply systems, Vihear Thum in Kampong Cham and Koah Chreng in Kratie, and to expand two piped water supply systems, Koah Tontuem in Kampong Cham and Sambok in Kratie. These projects led to 1,613 household connections, including 616 connections to poor households. In 2014, EMW supported a private operator in Kampong Chhnang Province to build a piped water supply system, and helped 355 poor households to connect to this system.

The Cambodian Water Supply Association (CWA) was established in 2012. It specialises in water service supply in both urban and rural areas of Cambodia. The CWA aims to support and promote cooperation among water operators. It supports technical skills and knowledge development, and the sustainable expansion of privately operated water supply services (Box 4). The CWA is supported by the Water and Sanitation Program of the World Bank, and in a joint program, the CWA and the World Bank developed a series of guidance notes and training programs for water supply

entrepreneurs. Other organisations that have supported rural water supply services in Cambodia include: 3i, the Japan International Cooperation Agency (JICA), USAID, KOSAN, and water.org.

1.3. Challenges water supply schemes face and addressing knowledge gaps

As is the case in many other developing nations, small-scale piped water schemes in Cambodia face acknowledged operational and regulatory challenges. Despite growth in private water enterprises, a previous study found that these schemes in Cambodia were inadequately regulated, had limited staff capabilities, and struggled to access capital for service improvements and expansion (World Bank 2015, p.15). Some development actors have implemented programs and strategies to address these challenges, but the overall success of these strategies is not known.

There are considerable knowledge gaps related to how gender norms and gender dynamics intersect with the development and growth of water supply schemes in Cambodia. These gaps include: how gender influences who becomes a water entrepreneur; what the experiences, challenges and opportunities of water entrepreneurs are; and how water entrepreneurship relates to women's empowerment, including economic empowerment. Previous research conducted by ISF-UTS found that little had been documented about the ways in which women were involved in water, sanitation and hygiene (WASH) enterprises, or about the potential for women entrepreneurs to lead successful WASH businesses (Leahy et al. 2017).

This study on which this report is based was conducted to begin to address these gaps, and it was the first to systematically analyse the experiences and needs of female water entrepreneurs. It was undertaken in order to support CSOs, donors and Cambodian government agencies to develop an enabling environment which is not gender blind, can support women's empowerment, and will contribute to sustainable piped water services in rural contexts.

This report draws on empirical research conducted in Cambodia in late 2017. It includes policy and practice implications for CSOs, donors, and Cambodian government organisations at a number of levels (national, provincial and commune), and it identifies further research needs. A summary table on p. 62 provides an overview of recommendations based on the research findings.

1.4. Water supply context

Only 16% of rural Cambodians have access to safely managed water supplies (Figure 1), and of these, only 11% have access to piped water (JMP 2015). The Sustainable Development Goals framework highlights the need for "safely managed" services. Consequently, piped water supplies which provide water of an acceptable quality will be an area of increased focus for rural water supply strategies in Cambodia in coming decades.

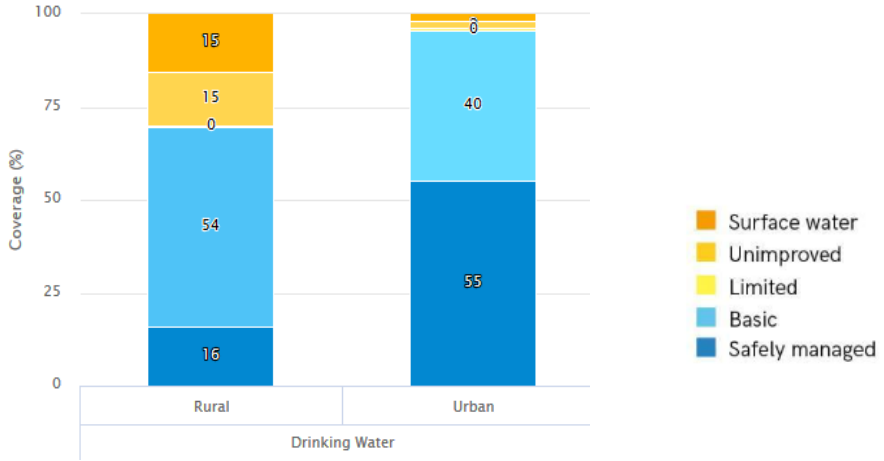

Figure 1. Water sources accessed by rural and urban Cambodians. Only 16% of rural Cambodians have access to safely managed water supplies.

1.5. Governance of piped water services in rural Cambodia: policy drivers for private sector engagement

The Ministry of Rural Development (MRD) is the lead agency for rural sanitation and water supply in Cambodia. The MRD provides these services via the Departments of Rural Health Care (DRHC) and Rural Water Supply (DRWS). The Ministry of Industry and Handicraft (MIH) manages private enterprise licences, and requires the presentation of a feasibility study prior to approval. The MIH also sets the tariffs that enterprises can charge their customers.

The Cambodian National Strategy for Rural Water Supply (NSRWS) (2011–2025) identified seven major challenges for the sector. One of them was the need to create a more favourable enabling environment for local privately owned and operated water supply schemes. This was because the interest and capacity of the local private sector to invest in water supply and sanitation was found to be limited (NSRWS 2012, p.4). The Strategy sets out a platform for encouraging the private sector, and one of the aims of this platform is to 'share risks of providing services in difficult and remote areas' (NSRWS 2012, p.7). The platform also highlights the need for private sector development and it focuses on creating a competitive environment, building capacity, and improving access to finance (Box 1).

Box 1. Cambodian National Strategy for Rural Water Supply (NSWRS) (2011-2025) Priority Actions (Section 4.3)

Create a competitive environment:

- Develop and widely disseminate guidelines that outline the principles of responsibility, accountability, predictability and transparency for private sector entities involved in water supply and sanitation.
- Put in place long-term service contracts (of at least 10 years) in situations where infrastructure investment by the private sector is needed.

Build capacity and improve access to finance for private sector:

- Develop clear regulations that support local businesses to obtain loans from financial institutions.
- Provide appropriate training on basic business and financial management to local businesses.

(NSRWS 2012, p.9)

1.6. Cambodian Government policies encouraging gender equality

Cambodia was ranked 112th out of 188 countries in the United Nations Gender Inequality Index in 2016.[1] In Cambodia 13% of females (compared to 26% of men) over 25 years of age have at least some secondary education, while 75.5% of females are in the workforce, and 86.7% of men are in the workforce. Violence against women is also a significant issue in Cambodia, with over one in five women reporting having experienced sexual or physical violence from an intimate partner (WHO et al. 2016).

To address gender inequalities, a number of policies, plans and programs have been developed by the Cambodian Government in recent years. Although the present study has not reviewed the impacts or effectiveness of these policies, some notable government policies and initiatives include:

- **Neary Ratanak IV (2014–2018)**[2] – A five-year strategic plan for gender equality and women's empowerment. This strategy identifies current gender equality issues and sets out policy recommendations across a range of areas including: gender in education and vocational training, violence against women, and women's economic empowerment.

[1] Gender Inequality Index (2016) can be accessed at: http://hdr.undp.org/en/content/gender-inequality-index-gii
[2] Neary Ratanak IV (2014- 2018) can be accessed at: http://www.kh.undp.org/content/cambodia/en/home/library/democratic_governance/cambodian-gender-strategic-plan---neary-rattanak-4.html

- **National Policy on Technical Vocational Education and Training (2017–2025)**[3] – includes a recommendation to expand opportunities for people to obtain life skills by paying special attention to the needs of women, marginalised groups, poor youth, school drop-outs, migrant workers and indigenous people. Support could include scholarships, increasing access to education, and the promotion of gender awareness.
- **Cambodian National Strategy for Rural Water Supply (NSRWS) (2011–2025):** The strategy aims to 'mainstream' the issue of gender in the rural water supply sector. The Strategy declares that it will review and revise, if necessary, all existing and new sector guidelines and procedures to ensure they adequately address gender issues' and that it will 'develop a gender orientation course, in collaboration with Ministry of Women's Affairs, suitable for people working in the water supply, sanitation and hygiene sector' (2011, p.10).
- **Gender Mainstreaming Action Groups in each Ministry** – each Cambodian Ministry established a Gender Mainstreaming Action Group. The Ministry for Rural Development also developed a detailed Gender Action Plan. It is understood that the Gender Action Plan was not implemented, and at the time of writing, there were no concrete plans to develop a new gender action plan.

These policies outline strategies to increase awareness of the need for gender equality, including an intention to increase women's participation in business overall in Cambodia. The level of the implementation of these policies, however, is not known, as it was not the focus of this study. The strategies and national-level data identified significant challenges with respect to gender equality in Cambodia. For example, although gender parity in education is improving, the data found that these improvements were not consistent across regions and age groups (Government of Cambodia 2017).[4] Therefore, this research was instigated to examine how gender dynamics influence Cambodian development, and in particular, women's inclusion in and contribution to privately managed water supply schemes in rural contexts.

1.7. Decent work and its linkage to women's empowerment

A key consideration for this research was to focus not only on whether women had employment in water enterprises, but also on whether this work and leadership led to their empowerment, including economic empowerment. Of course, it cannot be assumed that all kinds of employment are beneficial to women and will increase gender equality in Cambodian society. Women have fewer

[3] The National Policy on Technical Vocational Education and Training (2017 – 2025) can be accessed at: http://tvetsdp.ntb.gov.kh/wp-content/uploads/2018/02/NTVET-Policy-2017-2025.ENG_.pdf
[4] The National Policy on Technical Vocational Education and Training (2017 – 2025) can be accessed at: http://tvetsdp.ntb.gov.kh/wp-content/uploads/2018/02/NTVET-Policy-2017-2025.ENG_.pdf

segments of the labour market open to them, leaving them potentially exposed to sub-optimal conditions. Moreover, women are overrepresented in the unskilled (informally trained) sector (Dolan 2004). Flexible and informal employment is often considered to be more suitable for women because it allows them to balance their household maintenance and childcare duties with economic activities. However, this flexibility can mean that their livelihoods are precarious if they lack job security and the bargaining power to negotiate for fairer working conditions.

Female entrepreneurs cannot be said to have been positively integrated into the job market unless they attain security through their self-employment. In their seminal work, Rodgers and Rodgers (1989) describe seven dimensions of security: (1) labour market security relating to an adequate quantity of employment opportunities; (2) employment security relating to regulations on hiring and dismissal; (3) job security relating to prospects to advance from job into a career; (4) work security relating to protection against accidents and illness at work; (5) skills reproduction security relating to opportunities for gain skills through experience and training; (6) income security relating to the provision of adequate income; and (7) representation security relating to promoting better conditions through collectives or trade unions. This understanding of security can be seen in the International Labour Organisation's (ILO's) Decent Work agenda:

> It involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men (2018).

Sustainable Development Goal 8 aims to 'promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all'. While the present study does not address these security dimensions and the decent work concept in full, it is in this context that the study was developed. The study applied a gender lens and a women's empowerment framework to issues around water entrepreneurship in Cambodia.

1.8. Research objectives and questions

This study focused on the benefits and challenges faced by women (and their families) in owning and operating private water supply schemes in rural Cambodia.

Following a literature review, the empirical phase was guided by two key questions, each containing three sub-questions as shown in Box 2.

Box 2. Research questions

Research Question 1.

To what extent are women empowered through their management of water supply schemes in Cambodia?

a) What are common barriers and enablers for female entrepreneurs managing water supply schemes in Cambodia, and how do these relate to an understanding of women's empowerment?
b) To what extent does women's involvement in managing water enterprises in Cambodia facilitate their empowerment, including economic empowerment?
c) What is the relationship between the barriers and enablers faced by female entrepreneurs in other sectors in Cambodia, and the barriers and enablers faced by women managing water enterprises in Cambodia?

Research Question 2.

What needs to be done and by whom to support female water entrepreneurs in Cambodia to achieve empowerment, including economic empowerment, outcomes?

a) What strategies exist to support female water entrepreneurs in Cambodia?
b) What measures do female water entrepreneurs want introduced to support their water supply schemes, and who do they want to introduce these measures?
c) What do these support needs and wants mean for the WASH-enabling environment in Cambodia, with respect to supporting female water entrepreneurs?

1.9. Literature review: situating the research

The first phase of this study involved a review of the literature on female entrepreneurship in other sectors beyond WASH, in order to better understand how experiences of entrepreneurship in other sectors might relate to the WASH sector (Leahy et al. 2017).

This literature review found that women own 65% of all private enterprises in Cambodia, both formal and informal (ADB 2015), and according to the available documentation addressing the barriers to female entrepreneurship in Cambodia, the key barriers to entrepreneurship are:

- **Regulatory barriers** – in terms of ease of doing business and understanding the requirements for establishing a business.

