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GENDER AND ENERGY: OPPORTUNITIES FOR ALL

Editors Ana Pueyo and
Mar Maestre



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Strengthening the Women's Entrepreneurship Ecosystem within the Energy Sector*

Anita Shankar,¹ Amanda B. Elam² and Allie Glinski³

Abstract As women are increasingly engaged in clean energy value chains globally, it is crucial to understand what business models, practices, and enabling conditions can support the dual goals of scaling energy access and empowering women. To understand gaps in the women's energy entrepreneurship ecosystem, we draw from recent theories of gender and entrepreneurship and both peer-reviewed and grey literature sources on entrepreneurship and development. Key challenges in women's energy entrepreneurship and potential programme supports to the women's energy entrepreneurship ecosystem are identified from a resource-based perspective, focused on five primary sources of capital – economic, social, time, cultural, and symbolic. Examples of programme supports include: (a) access to finance and capital; (b) access to coaches, mentors, and business networks; (c) business education and skill development; (d) training to foster personal agency, personal initiative, and entrepreneurial mindsets; and (e) inclusion of men within women's energy entrepreneurship programming.

Keywords: gender, economic empowerment, micro-enterprise, emerging markets, women's empowerment, business development, clean energy.

1 Introduction

Access to energy is considered essential to promote economic development globally. With only a decade to reach the Sustainable Development Goal (SDG 7) that seeks to ensure access to affordable, reliable, sustainable, and modern energy for all by 2030, significant efforts are under way to fast track countries towards this goal. Advancements in renewable energy technologies, declining costs, and decentralised energy solutions are seen as important pathways for growth in these emerging markets. These efforts include increasing access to energy devices and household systems such as improved cookstoves and fuels, solar lanterns and solar home systems and kits, mini-grids/utilities, and grid extensions.

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In the international development community, the role of women is considered central to fueling growth in the energy sector, in large part because they are often the primary managers of household energy and the most heavily impacted by lack of clean energy access (Batliwala and Reddy 2003; Cecelski 2000; UN Women 2013). Engaging women at all levels of energy value chains is thought not only to have positive business outcomes, but also to economically empower women and support their families (ENERGIA 2019a; HEDON 2015). Many believe that women's involvement in the clean energy industry will enable energy companies to produce products and services that are better targeted and more easily adopted by female customers, especially those in hard-to-reach locations, which, in turn, will increase women's access to energy (Reiss 2015; ECOWAS 2014; MIT-CITE 2018; ENERGIA 2019a). Indeed, the role of women's entrepreneurship has a logical place in renewable energy sector programmes owing to the roles that women have historically played in fuel-intensive informal enterprises and as knowledgeable managers of small business-related energy (Batliwala and Reddy 1996; Glemarec, Bayat-Renoux and Waissbein 2016).

From an economic perspective, women entrepreneurs are considered essential for private sector development in emerging markets (Grewe and Stein 2011; IFC 2017; Habtezion 2016). Women-owned enterprises account for almost half of small and medium-sized enterprises (SMEs) in emerging markets, estimated to consist of 8–10 million businesses (Grewe and Stein 2011; Kelley *et al.* 2017). Additional evidence suggests that women-owned firms fill important gaps in local, national, and international economies, as women tend to start businesses with more emphasis on social goals (Hechavarría *et al.* 2017) and in different types of industries compared with men (Kelley *et al.* 2017; Amin 2014).

However, the challenges of energy access are significant. Globally, one billion individuals still lack access to modern electricity, nearly three billion people rely on wood, coal, charcoal or animal waste for cooking and heating (World Bank 2018), and more than one billion people living in the hottest climates are at risk of insufficient energy for cooling (SEforALL 2018). The energy access challenge is heavily concentrated in sub-Saharan Africa and South Asia and overwhelmingly affects individuals living in rural or poor communities. Therefore, it is unlikely that the SDG 7 targets for 2030 will be reached unless women are intentionally and effectively integrated in energy businesses, programming, and policies.