- **Limited access to finance** – women's reduced levels of access to finance due to the need to have documented credit histories – which men tend to have more than women – and bias against women from financial institutions.
- **Limited access to business development services** – vocational training often reflects traditional gender norms, and membership fees can be prohibitive for some women, especially those in rural areas.
- **Cultural values** – the traditional code of women in Cambodia (Chbab Srey) limits women's educational and economic independence.
- **Networks and networking** – some forms of networking which support business development are less accessible to women because these networks are male-orientated, and because travel may be involved.
- **Lack of education and training** – lower levels of education and literacy can impact on the success of entrepreneurs, and women's domestic responsibilities can prevent them from participating in training which can be useful for developing successful businesses.
- **Informal fees/taxes** – business women report paying considerable amounts in informal taxes and fees to government inspectors.

These barriers identified in the literature on Cambodian enterprises are explained in section 3.3., which also presents research findings from the empirical phase of the research into female-led water enterprises.

A number of the abovementioned barriers were also found to be experienced by female entrepreneurs in the other countries included in the literature review (Lao PDR, Indonesia and Cambodia), and together, these are shown in Figure 2.

Figure 2. Summary of barriers to female entrepreneurship identified in literature on Cambodia, Lao PDR, and Indonesia (Leahy et al. 2017)

The literature review also identified a number of strategies that have been used in Cambodia to support female entrepreneurship including: national action plans for women's economic empowerment; women's business associations; business development programs and services for women; training; and microcredit programs (Leahy et al. 2017). Whilst development actors are interested in gender equality issues within WASH enterprises, little is known about women's experiences in the sector and how these experiences relate to empowerment, including economic empowerment.

2. Methodology

2.1. Research team and process

This research was conducted through a partnership of three organisations:

- **Research organisation (lead):** Institute for Sustainable Futures, University of Technology Sydney
- **Cambodia WASH civil society organisation**: East Meets West (EMW)
- **Water association**: Cambodian Water Association (CWA).

A collaborative approach of working in partnership was employed to facilitate engagement between researchers and practitioners. This included co-creation of the research methodology by the research partnership team. Research frameworks, interview questions and sampling processes were co-developed, and data analysis processes, while led by ISF-UTS, were supported by EMWF and CWA through joint workshops.

The research process was transdisciplinary in that it sought out and valued different types of knowledge held by a range of stakeholders. This included valuing tacit knowledge held by entrepreneurs, EMWF and CWA as partners and government stakeholders in Cambodia. It also drew on different disciplines (social sciences, engineering, and entrepreneurship and organisational management). The partnership approach employed in this study was important for facilitating research impact, given that the users of the research were deeply involved in each step of the research process (Winterford 2017).

2.2. Research respondents and approach

For this study, 27 people were interviewed in total, eight were male and nineteen were female. A total of 15 interviews were conducted with female entrepreneurs and 12 were conducted with a range of government stakeholders.

The study focused on female entrepreneurs' experiences (n=15), and interviewees were recruited from the CWA membership by the CWA (purposive sampling). Five of the interviews were conducted in person by the whole research team, and another ten interviews were conducted by phone due to the interviewees' geographical distance from Phnom Penh.

A range of government stakeholders were also interviewed in order to gain outsider views on the challenges and enablers for female entrepreneurs, and to understand the support structures (programs, funding etc.) that are in place and/or available. These interviewees were from a range of

government levels including: national (n-= 3), provincial (n-= 5), and commune level (n-= 4) (Figure 3). The government interviewees were both male and female and the interviews were often conducted in a group setting (with a number of staff present and contributing to responses during the interview).

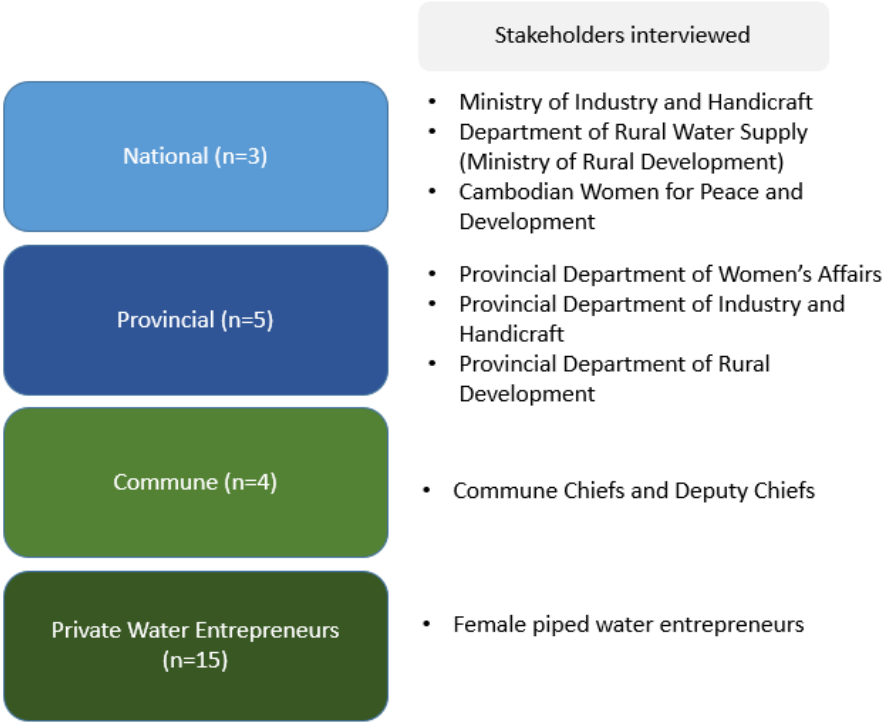

Figure 3. Stakeholders interviewed for the research

The research adopted a mixed methods approach that was primarily qualitative, using structured interviews with 27 stakeholders. All interviewees were asked questions about key challenges to establishing and running a water supply scheme. Responses were quantified using a scale of one (small challenge) to five (big challenge). The structured interviews of 47 questions (for female entrepreneurs) and 17 questions (for government stakeholders) were formulated to address the research questions and the definitions of women's empowerment and economic empowerment utilised for the project. Research partners contributed to the development of the structured interviews, and managed translation and dissemination of the interview questions prior to the interviews so that interviewees had the opportunity to consider their responses in advance. This process was also necessary due to the political environment, and norms related to interviewing community members and public officials.

The enterprises included in this study ranged in size from 600 connections to 2910 connections. They were in rural contexts and were established between 2001 and 2017. Connection fees were between US$30 and US$80 and tariffs were between $0.43 per m^3 and $0.75USD per m^3. Several (n=6) enterprises reported that they had been granted a 20-year licence from the Ministry of Industry and Handicrafts (MIH), in accordance with a relatively new policy designed to attract private sector interest in rural water supply services, and to address concerns from the sector about the enabling environment.

Research was conducted in eight provinces of Cambodia as shown in Figure 4.

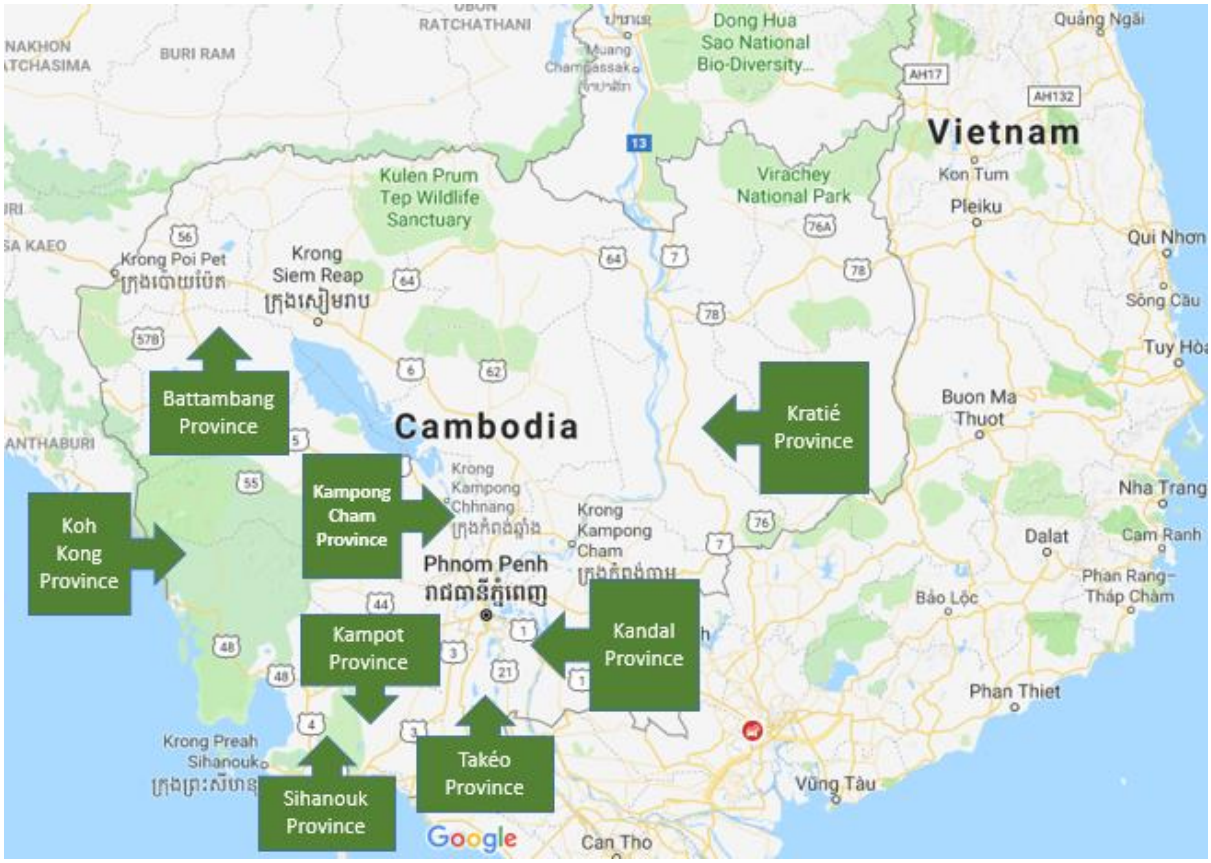

Figure 4. The eight Cambodian provinces where research was conducted.

2.3. Conceptual framework: women's empowerment and economic empowerment

Well known conceptions of women's empowerment and economic empowerment (Eyben, Kabeer & Cornwall 2008; Taylor & Pereznieto 2014) were used to inform research questions and analyse the data. These empowerment frameworks (explained below) were used to assess the common barriers and enablers for female entrepreneurs managing water enterprises in Cambodia, and to examine

how these relate to an understanding of women's empowerment (Research Question 1a); and the extent to which women's involvement in managing water enterprises in Cambodia facilitated their economic empowerment (Research Question 1b).

It is important to define empowerment and economic empowerment, as the meanings of these terms are contested, with multiple definitions used by different people. The definition of women's empowerment utilised in this project sees empowerment as a process of transforming power relations in favour of women's rights and social justice (Cornwall & Rivas 2015, p. 404). Empowerment brings about structural changes in economic, social and political institutions which traditionally constrain women. In particular, "economic empowerment is the capacity of poor women and men to participate in, contribute to and benefit from growth processes on terms which recognise the value of their contributions, respect their dignity and make it possible for them to negotiate a fairer distribution of the benefits of growth" (Eyben, Kabeer & Cornwall 2008, p. 9).

Empowerment is a journey characterised by negotiation and compromise, with uncertain outcomes due to the contingent nature of this journey. Empowerment must be understood in the particular context in which women live (Cornwall & Edwards 2010, p. 2). Rather than conceptualising women as autonomous individuals, they seen as being embedded in social relationships that can support or constrain the kinds of changes associated with empowerment. Common constraints include the expectation that women will do the largest share of unpaid, care work in their household, and the persistent gender segregation of the labour market (Kabeer 2012).

The conceptualisation of empowerment used in this project draws attention to transformations in four types of power (Eyben, Kabeer & Cornwall 2008; Taylor & Pereznieto 2014, p. 1), as outlined in the Table 1 on the next page.

Table 1. Framework of empowerment processes

Types of power	Explanation	Examples of empowerment (adapted from Eyben, Kabeer & Cornwall 2008)	Examples of economic empowerment (adapted from Taylor & Pereznieto 2014)
'power within'	people's self-understanding, self-esteem, sense of entitlement to fulfilment of rights, self-belief to make changes in their lives	the perception that women have capabilities equal to men and are entitled to make their own choices	learning business skills or financial literacy to feel prepared to start an enterprise
'power to'	decision-making roles in the household, community, and economy – extending to areas traditionally considered as men's occupations or domains	leadership by women in village-level committees and government agencies	women managing decisions within their own enterprises
'power over'	access to and control over financial, physical and knowledge resources	ownership and control over land, housing and freedom of movement	access to credit, paid employment and income-generating activities
'power with'	process of group conscientisation and mobilisation to agitate for rights and to change the labour and market conditions.	women claiming space to challenge social norms regarding their roles and how they are treated by others.	forming cooperatives, unions and group-based financial services.

This study explored the roles of female water entrepreneurs, their experiences and how these experiences were impacted by gender norms, as well as what support they needed to manage successful and sustainable piped water schemes. The research will therefore be useful to the international development and WASH sectors in Cambodia and beyond, especially for those organisations seeking to achieve Sustainable Development Goals 5 (gender equality) and 6 (universal water and sanitation).

2.4. Limitations

The research process encountered some limitations related to translation from Khmer into English, and challenges around exploring gender issues in environments that were not completely confidential and involved a range of people being present.

The structured research questions were translated into Khmer and sent to the interviewees in advance of the interviews, so they were very comfortable with the questions and ready to respond. The interviews themselves were conducted in Khmer, with a translator writing notes and explaining the key points of the interview to English speaking research team members. This could have resulted in non-Khmer-speaking researchers failing to grasp some of the nuances of what the interviewees

were saying. Notes were written in Khmer, and then translated into English for analysis, which again, could have resulted in some details and nuances being lost in the analysis process. Recording the interviews and then fully transcribing them was not considered appropriate by the research team, given some of the sensitivities of the topics being discussed.

In some cases, female entrepreneurs responded to the questions in the presence of their husbands, which could have impacted on their responses about gender issues (including decision-making) and household duties. Given the sensitivities associated with talking about gender issues, great care was taken to make interviewees feel safe and comfortable. This included not asking husbands to leave the interview space. Some husbands contributed to the answers with their wives, especially around operational issues, which demonstrated the team nature of the family business, and this was also reflected in the entrepreneurs' answers about whether or not they received support from her husbands and families.

Finally, the CWA and EMWF were present and conducted the interviews. This enabled them to hear the stakeholders' views first hand, and to develop greater research experience. While this was a real strength of the research process, it could also have influenced stakeholders' responses to questions around what kinds of support mechanisms they had been offered, and they would like/need. Despite this, having the civil society organisation research partners conduct the interviews, meant that deeper connections were made between these actors and the interviewees and stakeholders, and in the CWA's case, it promoted a deeper connection between the organisation and its members.

3. Results

Part 1: Women's empowerment through water supply scheme management in Cambodia

To understand the extent to which women are empowered through their management of water supply schemes in Cambodia, this section presents findings against the following three sub-questions of Research Question 1:

a) What are common barriers and enablers for female entrepreneurs managing water supply schemes in Cambodia, and how do these relate to an understanding of women's empowerment?
b) To what extent does women's involvement in managing water enterprises in Cambodia facilitate their empowerment, including economic empowerment?
c) What is the relationship between barriers and enablers faced by female entrepreneurs in other sectors in Cambodia and the barriers and enablers faced by women managing water enterprises in Cambodia?

These three sub-questions are addressed in detail in Sections 3.1., 3.2. and 3.3. of this report. Overall, this study found that while women's involvement in the water supply sector can facilitate their empowerment, better support in the form of technical training, improved access to low-interest credit, and peer-to-peer professional support networks is needed to further empowerment, including economic empowerment, outcomes.

3.1. Common barriers and enablers for female water entrepreneurs

This study found that the top four barriers for women managing a water supply scheme were: operational issues, government and regulation, financial issues and limited demand for water services issues. The top three enablers were: social, economic and program support enablers. These barriers and enablers, and how they were reported, are discussed below, followed in section 3.1.3., by a review of interviewees' perceptions of the differences between male and female entrepreneurs and an analysis of how these barriers and enablers are related to the empowerment (including economic empowerment) of female water entrepreneurs.

3.1.1. Barriers and challenges faced by female water entrepreneurs

Operational issues, government and regulations, financial issues and limited demand for water services issues were perceived by research respondents to be the greatest challenges faced by women who were managing water supply schemes. Entrepreneurs in particular reported that damage to water infrastructure, the lack of favourable government policies and regulations, a lack of access to finance and regular incomes, and lower demand during the rainy season affected their ability to manage their water supply schemes. This section explores these barriers and challenges in more detail.

In order to understand how the research participants perceived challenges identified in the literature review conducted for this research, all interviewees were asked to rate a range of issues on a scale of one to four using the following definitions: 1= “not a challenge at all”, 2= “not too much of a challenge”, 3= “somewhat of a challenge” and 4 = “a big challenge” (Table 2). The eight thematic challenges presented to the interviewees included: i) limited demand for water services issues; ii) financial issues; iii) human resource issues; iv) operational challenges; v) government and regulation issues; vi) cultural norms and expectations; vii) access to networks and networking; viii) education and training (

Table 3). Interviewees were asked to rate each challenge using a scale of one to four, where one was 'not a challenge at all', and four was 'a big challenge' (Table 2). To facilitate visual comprehension of the scale, each unit of measurement is colour coded as follows:

Table 2. Scale used to depict challenges as rated by interviewees.

Scale: unit of measurement	**Colour code**
1= "not a challenge at all"	
2= "not too much of a challenge"	
3= "somewhat of a challenge	
4= "a big challenge"	

Table 3. Stakeholder perspectives on the thematic challenges faced by entrepreneurs (mean responses on a 1–4 scale)

			Government stakeholders		
Challenges (themed)	**Definition provided during the interview**	**Entrepreneurs (n=15)**	**National (n=3)**	**Provincial (n=5)**	**Commune (n=4)**
Operational issues	Include high expenses such as electricity, rental etc.; insufficient or irregular access to water resources all year round; equipment that breaks down.	3.1	2.3	2.8	3.0
Government & regulation issues	Include government requirements to pay fees or taxes, policies that make it hard to run a water enterprise, lack of government support, inconsistent approaches to subsidies.	3.1	2.7	3.0	2.3
Financial issues	Include a lack of financing options for enterprises or their customers, high interest rates, customers not paying on time, and challenges to reach economies of scale especially in remote areas.	2.9	2.3	3.4	3.0
Limited demand for water services	Include low or irregular demand which might be due to seasonal variations in water supply or demands; and lack of information about potential customers and what their needs are.	2.9	2.7	2.4	2.8
Human resources challenges	Include having too little or no access to technical and business skills, it being hard to find the right staff with the skills you need, not having enough time to manage your water enterprise.	2.1	2.0	3.6	2.8
Cultural norms & expectations	Include reduced economic independence and/or opportunities to attain financial stability, expectations that you will stay at home and look after the family rather than have paid work, not being supported (or allowed) to travel, the perception that women are of lower status than men.	1.7	1.3	2.4	1.5
Access to networks	Include barriers to networking opportunities which help to support your business activities	1.7	1.0	2.2	1.8
Education & training	Include having lower levels of literacy in comparison to men, less support for attending school or post-school education and training opportunities.	1.5	1.0	2.2	1.5

Note: Some stakeholders did choose 4 (a big challenge) for their responses, but in

Table 3 and Figure 5 the average across stakeholder groups has been presented.

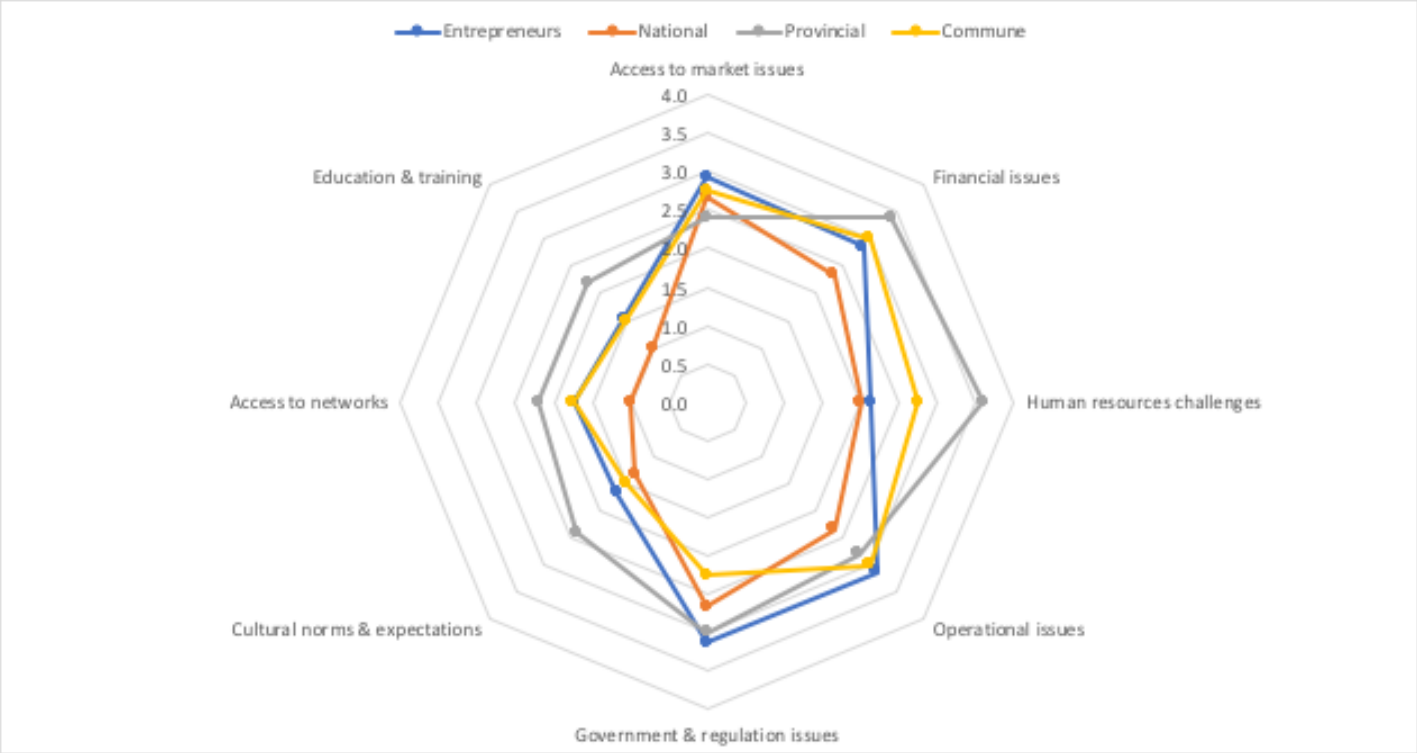

Figure 5 shows that the perceptions regarding which were the main challenges faced by entrepreneurs differed by stakeholder group.

The research revealed that the greatest variations in the scoring of thematic challenges were between the entrepreneurs and provincial and national stakeholders, with the responses of commune stakeholders and the entrepreneurs themselves being more alike (Figure 5). The three main areas of difference were the ratings of human resource challenges, operational issues and government and regulation issues. Provincial stakeholders scored human resources challenges much higher than the entrepreneurs; the national stakeholders scored operational issues much lower than the entrepreneurs; and the commune councils scored government and regulation issues much lower than the entrepreneurs. Except when rating government and regulation issues, council stakeholders' scores for the various thematic challenges were similar to the scores of the entrepreneurs. There was bigger difference between the scores of the entrepreneurs and the scores of the provincial and national stakeholders. This is to be expected, as the commune leaders were closer to the entrepreneurs and therefore they are likely to be more familiar with the challenges the entrepreneurs faced on a day-to-day basis. The differences in the scoring raises the question of

Figure 5. Stakeholder perspectives on the thematic challenges faced by entrepreneurs

whether the provincial and national-level stakeholders are sufficiently informed, and the question of whether adequate communication mechanisms exist to enable them to understand the challenges faced by water entrepreneurs.

In contrast to the responses to the broad thematic challenges presented above, a more detailed account of the specific challenges was provided by eleven of the entrepreneurs (Figure 6). All fifteen entrepreneur interviewees also provided qualitative responses (before being presented with the thematic challenges) to questions about what their most significant challenges were in managing water supply schemes. Figure 6 presents the six issues which received the highest average scores from entrepreneurs (within the broad thematic challenges). These included: i) high interest rates; ii) connecting remote properties; iii) government policies; iv) taxes and fees; v) cost of electricity and rent; and vi) customers not paying on time.