Despite the increasing interest in the potential role of women's entrepreneurship as a strategy to reach these underserved populations and to extend energy access specifically to female consumers, there are significant gaps in understanding how best to support the larger ecosystem within which women's energy entrepreneurship resides. The existing literature on women's energy entrepreneurship is limited, but growing (ENERGIA 2019b). Still, there is a preponderance of grey literature informing policy and programmes (Elwell, Mershon and Aguilar 2014;

SEforALL-PCA 2017; Dutta 2019). What is clear is that populations facing a lack of energy access, where efforts for increasing women's economic engagement are most common, are also facing significant gender inequity, which, in turn, comes from prevailing gender ideologies and allocation of roles and resources. In this article, we draw from recent theories of gender and entrepreneurship and from existing literature and programme efforts in the energy sector. It is through this gender theory lens that we attempt to address the question of critical supports for the women's energy entrepreneurship ecosystem.

2 Theory and methodology

Gender inequity is a product of the reciprocal relationship between ideologies of gender and the resulting allocation of roles and resources in a given society (Sidanius and Pratto 2012; Dillabough 2004). For example, cultural beliefs about gender influence who gets a bank account and when, who handles the money in a family, and who becomes involved in what types of work inside and outside the home. Gender beliefs influence the types of occupations individuals pursue, in which industries, and the ways in which individuals prepare themselves for these roles and how they are supported by others around them. Beliefs about gender further influence the types and character of the social connections individuals cultivate, the resulting power of social networks for business and family demands, the education and experience obtained, and the credibility that individuals face when starting and growing a business. The structural patterns that result from gender norms, ideals, and expectations tend to be reproduced by reinforcing the governing gender ideology. To break the cycle of gender inequity, gender policy and programmes must address both gender ideology and the limits that women face in access to and mobilisation of key business resources.

Worldwide, entrepreneurship is generally considered a masculine-type activity, especially in certain industries and at the highest levels of growth (Jennings and Brush 2013; Ahl 2006). As a result, men and women entrepreneurs tend to face very different realities when it comes to accessing and mobilising the types of resources required for starting and growing a business (Terjesen and Elam 2009; Elam 2008; Bruni, Gherardi and Poggio 2004). In an effort to better explain variations in gender patterns of business start-ups around the world, Elam (2008) proposed a *practice theory* view of gender and entrepreneurship. Practice theory is concerned with the ways in which individuals create and re-create the social world around them (Ortner 2006; Bourdieu 1977). This process of social (re)production results from the interplay of individual action and social structure, such that action is situated, negotiated, and largely based on habits of the mind (*habitus*). Drawing on Pierre Bourdieu's theory of capital ([1986] 2011), Elam (2008) argued that, as a result of traditional gender beliefs, women entrepreneurs face barriers in access to and mobilisation of four key forms of capital: economic, social, cultural, and symbolic capital. Notably, one additional resource, or form of capital, missing from this theoretical framework is 'time', which we also consider in this article.

Definitions of these forms of capital are as follows:

- *Economic capital*: Cash and other financial assets that enable one to purchase or trade for resources needed for business creation and growth.
- *Time capital*: The availability of time to put into business related activities.
- *Social capital*: A durable network of established social ties through which one can access or mobilise resources needed for business creation and growth.
- *Cultural capital*: Expertise, education and training credentials, knowledge, and habitus (i.e. mindsets, mental schemas, and ways of thinking, feeling, and doing), which influence access and mobilisation of resources needed for business creation and growth.
- *Symbolic capital*: Legitimacy (related to prestige, social status, and credibility) as defined and enforced in specific cultural contexts, limiting or enhancing individual access to, and mobilisation of, resources needed for business creation and growth.

Importantly, these forms of capital are convertible at a culturally defined exchange rate. For example, high levels of financial capital, knowing the right people, and having the right education or expertise convert into high levels of status and legitimacy in most cultures. However, the exchange rates may vary across cultures and across individuals according to status characteristics, such as gender, race/ethnicity, and social class (Ridgeway and Correll 2004b; Foschi 2000). Conversely, symbolic capital (legitimacy or prestige) converts into other forms of capital, providing or limiting access to financial capital, education, or social connection to individuals who fit certain stereotypes. Many entrepreneurs in resource-constrained environments find ways to overcome barriers to business financing, expertise, and human capital by investing time (sweat equity) into the business – an example of both bricolage and bootstrap start-up strategies (Baker and Nelson 2005; Senyard *et al.* 2014). Time poverty is a particular challenge for women entrepreneurs faced with time-consuming household and family care work, in addition to business demands, especially those living in resource-poor settings where many tasks are not automated (e.g. washing clothes, collecting firewood) (Blackden and Wodon 2006).