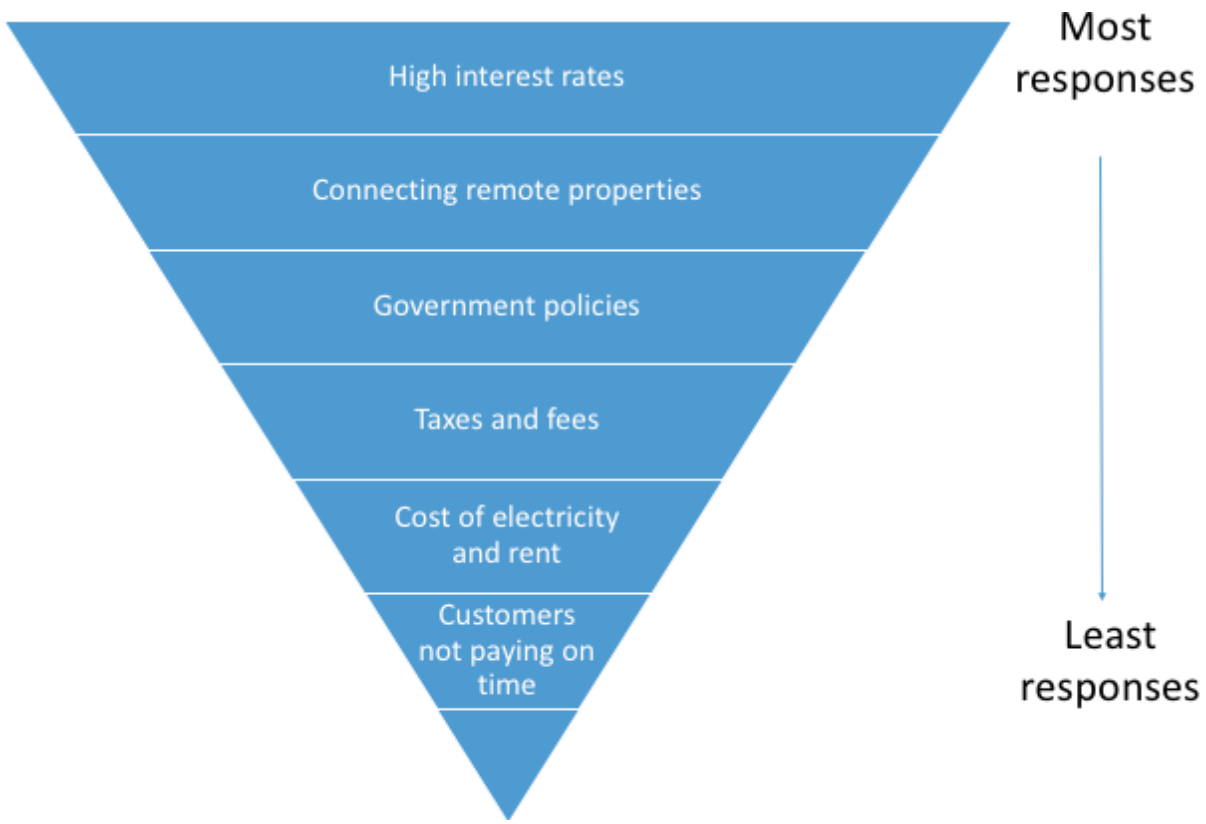

Figure 6. Specific challenges reported by female water entrepreneurs (n=11)

This section presents a more detailed account of the key challenges reported by entrepreneurs and other stakeholders. Given that the lived experience of the entrepreneurs was the main focus of the

research, the perceptions of entrepreneurs were taken as the starting point for analysis, with stakeholder views being presented alongside this analysis.
Entrepreneurs rated ***operational issues*** and ***government and regulation issues*** equally as the most significant challenges they faced, with an average score of 3.1 (out of 4) for both.

The ***operational issues*** that entrepreneurs said made water scheme management difficult included: damage to pipes from road and fence building, a lack of cooperation from households and entrepreneurs, and limited personal mobility (especially at night). Seven of the fifteen entrepreneurs mentioned damaged infrastructure specifically, with one entrepreneur explaining: *'development of the road damaged pipes and lost water… [therefore we]* were unable to *supply clean water to the households due to damaged pipes'*. A reported lack of cooperation from households also caused operational challenges. For example, one entrepreneur stated that: *'people have not cooperated with us. They have filled the land for their house improvements on top of the piped water systems. So, it has been difficult to find the pipes when they break down'*. Five entrepreneurs also reported that their limited mobility at night reduced their ability to fix broken pipes, and their ability to travel to neighbouring towns and cities for training and networking opportunities (see Case Study 1).

> *'People have not cooperated with us. They have filled the land for their house improvements on top of the piped water systems. So, it has been difficult to find out the pipes when they break down' (Entrepreneur)*

The commune council and provincial government stakeholders scored operational issues similarly to the entrepreneurs, but the national-level stakeholders rated operational issues the lowest. This suggests a disconnect between the actors operating in the field and those at the national level, with the national stakeholders perhaps having no direct experience of the challenges faced by entrepreneurs, and/or those challenges not being communicated up to the national level, or limited mechanisms available to communicate these concerns.

Government and regulation issues were also rated as significant challenges, with entrepreneurs reporting a lack of policies and regulations that supported their management of water supply schemes. Three entrepreneurs said that government regulations regarding water tariffs were tough or complicated, and in one case, an entrepreneur explained: *'when the government enlarged the road, pipes were damaged and they did not pay any money for the damage'*. Another entrepreneur stated: *'I have some worries because now the regulation is so complicated which has placed some constraints on my water* service'. Both the national and provincial-level stakeholders also perceived

the role of government as important, with one provincial government interviewee stating that challenges for women in managing a water supply scheme included a lack of *'outside support such as regulation and administration'*. Commune-level stakeholders did not rate this challenge as highly as the other interviewees (Figure 5).

Financial issues and ***limited demand for water services issues*** were perceived as the next-greatest challenges by entrepreneurs. Entrepreneurs explained that ***financial issues*** included high interest rates, high expenditure on electricity and rent, and customers not paying on time. Several entrepreneurs also reported not making a profit, or that expenses were greater than income. One entrepreneur explained: *'Income is not consistent due to seasonal variations and expenses are more than income. I have received a small income and most of it has gone to paying my staff'.* Not being able to access finance also limited the entrepreneurs' ability to expand their water schemes, as stated by another entrepreneur: *'I do not have enough money to connect the main pipes to the remote households'*. There was consensus amongst commune council and provincial-level stakeholders that financial issues were significant problems for entrepreneurs managing water supply schemes. The national-level stakeholders rated this challenge lower than other interviewees, suggesting that they may not have realised that this was a significant challenge for entrepreneurs.

Limited demand for water services issues included lower demand from customers during the rainy season and the perceived need for increased community understanding of the importance of clean water which could increase the demand for services. Three entrepreneurs reported that lower levels of water were consumed during the rainy season (and this reduced profits). One entrepreneur explained: *'in the rainy season, I find additional money from other sources because people use little water'*. Two entrepreneurs also explained that lower demand from customers was due to a lack of understanding in the community about the importance of clean water: *'people do not understand about the importance of clean water … people still use a lot of well water'*.

> *'People do not understand about the importance of clean water … people still use a lot of well water' (Entrepreneur)*

Entrepreneurs reported that ***human resource challenges*** were the next-greatest challenge that they faced. For the purposes of the study, human resources challenges were defined as: having too little or no access to technical and business skills, difficulties finding the right staff with the required skills, not having enough time to manage your water enterprise. Four entrepreneurs reported a lack of technically skilled personnel for water supply and finance matters as a barrier to managing their

water supply schemes. In support of this view, provincial-level stakeholders perceived human resource challenges as the greatest barrier. One interviewee from the provincial government explained that: *'human resources and the need for support from husbands'* was a challenge entrepreneurs faced, and one entrepreneur stated that: *'a lack of technical skills and persons'* was a challenge for her in managing her water supply scheme. Another provincial government interviewee felt that challenges faced by entrepreneurs in managing water supply schemes included: *'the time consuming [nature of the work], not being as strong as men and having to take care of the family'*. These findings suggest that the perceived lack of technical human resources, not having sufficient time available and not being as strong as men resulted in challenges for entrepreneurs in their management of their water supply schemes.

Entrepreneurs rated ***cultural norms and expectations***, ***access to networks*** and ***education and training*** challenges as lower-level challenges. While cultural norms and expectations were not perceived to be a significant challenge for entrepreneurs in managing water supply schemes by any of the groups interviewed in this research, the impact of cultural norms and expectations was evidenced in the operational and human resource challenges discussed above. Traditional roles of women as carers of the family and household limited their mobility and their ability to gain employment in the water sector and they reduced the time they had available to manage their water supply schemes. One provincial government stakeholder said that *'in the water services industry, most managers do not employ women'*. This could be due to the perception that women have limited time available, as stated by another provincial stakeholder: *'it is too time consuming [for women to own a water enterprise] because women need to look after their children'*. The influence of gender norms is further explored in sections 3.1.3. and 3.2. of this report.

Access to professional networks was seen as beneficial for peer-to-peer learning amongst entrepreneurs, and many (n=8) reported that the CWA was facilitating the professional networks that the entrepreneurs were members of. Access to networks, in the context of support sought by entrepreneurs, is further discussed in section 3.5. of this report. Lack of access to education and training was not considered a significant barrier, but education and training was seen as a key enabler for entrepreneurs managing water supply schemes, and this is further explored in section 3.4.1. of this report.

Box 3. Case study: Mrs Keo, Kampong Cham Province[5]

Mrs Keo (not her real name) started her water scheme in 2012 after being informed about the opportunity by her sister who is also a water supply entrepreneur. The scheme run by Mrs Keo has the potential to service 2100 households, and in late 2017 it had connected 1400 households (with 1000 connections, as some households share connections). Mrs Keo previously worked for the government in the Department of Commerce, and reported that she had obtained the information and skills needed to run the business through the Provincial Department of Industry and Handicraft (DIH). Her goals for the business were: to make a profit; improve the livelihoods of her community members; and improve the health of the community. She received a 20-year licence from the provincial government. Mrs Keo (approx. 60 years old) runs the water scheme with her husband who is also very involved in the business.

Community members pay 120,000 R (USD $30) to connect to the piped water service, and Mrs Keo has loans with two banks, and also borrowed money from her sister when setting up the scheme. She said that the interest rates are high, and that she does not feel that the loan repayments are affordable. For six months of each year when she has low income (due to reduced water consumption), it is hard for her to make the loan repayments. Mrs Keo mentioned that tariff setting was a challenge to her business, because if people use less than $3m^3$ of water, then the cost to the user is very low. She feels that it will take another five years for her business to make a profit.

Prior to starting the water supply system, Mrs Keo investigated her sister's business, and conducted a study of the location for her own scheme. She also studied the regulations related to setting it up. She and her husband received training from the DIH in how to prepare documentation and how to maintain the scheme.

Overall, Mrs Keo feels that her family supports her, and that in society women are thought to be able to do anything, and have equal rights with men. However, she said that a man would face fewer challenges if he wanted to set up a water service because "*men have it easier than women …. they can travel and go far away from home and attend meetings*". Mrs Keo thinks that there needs to be more women involved in water supply enterprises because women want to have businesses, and they are good at communicating.

3.1.2. Factors enabling entrepreneurs

The entrepreneurs were asked what had helped them set up their water supply schemes, and what had made it easier for them to get started. Three of the most common enablers reported by the

[5] Mrs Keo is not her real name – all names have been changed for privacy reasons.

entrepreneurs included social enablers, economic enablers and program support from a number of organisations. This section presents these enablers in detail and a summary of these enablers is provided in Figure 7.

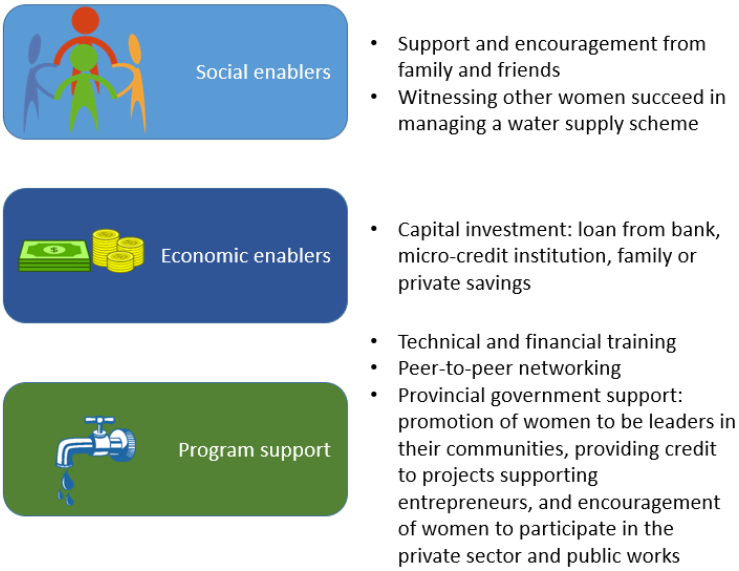

Figure 7. Enablers reported to have supported entrepreneurs to set up their water supply scheme

The ***social enablers*** which assisted entrepreneurs in setting up their water supply schemes included receiving encouragement and practical help from family members and friends, and seeing other women succeed in the sector. Several entrepreneurs reported that support and encouragement from family (husbands, brothers, children and family in general) and friends (n= 7 of 15) helped them to set up their water supply schemes. In terms of managing the ongoing running of the water supply schemes, nine entrepreneurs reported receiving support from family, but also friends. One entrepreneur explained that her family: *'helps to do general management of staff to produce clean water, to do water connections and to provide technical assistance'*. In some cases, this encouragement and support was linked to the fact that their family (n= 2 of 15) or friends (n= 1 of 15) already had water supply schemes, so they were able to advise, teach and support the entrepreneurs in setting up a new business. One respondent explained that witnessing another female water scheme owner working in the field inspired her to start her own business, which then led her to communicate with the commune chief, who assisted her to set up her own business.