In many ways, women energy entrepreneurs face key challenges in access to, and mobilisation of, these five forms of capital, with the understanding that some forms of capital provide access to other forms of capital at exchange rates that are culturally defined and tied too often to gender ideology. In the following section, we outline key challenges faced by women energy entrepreneurs, highlight field programmes that provide support to these challenges, and identify other areas of opportunity to further strengthen the energy entrepreneurship ecosystem.

3 Key challenges to women's energy entrepreneurship

3.1 Challenges in economic capital: limited access to finance

Access to financial capital is one of the biggest barriers faced by women entrepreneurs attempting to start and expand energy enterprises (IFC 2011; Bardasi, Sabarwal and Terrell 2011; Ellwell *et al.* 2014; Sigalla and Carney 2012; Clancy 2000; Baruah 2016; Amatucci and Crawley 2010; Pachauri and Rao 2013). There are numerous reasons why women energy entrepreneurs face challenges when accessing financial capital, both money assets and financial services; for example, gender norms and resulting inequalities in land tenure and access can make it difficult to present the collateral needed to obtain a loan; cultural norms can contribute to the low bankability of women, such as family bank accounts established in the name of the male head of household only; and discriminatory banking practices, such as the requirement to have a male signatory on loans taken by women, which further discourage women's use of banking services and, in particular, access to credit (IFC 2011; Bardasi *et al.* 2011).

Importantly, women energy entrepreneurs are not a homogeneous group. As for all business owners, the type of financial capital needed varies by type and stage of business. For example, community collectives, micro-entrepreneurs, or SMEs come to the financial sector with different qualifications and requirements, including financing needs, credit histories, and financial literacy. The stage of business growth is a critical consideration, whether it is a new or small firm working towards breakeven or experiencing significant business growth. The primary sources of funding for businesses include personal/family savings, loans and grants from governments and foundations, commercial banks, microfinance or microcredit lending organisations, and institutional equity firms (private equity and venture capital) and angel investors (Coleman and Robb 2016). Research suggests that women entrepreneurs tend to have fewer personal savings (Jamali 2009), are less likely to have a bank account (Demirgüç-Kunt *et al.* 2017), and are less likely to apply for business loans than men (Treichel and Scott 2006).

3.1.1 Examples of programme supports to address economic capital

Start-up capital for female micro-entrepreneurs engaged in sales/distribution of energy products and services is often critical to purchase initial inventory (such as cookstoves or solar lanterns) or energy provision equipment (such as a solar kiosk).

Micro-loans. In some cases, energy-related programmes working with micro-entrepreneurs can help entrepreneurs to access microcredit by negotiating for low-interest loans with longer payback periods and can underwrite risk for micro-entrepreneurs by serving as the collateral when linking with financial institutions. These micro-loans can be provided more formally, through an external source such as a company or microfinance organisation, semi-formally, through savings and credit cooperatives, or informally, through local savings groups, such as

self-help groups, which use informal methods such as table banking to support savings and credit.

Micro-consignment. Alternatively, enterprises can provide inventory through a micro-consignment model wherein the entrepreneur pays back the inventory after making a first round of sales (Dutt 2012). The micro-consignment model puts the financial risk on the energy programme or larger enterprise rather than on the entrepreneur, and it allows entrepreneurs to test the product and their sales ability without making a large upfront investment. However, some social enterprises focused on energy distribution, such as Solar Sister working in Tanzania and Nigeria, have found that taking on the financial risk through micro-consignment is not an effective model to support business growth because of high attrition rates, presumably due to limited commitment from the women (Pailman 2016). In contrast, LivelyHoods, which works in Kenyan slum areas, distributes a variety of clean energy and other household goods and has successfully designed a micro-consignment model wherein sales entrepreneurs 'check out' products at the beginning of the day and return unsold products at the end of the day. While the micro-consignment model might be attractive to entrepreneurs of all backgrounds, the microcredit model may be attractive only to those who already have experience in taking and paying back loans. In fact, some studies have found that women from wealthier families are more likely to take the financial risk of taking out a micro-loan to support an entrepreneurial venture (Baruah 2016). Other studies have found that micro-consignment models may be more effective for micro-entrepreneurs because they do not have to take on the financial risk of purchasing inventory, and the models enable them to avoid the potential challenge of mixing household and business expenses (Dutt 2012; IUCN 2015).

Supplier credit. Case studies reviewed by Pailman (2016) demonstrate some of the diversity in models and the need for energy programmes to adjust their financing approach to both attract their entrepreneurs and ensure their sustainability. For example, Nuru Energy in Rwanda requires a US\$60 commitment fee and then entrepreneurs finance solar lighting products through upfront orders; the African Renewable Energy Distributor (ARED) programme in East Africa requires entrepreneurs who want to run their solar-powered mobile phone charging kiosks to pay 20 per cent of the first lease payment (for the kiosk) upfront; Juabar, which works with entrepreneurs in rural Tanzania who manage solar-powered mobile phone charging kiosks, switched from an upfront payment to a deferred initial payment after one month of operations.

Equity investment. Angel investment and venture capital are important for SMEs when these businesses are testing and refining their business model, creating customer awareness, and generating demand for their product/service (Pailman 2016; Bardouille 2012; Van Leeuwen and Erboy Ruff 2014). While equity investing can be

Box 1 Key considerations for financial services to support women-led micro, small, and medium enterprises

- Recognise there is a strong business case for lending to women (in general, their risk profile is lower, loans to women are more profitable than those to men, and women tend to have more robust savings accounts, according to microfinance data).
- Understand that numerous factors influence whether women will seek out credit or financial services (e.g. limited understanding of financial services, lack of collateral and credit history, informality of their businesses, or inadequate documentation or record keeping).
- Establish a clear path for women to establish credit history and become bankable (e.g. joint bank accounts for households or separate bank accounts for women business owners).
- Provide outreach, training, and education for female entrepreneurs to support financial literacy and better understanding of available financial services.
- Encourage women entrepreneurs to pursue business opportunities in high-margin, high-growth markets, including in male-dominated industries.
- Provide training and education of staff at financial institutions to more effectively engage with women entrepreneurs, specifically in community information on new products and financial services.
- Modify approval and delivery process for loans in areas where cultural norms may limit women's movement, travel, or interactions with others (e.g. use of mobile money). Customise offerings for the local context and markets (e.g. for new products or informal economic sectors).

Source: Authors' own.

more flexible, these investors often expect very high rates of return and prefer to invest in high-potential, scalable businesses targeting large markets. This goal is especially true for venture capital firms that run high-potential portfolio models. A study by the Omidyar Network (2013) found that angel investment and venture capital made up only 4 and 5 per cent respectively of funding sources for African enterprises. It is likely that these numbers would be even lower for women-owned enterprises, given that women-owned businesses in the USA receive less than 2 per cent of venture capital funding (NAVC 2019).

Impact investments and grants, on the other hand, are generally tied to developing market solutions for specific social needs.

Box 1 outlines some key considerations for lending institutions to consider as they develop targeted financial solutions to better suit the needs of women energy entrepreneurs. Of the various forms of capital, economic capital is probably the most pressing issue to address in resource-constrained environments and is often the most cited barrier reported by female entrepreneurs in any sector.

3.2 Challenges in time capital: time poverty and business ownership

Women often spend a disproportionate amount of time on household tasks, limiting their contributions to micro-entrepreneurship. Women in developing countries experience time poverty through longer working days compared to men – a study in Burkina Faso and Nigeria estimated that women have an average working day (including paid and unpaid work) of 11–14 hours, which exceeds the average ten-hour working day for men (IFAD 2015). This large unpaid work burden is one of the biggest challenges to achieving gender-equitable economic development today: women are not able to fully participate in the economy and gain the benefits that would result from such participation owing to the large amounts of time they are required to spend on household responsibilities such as cleaning, collecting water and fuel, cooking, and caregiving.

Specifically, these unpaid care burdens limit the amount of time and effort that women can dedicate to entrepreneurial endeavours. A study among business owners in the Dominican Republic found that,

Almost half of the women owners report that household responsibilities frequently or occasionally impede them from dedicating sufficient time to their businesses compared to only 12 per cent of the men. In contrast, male owners are more likely to report that help from family members is essential to the success of their businesses than are women, 54 per cent compared to 43 per cent, respectively (Espinal and Grasmuck 1997).

Similarly, the Upesi Stove project in Kenya – which involved women entrepreneurs in the distribution of stoves – found that a primary barrier to women's participation was that they did not have enough time and could not be away from home for such long periods of time due to domestic and community responsibilities (Khamati-Njenga 2001; Misana and Karlsson 2001).