A range of motivations supported and enabled women to establish and manage their water supply schemes. The desire to earn an income was one motivation for setting up a water supply scheme as

reported by a minority of entrepreneurs (n= 3 of 15). However, altruistic motivations, in terms of the entrepreneurs wanting to support the community to access clean and reliable water sources, was also reported by entrepreneurs (n= 6 of 15). The entrepreneurs perceived a clear need for people to have access to clean water for consumption and to support good health. As explained by one entrepreneur *'I would like people to have clean water to be used more easily … I would like people to have good health'*. The entrepreneurs' sense of social responsibility therefore acted as a social enabler for them to establish and manage their water supply schemes.

Access to finance is one ***economic enabler*** that women need to set up a water supply scheme. Due to the significant upfront financial investment required to set up a piped water supply scheme, a national-level stakeholder explained that access to capital was needed: *'it is easy for a woman to set up a water service if she has capital'*. The findings showed that of the fifteen entrepreneurs interviewed, twelve had received a loan from a bank or microcredit institution. Of these twelve entrepreneurs, four had also received capital from their family or invested money they had saved themselves, as explained by one entrepreneur: *'I did not receive any loan from the bank. I received financial support from relatives'*. One entrepreneur obtained capital only from her family, and one was currently applying for a loan from a bank.

The research findings also identified a number of ***programs which provided support from various stakeholders*** targeted to water entrepreneurs. The CWA, for example, provided support to water entrepreneurs in the form of training and networking opportunities (see Box 4). Seven of the fifteen entrepreneurs reported receiving technical and financial training, as well as opportunities for peer-to-peer networking from the CWA. These support mechanisms were offered to all CWA members (not only women). The provincial government was also reported to have provided training to the entrepreneurs on management of the technical and administrative aspects of water supply schemes. Four entrepreneurs mentioned this specifically. One entrepreneur stated that she received training support from: *'PDIH who came to share experience'* and another entrepreneur explained: *'I received training from PDIH on how to clean the water treatment plant, how to locate leaks and administrative management'*.

Provincial-level stakeholders reported providing program support to women, not only to enter the water sector, but other business areas as well. This was done through the promotion of women to be leaders in their communities, providing credit to projects supporting entrepreneurs and encouraging women to participate in the private sector and public works.

3.1.3. Perceptions of the differences between male and female water entrepreneurs

This research aimed to understand the perceived differences between male and female water entrepreneurs, with respect to barriers, challenges and enablers in Cambodia. While the majority of entrepreneurs thought men faced the same barriers as women in setting up water supply schemes, some stated that men faced fewer challenges. As shown in Figure 8, ten of the fourteen (one entrepreneur did not answer this question, therefore the sample size for this question is fourteen) entrepreneurs reported that they thought men faced the same barriers as women. When asked to explain this further, several entrepreneurs said that both men and women have the same responsibilities in managing a water supply scheme, and that the challenges faced are comparable. One respondent stated that: *'I think that we have the same challenges to men because we have the same rights to education, and business opportunities are now equal for women and men'*. Despite this overall perception that men's and women's challenges were comparable, some (n=4) did think that men faced fewer challenges, and no respondents said that men faced 'more challenges'. A provincial government stakeholder explained that a woman is capable of setting up a water service because: *'a woman can earn money and also have time to look after their family, even though a woman is weaker than a man, she is as clever as a man'*. This statement may point to a cultural norm that see women's inferior physical strength as a disadvantage in particular jobs. However, the statement also recognises that women and men have equal intellectual capabilities.

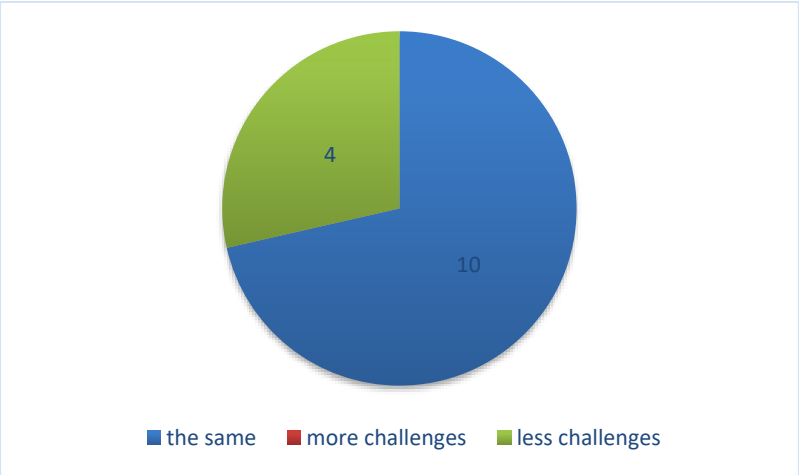

Figure 8. Entrepreneurs' perspectives as to whether men would have encountered the same barriers in setting up a water service.

One entrepreneur mentioned her increased workload and the challenges of juggling household, childcare and water scheme management duties:

> *'There have been changes in my responsibility to look after my children because my water service is far from home. So, I have not had enough time to look after my children as before … there have been some changes of my relationship with my husband and children because we are all busy with our individual tasks'*

This statement may be an indication of the double burden of work experienced by women, and the challenge women face in finding enough time to earn money and take care of their children simultaneously.

Despite cultural norms that dictate women should downplay the challenges they face, as can be seen in Figure 8, four entrepreneurs perceived that men faced *fewer challenges* than women in setting up water services (n=4). Entrepreneurs provided reasons holding for this view, including that men enjoy greater mobility (being able to travel away from the home), men's lower reproductive work burden, greater respect and space given to men's voices and women's perception of their lower capacities than men. According to the entrepreneurs who said that men have fewer challenges than women, the greater mobility experienced by men meant that they were able to work at night if equipment broke down (n= 3 of 4) and easily participate in trainings or workshops (n= 1 of 4), which also indicated a lower reproductive work burden. Entrepreneurs reported that this lower reproductive work burden meant that men did not need to look after children (n= 2 of 4), take responsibility for housekeeping (n= 1 of 4) or go through pregnancy (n= 1 of 4). As one provincial government stakeholder explained: *'there are some differences between men and women working in water services because women have to take care of children and housework. So, women spend much time on their children and their household*'. The findings also showed that the entrepreneurs thought that men could easily communicate with authorities (n= 2 of 4), which indicates more respect and space given to the voices of men. Finally, the entrepreneurs reported that men are stronger (n= 1 of 4), work faster (n= 1 of 4) and have more time (n= 2 of 4) which indicates the entrepreneurs believed women had lower capacities and less natural ability. These responses can be linked to gender norms perpetuated by society, and possibly inequality of opportunities afforded to women and girls.

The empowerment analytical framework presented in section 3.2. more deeply analyses the gendered dimensions of entrepreneurs' experiences in managing water supply schemes.

3.2. Empowerment and economic empowerment of female water entrepreneurs

This section addresses the following two sub-research questions: *"What are common barriers and enablers for female entrepreneurs managing water supply schemes in Cambodia, and how do these relate to an understanding of women's empowerment"?* and *"To what extent does women's involvement in managing water enterprises in Cambodia facilitate their empowerment, including economic empowerment?"*. In section 2.3. of this report, a detailed definition of women's empowerment was provided that was utilised in the analysis and framing of this research. As described earlier, this definition views empowerment as a process of transforming power relations in favour of women's rights and social justice (Cornwall & Rivas 2015, p. 404) and a journey characterised by negotiation and compromise, with the contexts women live in, and social relationships they are embedded in, either supporting or constraining the kinds of changes associated with empowerment (Kabeer 2012; Cornwall & Edwards 2010). The conceptualisation of empowerment used in this research draws attention to transformation in four types of power: 'power within', 'power to', 'power over' and 'power with', as explained below.

Considering this definition and conceptualisation of empowerment, we connect each of the barriers and enablers identified in section 3.1. to one of the four empowerment categories in order to explore the level of empowerment that female water entrepreneurs experienced in manging water supply schemes.

3.2.1. 'Power within': self-belief, self-esteem and sense of entitlement to rights

The majority of female entrepreneurs perceived their capabilities to be equal to men in terms of managing a water supply scheme. However, a minority still perceived some of men's capabilities (especially strength) to be superior. As explained in section 2.3., if women possess 'power within' then they will feel powerful, and empowered, *within* themselves. They will have a strong sense of self-esteem, a sense that they are entitled to their rights being respected, and they will have the self-belief needed to make changes in their lives. This type of empowerment is exemplified in the view that all people's capabilities should be equally valued and respected, regardless of their gender, and that al people are entitled to make their own choices about their lives.

The majority of entrepreneurs in this study demonstrated 'power within' in terms of their perceptions that their capabilities were equal to those of men. In section 3.1.3. of this report, it was shown that the majority of entrepreneurs (n= 10 of 15) perceived that men and women faced the same challenges in managing a water supply scheme, as explained by one entrepreneur: *'setting up and operating a water service is the same for women and men. It is based on individual determination, goal setting, knowledge and commitment'*. Overall, entrepreneurs perceived themselves to have the same capabilities as men when it came to managing water supply schemes. A commune-level stakeholder reaffirmed this, stating that there is *'no difference between women and men working in the water services because women can also lead the business and have good communication with customers'*.

> *'Setting up and operating a water service is the same for women and men. It is based on individual determination, goal setting, knowledge and commitment.'* (Entrepreneur)

The research showed that women's self-belief about their ability to make changes in their lives, and those of others, helped them to start water supply schemes. Two entrepreneurs spoke about their self-belief, with one stating: *'I want to become an influential person to change communities for the better through the water service'* and the other woman explaining *'it was very difficult for me to find clean water to produce ice [for their ice production business]. Then I decided to set up my water service'*. Both of these examples suggest that their self-esteem and self-belief helped them to make changes in their lives by starting their water supply schemes, either for the benefit of their communities or to increase their business opportunities.

However, not all entrepreneurs displayed a sense of 'power within', with some reporting that they perceived men to have superior capabilities compared to women. One entrepreneur explained: *'it is different for men and women to set up a water service … men do not do as much housework as women do, and men have more knowledge than women … men work faster and it is easier for them to go out and work at night [for example if pipes leak]'*. The perception that men are more knowledgeable and work faster than women indicates an internalised belief in the inferiority of women's capabilities. The statement by this entrepreneur also reflects an awareness that the extra household labour that women are expected to carry out, and the restricted mobility they experience, will affect women's capacity to succeed in setting up a new business.

> *'it is different for men and women to set up a water service…men do not do as much housework as women do, and men have more knowledge than women…men work faster and it is easier for them to go out and work at night [for example if pipes leak]'*. (Entrepreneur)

The findings above suggest that while positive examples of women's capabilities, self-esteem and self-belief to make changes in their life exist, changes in societal norms and culture are still needed to support women to feel empowered to establish businesses such as water supply schemes.

3.2.2. 'Power within': economic empowerment

In this research, examples of economic empowerment that highlight the 'power within' of the entrepreneurs included learning business skills or financial literacy to feel prepared to start an enterprise. Section 3.1.2. discussed the enablers that supported entrepreneurs in managing water supply schemes. Fourteen of the fifteen entrepreneurs reported receiving financial and technical training from CWA: *'[the CWA] brought me to see other water services, provided information to me, provided training on how to do the water connection … helped solve some problems'*. Another entrepreneur explained that the *'CWA supports as follows … training in technical skills and business management … provides ideas, thoughts and knowledge to solve problems and expand water services'*. Information on setting up a water supply scheme, and technical skills training, were also provided by the provincial and national governments to eight of the fifteen entrepreneurs: *'PDIH provided training on technical skills and administration'* (entrepreneur).

> *[The CWA] brought me to see other water services, provided information to me, provided training on how to do the water connection … helped solve some problems' (Entrepreneur)*

The entrepreneurs also reported receiving information and skills from family and friends which enabled them to set up their water supply schemes. Seven entrepreneurs received support from family and friends. One woman reported: *'my brother has a piped water supply system in [another] commune. He gave me the information and provided the skills to me … I [also] visited other piped water supply systems'* and another entrepreneur stated *'my family helped encourage me and gave me power … my friends advised and offered ideas about how set up a water service'*. The research findings show that the knowledge gained from CWA, government actors, family and friends assisted the entrepreneurs in starting their water supply schemes. However, additional training, especially in financial and technical skills development, was requested by seven of the entrepreneurs.

While the research findings showed that the entrepreneurs did benefit from skills development and training from various actors, a need for continued or more targeted training was also identified. This suggests that there was still scope for growth in women's 'power within', as a desire for continued learning was reported by interviewees.