3.2.1 Examples of programme supports to address time constraints

Energy access, especially in the form of electricity, is central to saving time in a wide range of productive uses and entrepreneurial activities, such as tailoring, cookshops, and service-centred businesses (Cabraal, Barnes and Agarwal 2005; ESMAP 2008; Mohlakoana *et al.* 2019). Furthermore, a unique feature of many energy-related technologies is the capacity to reduce women's time burden for daily and/or arduous tasks. For example, moving from traditional biomass stoves to cleaner

and more efficient cookstoves and fuels, such as improved biomass stoves or liquefied petroleum gas (LPG), has been shown to significantly reduce time required for cooking and eliminate the need to forage for fuel (Cundale *et al.* 2017; Gould and Urpelainen 2018). Therefore, women energy entrepreneurs who sell these types of energy-related technologies are able to benefit from the technologies themselves. Correspondingly, consumers using these time-saving energy-related products report the time saved can be used to engage in economic activities (GACC 2014). In this sense, programming focused on increasing energy access to women fundamentally addresses time poverty issues faced by both entrepreneurs and consumers in developing contexts.

Unfortunately, time poverty resulting from the family demands disproportionately managed by women still constitutes a barrier to business start-up and growth in contexts where households have relatively easy access to energy sources and time-saving energy products. Programmes that offer scheduling of meetings and events at times that correspond to school timetables, that offer childcare, or offer online participation are friendly to women juggling family demands and time constraints. Hence, programmes that address gender gaps in mobile communications and transportation also provide solutions to time constraints.

3.3 Challenges in social capital: lack of mentors and business networks

For female entrepreneurs, and especially within resource-poor settings, lack of access to mentors and expanded networks is a common challenge. Prior research suggests that women entrepreneurs often have less effective business networks compared to men entrepreneurs due largely to gendered family roles (Renzulli, Aldrich and Moody 2000; Brush *et al.* 2002). Consequently, both scholars and policymakers recognise that financial capital is not enough of a solution and advocate for ongoing support and mentoring to provide an important source of new information, resource acquisition, and social support from other entrepreneurs (IUCN 2015; Pailman 2016; Amatucci and Crawley 2010; O'Dell, Peters and Wharton 2014).

Engaging women through self-help groups and/or cooperatives may help to overcome some of the challenges related to access to business financing (financial capital) in that they are able to pool funds or may have already established a system of savings and loans within the group (Brody *et al.* 2015; Pachauri and Rao 2013). By improving social networks, women entrepreneurs experience greater solidarity with peers, appear to demonstrate greater financial independence, and often gain greater respect in their communities. In other words, social networks are important sources of knowledge, social support, and legitimacy (symbolic capital) for women entrepreneurs.

Coaching and mentoring are the most commonly used types of social support programming provided to individual entrepreneurs. Creating ongoing touch points for mentoring and networking can help female

Box 2 Role of ICTs to advance women-led enterprises

- Increased access to financing – mobile money enables users to send and receive money through a phone.
- Reduced time constraints – because women can communicate with customers and suppliers while staying at home to increase time efficiency.
- Reduced need for women's physical mobility – mobile phones allow easy communication and reduce the need to travel.
- Improved access to information, education and training – and women who may otherwise be illiterate have the opportunity to learn to read.
- Diversified learning and data collection – with increasing access to the internet, ICTs are a central conduit for supporting entrepreneurial learning and growth.
- Increased links to markets and expanded supply chains.

Source: Authors' own.

entrepreneurs maintain a useful personal and professional network to address business challenges as they arise and learn best practices from other entrepreneurs, as well as expand their reach and share resources with their peers and communities. In the case of energy entrepreneurs, mentors with at least two types of skills are required – one to support general business development and another to support the technological aspects of the energy product.

Access to digital technology is another critical innovation to enhance social capital and to support scaling SMEs (UNCTAD 2014; Martinez and Nguyen 2014). Information and communication technologies (ICTs) have been changing the global landscape of entrepreneurship, especially in resource-poor settings, by facilitating how people communicate and what type of information they have access to and by simplifying the exchange of money. In some cultural and geographic contexts, women are known to face additional barriers to social connection owing to gender norms that restrict mobility and connectivity to others, either through restricted access to mobile phones and motorcycles or via rules about how and when women are allowed to interact independently with others in public. Box 2 outlines several ways ICTs can support women to enhance social capital. In addition to the traditional methods of increasing communications, new forms of ICTs can enhance learning opportunities, mentoring and coaching support, linkages to markets, and rapid feedback on community or environmental concerns.