3.2.3. 'Power to': decision making and leadership roles

If women possess 'power to', this suggests that they feel powerful and empowered to hold decision-making roles in the household, community and economy, including in areas traditionally considered as men's occupations or domains. Examples of this included women taking up leadership roles in their communities or in government bodies. Entrepreneurs reported that the encouragement they received from family, friends and community members assisted them taking up community decision-making roles.

The research also showed that all entrepreneurs were involved in decision-making roles related to household expenditure. All of the entrepreneurs reported having a decision-making role regarding the management of finances in their household, and the majority managed these finances in coordination and discussion with their husbands (n= 6 of 15) or families more broadly (n= 5 of 15).

Encouragement from family members, friends and community members assisted in empowering the entrepreneurs to start their water supply schemes. As explained by one interviewee: *'there were suggestions from people to set up a clean water supply system … from people who did not have clean water, and there were suggestions from all involved local authorities'* and another entrepreneur said: *'it was difficult to find clean water … people encouraged me to set up a water service'.* These examples suggest the community not only encouraged the entrepreneurs, but were sufficiently confident in their skills and capacities to take up leadership roles in establishing water schemes. One commune council stakeholder said: *'this work is not for only men. Women also can do it like men can, and they are an example for young generations*'. This suggests that the entrepreneurs were able to take up these decision-making roles in the community, and that in taking up these leadership roles they acted as role models for children and youth in their communities.

3.2.4. 'Power to': economic empowerment

Women's 'power to' manage financial decisions within their own enterprises is taken as an example of economic empowerment in this research. We found that the majority of entrepreneurs managed (or co-managed) the financial decision-making in their enterprises, and this helped the entrepreneurs to gain a degree of financial independence. As expressed by one entrepreneur, running a water supply scheme '*is not heavy work that takes a lot of strength, and she can earn money by herself and does not need to rely as much on her husband'*. Another stated: *'I want women not to rely on their husbands only'.* It was clear that for many of the entrepreneurs the ability to earn money, and not to be entirely financially dependent on their husbands, was a very important motivating factor.

Of the fifteen entrepreneurs interviewed, ten reported managing the finances of the water supply scheme, with one entrepreneur explaining: *'I feel confident in managing of my business's financial matters because my income and expenses are okay … I want women not to rely on their husbands only'*. Another entrepreneur stated: *'I feel confident in managing my business's financial matters. I have responded to the needs of the people. I have experience in managing profit and loss'*. This shows that these women felt 'power to' manage the finances of their water supply schemes.

However, many of the water supply schemes were family businesses, and as such, the entrepreneurs' husbands and family members played significant roles in the schemes. For example, one entrepreneur explained: *'I manage the budget and discuss with my son before spending the money to buy anything'* and another stated: *'I and my husband manage the money together. We discuss expenses in advance'*. Joint financial decision-making processes are an example of economic empowerment, as described by one entrepreneur: '*before I spend on anything I always discuss it with my husband … I feel confident in managing my business's financial matters'*. This example suggests that entrepreneurs showed confidence, and 'power to', manage the business's financial matters.

3.2.5. 'Power over': access to and control of resources

'Power over' suggests that women feel powerful, and empowered, in regard to their access to and control of financial, physical and knowledge resources. The research found that while the entrepreneurs did have some 'power over' access and control over financial and knowledge resources, they had concerns about access to finance, freedom of movement, and their need for additional technical training.

Financial resources were found to be both enablers and barriers for entrepreneurs in managing their water supply schemes. Twelve entrepreneurs had received loans from banks or microcredit institutions to enable them to invest in the infrastructure and systems necessary to start their water supply schemes. However, financial barriers and challenges were also perceived as the greatest issue faced by entrepreneurs, especially in terms of high interest rates, high expenditure on electricity and location rent, customers not paying on time and expenses remaining greater than income. These financial challenges hindered the entrepreneurs' empowerment, and in particular their economic empowerment (for more detail, see section 3.1.1.).

The research findings also identified limitations in the entrepreneurs' 'power over' their freedom of movement. Five entrepreneurs reported feeling unsafe and having limited mobility due to their gender. As stated by one: *'women are afraid, women cannot travel far away and stay longer'*. A

commune council stakeholder explained: *'it is easier for men to operate at night and go far away from the home than women'*. One entrepreneur said women *'have difficulty travelling far away from home'*. This lack of mobility affects the entrepreneurs' ability to attend training workshops and take advantage of networking opportunities, as well as manage their businesses if pipes break down at night.

While levels of education were not seen as a major challenge for entrepreneurs, an interest for more technical support, including training was expressed by most entrepreneurs (n= 11 of 15). One entrepreneur explained that: *'the CWA should provide additional training on technical skills, management and regulation'* and another entrepreneur stated that more *'meetings with other water entrepreneurs'* should be arranged to promote peer-to-peer learning. Despite the interest in more training and peer-to-peer learning, women's limited freedom of movement appeared to curtail empowerment outcomes.

3.2.6. 'Power over': economic empowerment

The entrepreneurs' 'power over' access to credit, paid employment and income-generating activities were taken as examples of economic empowerment in this study. The research found that the majority of entrepreneurs were able to access credit, paid employment and income-generating activities. However, high interest rates on loans taken out, the double burden of work experienced by some women, and high expenses related to running the business limited the women's economic empowerment.

Most of the entrepreneurs said they were able to gain access to credit. Of the fifteen entrepreneurs interviewed, twelve had received loans from banks, microcredit institutions or relatives. One explained that: *'I can pay the loan repayment as my income is more than the expenses'.* However, three entrepreneurs described challenges related to accessing credit, with one woman saying that it was *'difficult to find bank with low interest rates'* and another explaining that it was *'difficult to access a loan due to high interest rates'*. These findings suggest that while loans are available to entrepreneurs, they had difficulty obtaining interest rates that they are able to afford, and in some cases this limited their access to credit.

The research found that managing water supply schemes provided the entrepreneurs with paid employment and access to income-generating activities. One entrepreneur stated: *'it is a good option for women to work in water supply services, because women can earn money by themselves. It is brave for women to have businesses so that they do not have to rely on their husbands'.* The entrepreneurs' ability to access income was also perceived positively by their families, as explained

by one entrepreneur: *'there have been many changes in my family [since starting water enterprise]. We have money to spend and money to set up a new business'* and another entrepreneur stated: *'it is a good option for women [setting up a water enterprise] because women can earn money to improve family living conditions, and the business is close to the house which is convenient for taking care of the family'*. While these examples suggest the entrepreneurs have 'power over' their paid employment, and that the business benefits the whole family, it also suggests that the entrepreneurs are expected to maintain their traditional carer roles in the family. Therefore, the effects of paid labour responsibilities on top of traditional, unpaid labour roles must also be taken into consideration when assessing the extent to which the entrepreneurs were economically empowered.

While some entrepreneurs explained that their water supply schemes provided them with access to income-generating activities, five reported that the expenses of running their schemes were greater than the income gained, and they had not yet made any profit. One entrepreneur stated: *'I have not made any profit because I continue to spend money on pipes for expansion, for workers to dig and lay pipes and on other materials and equipment … I have not yet felt confident because the expenses are more than income'*. This shows that this entrepreneur did not feel 'power over' her access to income, was experiencing a lack of confidence in managing her water supply scheme and it suggests that she was not economically empowered. Another entrepreneur explained that she was worried about her business because: *'my expenses are more than income. I have not made any* profit'. While setting up and expanding a water supply scheme can incur significant financial costs, it is important that entrepreneurs are both fully aware of, and able to manage, these financial challenges to ensure they do not become financially indebted.

3.2.7. 'Power with': working with others for women's rights.

If women possess 'power with', they feel powerful, and empowered, with other women in a process of group mobilisation. They are able to call for their rights to be upheld and they are able to work to improve labour and market conditions for women. The research showed that entrepreneurs were inspired by other female water entrepreneurs to start their own businesses, and a number of entrepreneurs were advising, or willing to advise, women wishing to enter the water sector. One entrepreneur explained that the achievements of another female water supply scheme owner inspired and empowered her to start her own business, as already discussed in section 3.1.2. Three entrepreneurs reported advising and supporting women wishing to enter the water sector, as stated by one: *'I have advised my friend to set up a water service as I saw a good location'*. Another entrepreneur explained: *'It is a very good option for women to run the water supply scheme … I will*

advise them if they are interested in setting up a water service'. These examples suggest that women feel 'power with' other women to start their own businesses, and that they have a desire to support other women.

However, while the research uncovered examples of peer-to-peer support, several entrepreneurs expressed their desire to have more opportunities for professional networking with other entrepreneurs through the CWA support mechanisms. Four entrepreneurs expressed a desire for more peer-to-peer knowledge sharing opportunities (with male and female entrepreneurs) and one entrepreneur explained that such networking support groups could provide *'advice to water entrepreneurs to share experiences with each other and understanding what to do in a water supply scheme'*. The ideal forms of peer-to-peer networking, information exchange and learning that would best support entrepreneurs is an area in need of further research.

3.2.8. 'Power with': economic empowerment

'Power with', in the context of this study, involves entrepreneurs forming cooperatives, unions and group-based financial services which have economic empowerment outcomes. The research found that the only formalised cooperative or association that existed for both male and female water entrepreneurs was the CWA (see Box 4). All entrepreneurs interviewed were aware of the CWA (given they were members and were recruited through the CWA) and fourteen specifically mentioned receiving training and/or support from the Association. The CWA was reported to play an important role in bringing water entrepreneurs together to facilitate peer-to-peer learning and professional networking opportunities. As one entrepreneur stated, the CWA provides: *'advice to water entrepreneurs to share experience with each other and understanding of what to do in a water business'.*

Five entrepreneurs reported receiving information, advice and support from other entrepreneurs, which both motivated and helped them to start their own water supply schemes. One entrepreneur stated: *'I saw other women running this business and I love it too … I [then] studied the location, I collected data, I communicated with the commune chief to consult with him'*. The advice and support of other entrepreneurs was evident in this study and could be an area of further facilitation by the CWA and/or NGOs working to support water supply scheme entrepreneurs, as outlined above.

Women's empowerment, including economic empowerment is not a linear process, but rather a journey that is unique for each individual and community, and it is dependent on many economic, social and political factors. The research found overall that women's involvement in managing water supply schemes in Cambodia does seem to facilitate a degree of economic empowerment. However,

the extent of entrepreneurs' economic empowerment cannot be completely understood or assessed without a detailed analysis of the financial status of the water supply schemes. Given many entrepreneurs said that they were worried about their scheme's finances, and high interest rates were rated as their number one challenge, further enquiry into the extent to which entrepreneurs gain economic empowerment is warranted. Entrepreneurs need to be supported to have a realistic understanding of the payback period for water schemes.

The research confirms that transforming power relations in favour of women's rights and social justice, and the measurement of progress in this area, are complex. While women's involvement in the water supply sector can facilitate their economic empowerment, better support in the form of technical training, improved access to low-interest credit, and peer-to-peer professional support networks, is needed to promote empowerment outcomes.

When applying the empowerment framework to the challenges and enablers that entrepreneurs reported through this research, we found that some enablers such as 'power to' manage financial decisions and 'power with' other entrepreneurs supported women in setting up and managing water supply schemes. Barriers included a lack of 'power within' which involved perceiving men as having superior capabilities, and women's limited 'power over' their freedom of movement, which hindered entrepreneurs' capacity to manage their water supply schemes. While empowerment processes are context specific and unique to each individual and community, these research findings can assist CSOs, government actors, development partners and donors to understand how to better support female entrepreneurs in the Cambodian water sector, though the explicit targeting of programs to support empowerment outcomes.

3.3. Barriers and enablers of female entrepreneurs in other sectors in Cambodia compared to female water entrepreneurs

We now turn to looking at the relationship between the barriers and enablers encountered by entrepreneurs in other sectors in Cambodia (as identified through the literature review), and the barriers encountered by women managing water supply schemes. The literature review that informed this study identified barriers and enablers for female entrepreneurs within and beyond the WASH sector, and found nine key areas of typical barriers to entrepreneurship (Leahy et al. 2017; Willetts et al. 2016):

1. regulations
2. finance
3. limited access to business development services
4. cultural values
5. networks and networking
6. education and training
7. informal fees/corruption
8. human resources
9. operational issues

The empirical research conducted for the present study confirmed that operational issues, regulatory barriers and financial issues were also key barriers to women managing water supply schemes. Limited access to business development services, cultural values (including gender norms and discrimination), human resources challenges and networking were partly confirmed as barriers, though not identified by water scheme entrepreneurs as major problems. The empirical research did not find that levels of education and training were perceived as barriers by entrepreneurs, and the empirical phase did not confirm or contradict the view that informal fees/corruption constituted a barrier.