3.3.1 Examples of programme supports to address social capital

The Women's Economic Empowerment (WEE) programme operated by ENERGIA, International Network on Gender and Sustainable Energy, is designed to expand the reach of women's energy enterprises in the renewable energy sector and supports five partner organisations working in Indonesia, Nepal, Tanzania, Senegal, Nigeria, Kenya, and Uganda. In this programme, women energy entrepreneurs' social capital is supported through business development associates that provide mentoring and technical advice as well as access to larger business networks and resources (Dutta 2019). Solar Sister, one of the WEE partners and a female-led organisation, takes the concept to building social capital further, through its 'sisterhood' meetings. These monthly meetings, which are designed to strengthen local ties, help build interpersonal relationships, as well as provide technical advice to last-mile energy entrepreneurs (MIT-CITE 2018). Monthly mentoring meetings supported by easy-to-use software to track sales performance have been crucial to the WEE programme's success (Dutta 2019).

Another women-led organisation, Frontier Markets, which works with over 5,000 entrepreneurs (50 per cent women) who are trained in technology, marketing, and technical repair as well as selling clean energy solutions, is expanding its networks throughout India with the use of ICTs. Its teams are currently expanding a technology platform to serve rural consumers and simultaneously leverage a network of digital rural women entrepreneurs throughout India.

3.4 Challenges in cultural capital: lack of business education and skill development

Gender ideology is socialised in the individual habitus (i.e. ways of thinking, feeling, and doing). In this sense, men and women tend to recreate their social and economic circumstances by conforming to the prevailing rules that govern their appropriate roles and resources in their communities. This pattern of social reproduction is particularly persistent in more traditional societies where women's basic educational levels are low. Significant progress can be made towards gender equity goals simply through education, as illustrated by research from advanced economies where the gender pay gap has largely been reduced through opening access to education and work experience for women (Blau and Kahn 2007, 2017). Business skills and financial literacy are important for building strong women's businesses, and also for increasing their knowledge base and ways of thinking about their business. Although there may be considerable variation in business education content, entrepreneurship training programmes tend to include accounting, financial planning, pricing and costing, marketing, and inventory management (McKenzie and Woodruff 2014). For example, favourable results have been reported for Goldman Sachs' 10,000 Women Initiative's business training programme focused on established women-led SMEs (Goldman Sachs 2019) and for Coca Cola's 5by20 Initiative (Coca Cola 2019). These types of business-training programmes have also shown promise for micro-entrepreneurs.

For example, a six-week fully subsidised training in Mexico found increased earnings for women's businesses (Calderon, Cunha and De Giorgi 2013), and similar positive impacts were seen with a three-month intensive training delivered by professionals in Peru (Valdivia 2015).

While many studies find a positive impact of business training on business practices and performance, these findings are probably due to very low levels of formal business practice in the populations observed (McKenzie and Woodruff 2014; Buvinic, Furst-Nichols and Pryor 2016). Additionally, research suggests that women entrepreneurs are much more prone to low confidence and strong reluctance to take risks in the face of a decidedly clear bias against women business owners. Women entrepreneurs in particular appear to benefit from programmes that support 'entrepreneurial mindsets' and address individual tactics for overcoming resource constraints. Moreover, trainings that reduce travel costs and provide accommodation for childcare (or organising the training to adjust for household obligations) are more likely to be successful, as they help women overcome structural barriers to participation. However, evidence from global studies of women's entrepreneurship consistently suggests that women need support to overcome high fear of failure and lack of confidence in their own skills to start and grow a business (Kelley *et al.* 2017; Elam 2008; Arenius and Minniti 2005).

3.4.1 Examples of programme supports to address cultural capital

Many university-based entrepreneurship-training programmes now incorporate training on entrepreneurial mindsets and growth mindsets, such as Babson College's Entrepreneurial Thought and Action methodology (Neck and Greene 2011; Neck, Greene and Brush 2014), to support traditional business skills and planning. However, few of these innovative university-based programmes have published scientific evidence that these enhanced entrepreneurship-training approaches actually influence business performance, rather than start-up intentions and business launch (Pittaway and Cope 2007).