Table 4. Relationship between barriers and enablers for entrepreneurs in other sectors in Cambodia (as identified through the literature review), to women managing water supply schemes in Cambodia

Barrier theme	A) Barriers experienced by female entrepreneurs (all sectors) as identified through the literature review (Leahy et al. 2017; Willetts et al. 2016, p.22; Gero et al. 2013)	B) Barriers reported by female entrepreneurs (n=15) as identified through the empirical research
Operational issues	Typical challenges include high fixed expenses (e.g. electricity, salaries, office space rental); high cost of materials and equipment; access to relevant resources (e.g. water resources for water supply scheme, relevant building materials such as sand, gravel etc. for sanitation enterprises); poor infrastructure such as unreliable power supplies or poor road conditions.	**Empirical phase confirmed literature review finding.** Operational issues were identified as one of the two most significant challenges faced by entrepreneurs, including high expenses such as electricity and rent, insufficient or irregular access to water resources all year round, and equipment that broke down. Having roads and householders' land dug up without notification and causing damage to pipes was also identified as a significant operational issue by entrepreneurs.
Regulatory barriers	Cambodia is ranked 127 out of 189 countries in the World Bank Group's "ease of doing business ranking" but particular barriers apply to women such as paying for expensive professional services or paying unofficial fees due to a lack of knowledge about the requirements for setting up a business.	**Empirical phase confirmed literature review finding.** Government and regulation issues were identified as one of the two most significant challenges faced by entrepreneurs. Entrepreneurs reported that government and regulation issues included government requirements to pay fees or taxes, policies that make it hard to run a water enterprise, lack of government support, and inconsistent approaches to subsidies.
Financial issues	Women have less access to finance than men due to their lower levels education and confidence, their lack of collateral and documented credit histories, unclear legal rights and negative perceptions of women on the part	**Empirical phase confirmed literature review finding**. Financial issues were identified as the equal second-most significant challenge for entrepreneurs, including high interest rates, a lack of financing options for enterprises or their

	of financial institutions. The result is that women's businesses often become unsustainable and women are left vulnerable to debt.	customers, customers not paying on time, and difficulties achieving economies of scale especially in remote areas.
Limited access to business development services (BDS)	BDS in Cambodia mostly offer vocational training which reflects traditional gender roles and fails to respond to the particular needs of women. Membership fees for business member organisations are also prohibitive for women, particularly those from rural areas.	**Empirical phase partly confirmed literature review finding**. When asked what support entrepreneurs wanted, the highest-ranking response was technical support, including training. All interviewees were members of the CWA, which would have influenced results in terms of access to BDS (which was provided to them by the CWA). Entrepreneurs confirmed that the CWA had provided them with support and training, but they called for further technical training related to managing water supply schemes. Women's limited mobility in comparison to men was found to be the greatest potential barrier to women accessing training opportunities. Further research is needed to identify the specific content that entrepreneurs would like to be trained on, and if female-only peer-to-peer networks would be useful.
Cultural values	Women's subordination to men under the *Chbab Srey* (traditional "Code of Women") limits women's economic independence and opportunities, leaves them with less control over resources, and restricts their ability to access markets and promote their businesses. It therefore has implications for women's ability and success as entrepreneurs.	**Empirical phase partly confirmed literature review finding**. Overall, entrepreneurs did not directly report that being a woman resulted in them being at a clear disadvantage to men with respect to establishing and running water supply schemes. Interviewees noted that women were being encouraged to establish businesses in general in Cambodia, and that although there were some restrictions on women (such as travelling, going out at night, physical strength, and family responsibilities), they were generally as able to set up water enterprises as men. Identifying these restrictions, yet not considering them to be key challenges, may point to the normalised level of gender imbalance present in many (if not all) societies. Women reported that running a water scheme delivered economic empowerment outcomes (especially related to managing finances and having greater independence). However, without fully assessing the pay-back and profit levels of the schemes, the extent to which entrepreneurs are economically empowered is not known, especially given many women reported that the finances of their businesses were a key concern for them. When asked if there need to be more women involved in water enterprises, entrepreneurs overwhelmingly said yes – and for a wide range of reasons including: financial independence, that it's a good employment option, to obtain a regular income, to support the health and wellbeing of the community, because there are favourable government policies supporting women, to be a role model to the community and to young women. Some women were also cautionary, stating that women need to have knowledge and skills to set up a water supply

		business, and that they need to have enough capital available.
Human resources challenges	Typical challenges include limited technical and business skills, difficulties in finding staff with the right skills, limited capacity building opportunities, and time constraints of the enterprise leader.	**Empirical phase partly confirmed literature review finding**. Human resources challenges (in terms of attracting good staff and being able to afford staff) were identified by entrepreneurs as a medium to low-level challenge, with these issues being rated by entrepreneurs fifth in a list of eight challenges presented (**Table 3**). However, provincial government stakeholders rated these challenges as the greatest challenges affecting water enterprises, indicating that they may not be aware of the challenges that entrepreneurs see as higher level for them on a day-to-day basis.
Networks and networking	Networking activities, although essential for successful business development, are less accessible to women because networking occurs after business hours and requires women to interact with male business owners and government officials, which is against social norms.	**Empirical phase partly confirmed literature review finding.** While access to networks was rated the second-lowest challenge by entrepreneurs, they did say that learning from each other was very useful and important. Several entrepreneurs expressed their desire to have more opportunities for professional networking with other entrepreneurs through CWA support mechanisms. The ideal form of peer-to-peer networking, information exchange and learning that would best support entrepreneurs is an area in need of further research.

Part 2: Supporting female entrepreneurs

This section addresses what needs to be done, and by whom, to support female water entrepreneurs in Cambodia to achieve empowerment, including economic empowerment outcomes.

3.4. Support provided to female water entrepreneurs

Interviewees identified a number of strategies that have supported entrepreneurs in Cambodia. These strategies were found to be generally focused on training and technical support, financial aid, and the promotion of professional networks.

3.4.1. Training and technical support

Almost all entrepreneurs reported that they received training and technical support from the CWA, PDIH and other water entrepreneurs. Of the fifteen entrepreneurs interviewed, fourteen mentioned that they had received training in various fields, including construction of water supply systems, drilling of boreholes, production of clean water, water connection, cleaning water treatment plants, identification of water leakages, management of water bills, financial and administrative management, and training on relevant regulations and policy requirements regarding setting up a water service. The primary stakeholders providing training to the entrepreneurs are the Cambodian Water Association (CWA) (n= 14 of 15 entrepreneurs), the PDIH (n= 4 of 15 entrepreneurs) and other water supply scheme entrepreneurs providing peer-to-peer support (n = 2 of 15 entrepreneurs). Technical support was also provided by actors such as CWA and PDIH when entrepreneurs had problems in setting up or managing their water services, including assistance in liaising with relevant government authorities regarding licences and taxes. One entrepreneur said that *'CWA should provide additional training on technical skills, management and regulation'.* Another entrepreneur explained that the kind of help that was needed to run water supply schemes was *'technical support and training … [including] financial literacy and experience on data management'.*

3.4.2. Financial support

Financial aid was necessary for the entrepreneurs to set up their water supply schemes, as capital investment is usually required. While traditional financing mechanisms, in the form of bank loans and micro-credit loans, appeared to be the norm, some interview respondents had received financial aid from not-for-profit institutions. One entrepreneur reported: '*I received 50% of the budget from USAID for water connection, technical support and upgrading water treatment plant'.* Two other entrepreneurs had received financial donations from GRET (a civil society organisation supporting water enterprises in Cambodia) for constructing a water treatment plant or set up the water service.

KOSAN (a private engineering company) was also identified as having provided financial assistance for the construction of a water treatment plant, as was 3i – *Investing in Infrastructure* (a program which provides investment subsidies to local infrastructure companies funded by the Australian Department of Foreign Affairs and Trade.). One entrepreneur explained that 3i *'helped conduct a feasibility study and provided financial support'*.

3.4.3. Government policy

The research found that a number of national policies facilitate the participation of women in small-scale enterprises. As explained by an interviewee respondent from the PDIH '*there are national policies that support women. Therefore, these are key elements that make it easier for all women to be involved in small businesses'*. A research respondent from the Ministry of Industry and Handicrafts (MIH) explained that at the national level, policies and circulars exist to support, and encourage, women in business and some do so specifically for the water sector. Initially *'the ministry issued a license for three years and it was difficult to get a loan from the bank. Now, the ministry issues a license for 20 years'.* These licences allow water supply scheme operators to set up and manage their business and are necessary to apply for a bank loan. Increasing the duration of these licences, from three to 20 years, meant entrepreneurs did not need to keep applying for these licences every three years, hence reducing bureaucratic processes and increased business certainty.

Other support provided by the government included financial assistance and linking entrepreneurs with technical partners. The MIH assisted in negotiating with Agence Française de Développement (AFD) to provide loans with favourable interest rates for entrepreneurs, and they have also supported water entrepreneurs to find partners to provide technical support. Entrepreneurs also recognised the support received from government actors: '*PDIH supported me in terms of laws and regulation'* (entrepreneur). It is clear from the research that government stakeholders and non-government actors are encouraging entrepreneurs in the water sector. However, the question of how effective these policies are in helping female entrepreneurs to set up and run water supply schemes needs to be further explored, and is addressed in the research implications for policy and practice (section 4) of this report.

3.4.4. Promotion of professional networks

Another strategy that supports entrepreneurs in Cambodia is the CWA's facilitation of peer-to-peer learning and meetings between entrepreneurs (see Box 4). As outlined by one entrepreneur, CWA:

> 'helps solve water scheme problems through conferences and meetings between the water entrepreneurs and donors, government institutions and companies selling water supply materials and equipment. These platforms allow us to share experiences, solve problems and provide information about our progress'.

Study visits between entrepreneurs were also promoted, and of the fifteen entrepreneurs interviewed, four mentioned the benefits of such professional networks being fostered to enable shared learning and to encourage more entrepreneurs to join the sector.

3.5. Support wanted by female water entrepreneurs and from whom

Providing technical and financial support, educating communities on the benefits of clean water, enabling access to peer-to-peer support networks and providing subsidies to the poor for water connections were the types of support requested by the entrepreneurs. The main stakeholders that entrepreneurs wanted support from included the CWA, government stakeholders, NGO actors and their families. These support mechanisms, and the stakeholders involved will be discussed in sections 3.5.1. and 3.5.2. below.

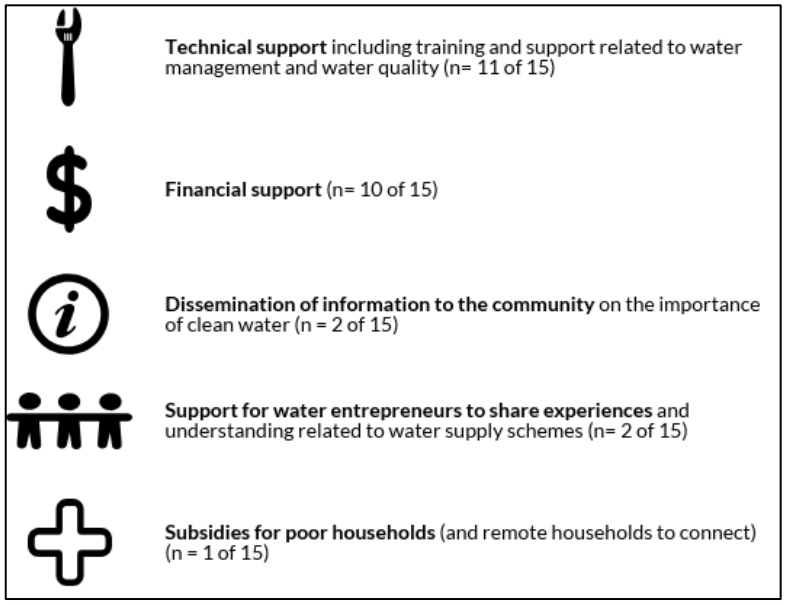

Figure 9. Entrepreneurs' responses to questions about how they would like to be supported to manage their water supply schemes

3.5.1. Desired support mechanisms

The kind of support most requested by entrepreneurs was technical and financial support to assist in the running of water supply schemes. Technical support (n = 11 of 15) included both training and direct technical assistance related to managing a water supply scheme and ensuring water quality. As explained by a PDIH representative: *'evaluation and estimation of budgets for setting up a water service and training on budget management*' were support requirements for entrepreneurs as well. In terms of financial support (n = 10 of 15), research respondents explained that training in financial management and literacy, and facilitation of access to loans from microfinance institutions and banks, as well as identification of partner banks with lower interest rates, was needed.

Other support mechanisms that entrepreneurs wanted included educating communities on the benefits of clean water, access to peer-to-peer support networks, entrepreneurial skills training, as and subsidies to the poor for water connections. A minority of entrepreneurs identified the dissemination of information on the importance of clean water within the community (n= 2 of 15); improved mechanisms by which water entrepreneurs could share experiences and understanding related to water supply schemes (n= 2 of 15); and thoughts and ideas on income generating activities (n= 1 of 15) as desired forms of support. Research respondents also discussed the need for the provision of subsidies to assist with water connections to poor households. One entrepreneur mentioned this specifically in terms of providing *'subsidies to the poor for water connections'*. Interestingly, the issue of subsidies to the poor was raised more frequently by commune council,

provincial and national-level stakeholders (n= 7 of 12). A commune council representative argued that action should be undertaken to *'help negotiate with the entrepreneurs on instalment payment for poor people to connect to the piped water supply and find funding from donors, organisations and government to give subsidies to remote households'*.

3.5.2. Support sought by entrepreneurs

In terms of 'from whom' entrepreneurs would like to receive support, the research found this was from the CWA, government stakeholders, NGO actors and their own families. Of the fifteen female water entrepreneurs interviewed, fourteen mentioned wanting to receive support from CWA in a number of ways. This included: the provision of a financial and technical training course required by the MIH; assisting entrepreneurs to obtain 20-year licences from the MIH; identification of, and applications for, financial subsidies; assistance in identifying and solving problems faced by water entrepreneurs; finding partner banks with low interest rates; empowering female water entrepreneurs to effectively liaise with relevant institutions; and assistance in communicating with households and the MIH.

Entrepreneurs recognised the importance of government support, but it was the government stakeholders themselves that expressed the need for their support of female entrepreneurs. Three entrepreneurs mentioned a desire for support from government stakeholders. As explained by one entrepreneur, *'women need support from local authorities, MIH, organisations and banks'*. However, it was the commune council, provincial and national-level stakeholders that emphasised the need for government stakeholder support, with 10 of the 12 government stakeholders mentioning this. As explained by a PDIH representative *'the government should provide financial support to enable women to set up water services, and it should publicise the availability of this support with letters and circulars'*. Other suggested forms of support included technical training, and smoother facilitation of the processing of licences and required documentation for entrepreneurs.

The respondents said that NGO actors and family members had also provided support. NGO actors that were mentioned as supporting entrepreneurs included USAID, JICA, GRET, KOSAN, water.org and 3i. Support provided included financial subsidies, technical support and training. Two entrepreneurs also mentioned the importance of receiving family support in setting up and managing their water supply schemes. One entrepreneur stated: '*the support from my husband. If he had disagreed with my idea, it would have been so difficult in the beginning. Then, I would have had to choose between running a water supply business and my family'.* The findings suggest that entrepreneurs need support from a range of stakeholders in order to set up and manage their water

supply schemes. These stakeholders include associations, government representatives, NGOs and family members.

Box 4. The Cambodian Water Association

The Cambodian Water Supply Association (CWA) was established in December 2011, and in May 2018 it had 181 members (154 active members and 27 associate members). Of the 154 active members, 121 are males and 33 are females. The Association specialises in water service supply in urban and rural areas of Cambodia. The CWA aims to: support and promote cooperation among water operators; support technical skills and knowledge development and support the sustainable expansion of privately operated water supply services. All members of CWA pay an annual membership fee which is dependent on the type and size of the water supply business. Fees range from $130 to $500 per year.

In 2013-2015 the Association, World Bank (WSP), GRET had a partnership to develop Business Development Services (BDS) packages and deliver these to 47 water supply operators who paid for the training based on their willingness and ability to pay (World Bank 2016, p. 26). The BDS program was targeted to a range of levels of water enterprises (beginner and advanced), and included components such as utility management software, training materials and guidance notes, group training over 8-9 days, a support hotline, and training videos (World Bank 2016). Seventeen per cent of the participants were female heads of water supply schemes.

CWA partnered with UNICEF to provide piped water supply networks to hard-to-reach villages in provinces where there is the threat of arsenic poisoning. The project supported poor households to connect through a subsidy scheme, and reduced the time women spent fetching water, enabling them to have more time for other activities. Through this project, more than 2,800 households connected to piped water supplies and 1,034 poor households received support under a subsidy scheme.

CWA worked with the Investment in Infrastructure (3i) program to build water operators' technical and business management skills. They also partnered with GRET and AFD in helping private water operators to access to finance. As a research partner in the Enterprise in WASH – female water supply entrepreneurs' project, the CWA wanted to better understand the needs and experiences of its members, and it wanted to be informed about the challenges and opportunities for

entrepreneurs. Entrepreneurs were asked about the kinds of support or activities the CWA offered them, and a number of support mechanisms were identified including: technical assistance (such as how to connect properties to the scheme, workshops on water quality issues, and maintaining the treatment plant); general information for the community on the benefits of clean water; finance and business management skills training (including billing advice); facilitating meetings with donors, government institutions and businesses selling water supply materials and equipment; supporting the completion of paperwork with government agencies; ideas and advice about how to expand water services; encouragement; site visits, networking opportunities and exchanges; and general problem solving.

4. Research implications for policy and practice

In response to support needs identified by entrepreneurs, and analysis of the challenges and enablers presented above, this research found that there are specific funding, training, policy and promotional opportunities that a range of actors can pursue to support entrepreneurs who are part of the growing water supply sector. These activities can be understood to broadly be part of the enabling environment, which is a set of interrelated sector functions influencing the capacity of governments and public and private actors to engage in WASH in a sustained and effective manner (UNICEF 2016). For water services to function effectively and help to meet the outcomes as identified in the Cambodian National Strategy for Rural Water Supply (NSRWS), a number of actors need to work effectively together, supporting needs of entrepreneurs, and addressing barriers including gender related barriers.

Entrepreneurs and government stakeholders specifically identified training and technical support, financial support, favourable government policy and the promotion of professional networks as key enabling factors that would support them in their water enterprises. Table 5 below summarises the key findings of the research, and canvasses a range of recommendations tailored to civil society organisations and associations, government agencies, and future research needs.

Table 5. Findings and recommendations summary

Finding	Recommendations for CSOs, associations and donors	Recommendations for the Cambodian Government	Further research needs
Women's Empowerment: While barriers related to gender norms were not considered by entrepreneurs to be their greatest challenges, women's limited mobility (which prevents them from going far away from the home or out at night), and household duties were reported to make it harder for female entrepreneurs, and they prevent women from attending meetings and responding to operational challenges involved in managing a piped water scheme. Some empowerment outcomes were experienced by female entrepreneurs, including economic empowerment outcomes. Entrepreneurs reported having 'power to' manage financial decisions and increased independence, including financial independence, and 'power with' other entrepreneurs which saw women supporting each other to establish water	**Build an understanding of gender differences/challenges into programming** so that the differences identified by entrepreneurs and stakeholders are responded to (e.g. mobility and time constraints in particular). Safe transport options, additional support for women to be able to travel with their families (husband, children) and other methods to assist women to safely travel could be part of the response to this reported challenge of lack of mobility. **Continued practice of investigating gender differences** by stakeholders so that other differences, that this research may not have uncovered, continue to be uncovered and are able to inform programming and policy.		Further research is needed to determine whether or not the double burden of household/looking after children and running a water enterprise is a significant challenge for women, and what society overall can do to help to address this – noting that this issue is not limited to the water enterprise sector, and therefore such research could be useful more broadly. Based on relevant findings, it may be possible that awareness raising is needed, for example through introducing commonly used tools such as 24-hour activity clocks which help to reveal the differences between men's and women's workloads.

supply schemes. Empowerment challenges included some cases of reduced 'power within' where men were sometimes perceived as having superior capabilities (strength), and women's limited 'power over' their freedom of movement which hindered entrepreneurs' capacity to manage their water supply schemes.		
Operational challenges: were rated as the equal highest challenge that entrepreneurs faced when running their water supply schemes. Operational challenges faced included road construction damaging their pipes, high expenses such as electricity and rent, and equipment breaking down.	**Respond to operational challenges:** better communication between different levels of government (communal, provincial and national) and enterprises about construction works that may damage pipes/disrupt services is needed. **Support for feasibility studies** so that entrepreneurs can hire qualified companies to conduct studies to determine the best locations for water sources and treatment plants. Enterprises could be supported to **analyse their costs** (over the long term) such that they are positioned to appeal to users and/or government agencies on appropriate water tariffs to charge.	
Government and regulation challenges: were also rated as the equal highest challenges that entrepreneurs faced when running their water	**Support communication between stakeholders:** support is needed to communicate enterprises' needs to all levels of	Some female respondents explained that 'government and regulation issues' included caps on tariffs and burdensome administration,

supply schemes. The rating of government challenges differed between entrepreneurs and government stakeholders, indicating that the government stakeholders may not be fully aware of the challenges that entrepreneurs face with respect to government policy and regulations.	government so that the real challenges are understood and responded to. **Develop compensation policy** regarding damage to pipes/disruption of services due to construction which outlines the various actors' responsibilities and mechanisms for compensation.	but more research is needed to identify what the key issues are in relation to government and regulation.
Financial challenges: were identified as the equal second-most significant challenges that entrepreneurs face when running their water supply schemes. Entrepreneurs reported that they hadn't made a profit on the business in most cases, but that their overall household financial situation was better than it was prior to establishing the water supply scheme. High interest rates were identified as a critical issue for entrepreneurs, and they would like support with access to low interest loans and subsidies to connect remote properties. Entrepreneurs may need support to understand the upfront costs related to establishing water supply schemes, the payback period of investing in the water supply infrastructure, and expected	**Offer and facilitate financial advice –** support is needed to help entrepreneurs to access low interest loans, and NGOs/donors/government could assist with up-front finance overall (to assist with establishing the scheme and connecting to remote properties) and development of alternative financing innovations (i.e. subsidised loan facilities). **Support women to know about the financial benefits and risks** of water enterprises, so that their expectations around profit levels, and return on investment, are realistic.	Further research is required (longitudinally) to ascertain whether establishing a water enterprise is a financially beneficial endeavour for women (and whether they are economically empowered). Given the research revealed that entrepreneurs were concerned about repaying their loans, and about high interest rates, and that financial issues were a major worry for them, more research is warranted in this area. Additionally, the concerns that entrepreneurs identified with respect to high interest levels on the loans they had taken out warrant further attention, especially in terms of whether or not there are any gendered factors at play, and if women are able to access the best rates of interest available.

rate of return so that expectations are in line with the reality of this type of enterprise.		
Limited demand for water services issues: were also identified as the equal second-most significant challenge that entrepreneurs encountered when managing their water supply schemes. Limited demand for water services issues included low or irregular demand which might result from seasonal variations in water supply or demand, and connecting to remote properties. Connecting to remote properties was in particular identified as a key challenge to water enterprises by respondents.	**Community education campaigns:** about the importance of clean water and the benefits of connecting to the scheme, including the convenience of piped water for households and comparing water quality for piped water versus other sources of lower quality that communities may be using (to address limited demand for water services issues). **Support with connecting to remote properties** – potentially with finance for householders and/or the scheme owner.	Behaviour change communications could help to boost demand for piped water systems. These campaigns need to be grounded in quality formative research relevant to the local context so that they identify local motivators and drivers. Research which explores a variety of approaches to supporting remote properties to connect to water schemes could be considered so that this challenge, which was rated highly, is addressed, and more householders can access piped water.
Technical training and support: was identified by entrepreneurs as their greatest need (area of requested support), and this included training and support related to water management and water quality monitoring. Support for feasibility studies could support entrepreneurs to ensure that their water schemes are situated and engineered	**Technical training/education:** as requested by the female entrepreneurs themselves. Identify how new and existing training programs (formal training, mentoring and peer-to-peer learning for example) can be gender sensitive and take account of child care duties, financial barriers, and limited mobility issues.	Further research is required to identify what technical training entrepreneurs are seeking, and how to target training to their needs.

optimally. Further research is required to determine the specific areas of training need that entrepreneurs would most benefit from, and whether or not there are gendered barriers (such as traveling to training and family duties) that are preventing women from taking up opportunities.			
Social support: Support from their husbands, families, friends, and personal networks were found to be key enablers for entrepreneurs setting up piped water enterprises.	**Involvement of men in socialisation of female-led private water enterprises**, recognising the importance of family in these businesses, and building on these connections and support systems for women.		
Encouragement of other women wishing to establish a private water supply scheme: Entrepreneurs overall said that they would encourage other women to set up water supply schemes if they had access to information and finance. Some entrepreneurs also said that they would offer their support and advice to other women.	Support **learning between water enterprise owners and staff**, and possibly, connect women to learn from each other. Actors will need to be conscious of not adding to women's time burdens, so such support would also need to be		Further research is needed to understand the extent to which women would benefit from women-only spaces/forums/networks to share experiences and support each other, or if existing mixed forums (such as those provided by the CWA) are adequate to meet their needs. Research could be conducted on whether the experience of the sanitation sector in

	resourced and family responsibilities taken into account.		Cambodia (where some female entrepreneurs have been supported to develop social networks with one another) is applicable to the water supply sector.

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