Two exceptions come from a series of randomised experiments into the efficacy of entrepreneurial training programmes for women entrepreneurs that have produced consistent results across different developing country contexts. These data are based on studies of two approaches to personal empowerment training in entrepreneurship that can be further strengthened and expanded with supportive coaching and mentoring. One is a targeted action-regulation training approach focused on enhancing 'personal initiative' (Campos *et al.* 2017; Frese, Gielnik and Mensmann 2016; Glaub *et al.* 2014; Koop, de Reu and Frese 2000). This training combines knowledge acquisition and mental tools with direct actions, actively practising and repeating actions towards their goals. The second is a 'personal agency' approach that recognises the integrated nature of various aspects of an entrepreneur's life and uses a cognitive-behavioural approach that considers how an individual's thoughts, feelings, and actions can lead to meaningful

action when examined within one's specific sociocultural and situational context (Shankar, Siddi and Smith 2018; Shankar, Onyura and Alderman 2015).

In the personal initiative approach, tested by randomised controlled trial in several locations in Africa, training activities were designed to encourage entrepreneurial action. Sales for training participants rose 27 per cent, and the training led to a 35 per cent increase in the number of employees hired by training participants, compared to a decrease in the control group. Similar results were obtained in Togo, where personal initiative training increased firm profits by 30 per cent compared with a statistically insignificant 11 per cent for traditional training (Campos *et al.* 2017). The evidence from these studies suggests that psychological mindset training may lead to both improved entrepreneurial success and increased innovation practices over and above simple business and technical training curriculums. Finally, the researchers note that the training for the personal initiative programme was cost-effective and paid for itself within one year. The curriculum for this programme is available to the public via open source access (see Campos *et al.* 2017 for details).

A similar approach was recently tested by a randomised controlled trial in the energy sector. Shankar *et al.* (2015) compared sales performance of newly trained male and female cookstove entrepreneurs testing a personal agency-based empowerment training curriculum as compared with standard business skills training. The results showed a threefold increase in sales and a doubling of business retention over time for energy entrepreneurs who underwent personal agency as compared with traditional business training, with the biggest influence seen on women entrepreneurs. Notably, women participants outsold men in both intervention and control groups, owing in large part to their enhanced knowledge of cookstove use and their willingness to provide after-sales services. The results of this study demonstrate that women can succeed very effectively as cookstove entrepreneurs in both urban and rural settings, with empowerment training serving to equip these entrepreneurs with a sense of personal agency, confidence, and social solidarity with their fellow women entrepreneurs. The curriculum for this personal agency programme, the *Empowered Entrepreneur Training Handbook* (Smith and Shankar 2015) is also available on an open access basis with support from the Clean Cooking Alliance (previously Global Alliance for Clean Cookstoves). More recently, the Empowered Entrepreneur Training Program (EETP) was deployed through a trainer certification programme that reached over 1,000 energy entrepreneurs via 67 trainers at more than 20 organisations in Kenya, Tanzania, Uganda, Nigeria, India, Bangladesh, Nepal, and Indonesia. The post-training monitoring further increased sales volumes and numbers of high sellers among those trained. A return-on-investment study conducted under real-life conditions found a return of 115.9 per cent and a significant (10.6 per cent) increase in monthly sales after the training programme (Shankar, Spurzem and Smith 2017). The EETP curriculum has been well integrated throughout ENERGIA's WEE

partner programmes, which include an integrated support package with technical, business and personal empowerment, continued mentoring, and financial advice on business planning and capital access as well as supported networks and partnerships between various actors in the energy sector (Dutta 2019).

3.5 Challenges in symbolic capital: conflicting responsibilities associated with traditional gender roles

Because men are more likely to start a business and because entrepreneurship is widely viewed as a male endeavour, women face significant penalties of legitimacy and status as entrepreneurs starting and growing businesses (Bird and Brush 2002; Ahl 2006; Elam 2008). This reality is no different in the energy sector where energy-related businesses tend to be founded and led by men. Even when women entrepreneurs possess an effective mix of economic, social, and cultural capital, when the societies in which they live present gender inequities and barriers to their entrepreneurship these individual assets may not be enough to overcome social and institutional barriers.

3.5.1 Examples of programme supports to address symbolic capital

Gender inequity in entrepreneurship and access to key business resources, in our view, is influenced heavily by Bourdieu's concept of symbolic capital (i.e. social legitimacy). Evidence suggests, for example, that women entrepreneurs face discrimination in access to financial capital, especially in high discretion contexts such as venture capital (Brush *et al.* 2014; Brush *et al.* 2018). Even in highly regulated contexts such as banking, women can experience challenges in being taken seriously as business owners, even in their own judgements. There is some evidence that women business owners may feel reluctance to apply for business loans owing to an expectation of rejection (Constantinidis, Cornet and Asandei 2006; Coleman 2000). Women entrepreneurs may further experience a sense of low status in business networking. Indeed, evidence suggests that women are often judged on prior performance, while men are more often judged on potential competence (Player *et al.* 2019). One recent study from the USA also showed that while men CEOs tended to be fired in the context of poor business performance, women CEOs tend to be replaced independent of firm performance (Gupta *et al.* 2018).

It is clear that women in business face significant legitimacy penalties, particularly in the context of leadership and motherhood (Ridgeway and Correll 2004a). It is very likely that women entrepreneurs face further challenges to legitimacy in male-dominated industries over and above the general gender bias they face as entrepreneurs. Following the argument that gender ideology and resource access are reciprocal and self-reinforcing in nature, the question arises: How do we break the cycle of social reproduction? We propose that the answer lies in programming that provides women entrepreneurs with special access to business resources such as financial capital, social capital, and cultural capital, and programming that addresses the overarching bias against, and negative stereotypes of, women entrepreneurs.

Growing evidence suggests that engaging men in programmes targeted towards women's economic empowerment can greatly improve the impacts of those programmes for women and their families. This outcome is due, in part, to the fact that gender norms at the household level are directly examined and addressed through the participation of male family members. Recent studies by the International Labour Organization Women's Entrepreneurship Development programme and the International Center for Research on Women highlight the importance of engaging men at all levels – household, community, and policy – in women's entrepreneurship (ILO 2014; Gliniski *et al.* 2018). Effective strategies towards this goal include providing capacity-building activities encouraging men to adopt more positive, more gender-equitable masculinities, promoting the benefits that men will gain from women's economic empowerment, encouraging men's roles in care work, engaging men in trainings targeting women, and identifying and supporting gender champions.

Simply participating in a formal training programme can provide certification and increased legitimacy for women entrepreneurs and their firms, reducing risks of investment and support in the eyes of other stakeholders. Working with community leaders to hold successful women entrepreneurs up as role models may also go a long way towards debunking traditional gender ideologies, showing men within and outside the household that not only can women be very effective business leaders, but also that the success of these women shines brightly on their male partners and on male leaders in the community.

4 Conclusions

As women are increasingly engaged in clean energy value chains, it is crucial to understand the ways in which business models and practices provide enabling conditions for both scaling energy access and empowering women. Recent efforts to expand women's entrepreneurship in the energy sector have shown a range of effective strategies that attempt to merge these dual goals within the context of challenging cultural and economic conditions. It is important to understand that these programme elements may not be turnkey activities that lead directly to entrepreneurial success. Rather, they address gender gaps in the forms of capital (i.e. economic, time, social, cultural, and symbolic) that influence business success. Our concern is that many efforts to promote social change in this sector may focus on only one or two forms of capital and, therefore, are likely to miss critical supports with unique benefits for women within the larger ecosystem. By applying a practice theory lens that examines the interrelationship of gender ideology with access to and mobilisation of multiple sources of capital, we are better able to review, assess, and improve ongoing programming and policies to enhance their effectiveness.

As such, we find great value in current efforts to bundle support services and provide targeted support for women entrepreneurs. Emerging research offers compelling evidence that bundled services, such as

the provision of capital transfer (as cash or in kind) combined with business training and ongoing supervision, can lead to long-term growth (Banerjee *et al.* 2015a). An excellent example of such a programme in the non-energy sector is a graduation programme for the ultra-poor in Bangladesh and India that bundled intensive training, access to savings, capital in-kind supports, and cash grants (*ibid.*). In contrast to a systematic review of randomised impact evaluations for microcredit alone, which showed no significant impacts on poverty reduction over time (Banerjee, Karlan and Zinman 2015b), a similar systematic review of bundled support services programming suggested that beneficiaries experience significant benefits as much as two years after the intervention (Banerjee *et al.* 2015a). While it may be argued that the cost of bundled services cannot be borne by industries in the energy sector, we argue that long-term, sustained impacts that include shifts in the various forms of capital are unlikely without such efforts.

Of the five forms of capital considered in this article, cultural capital and symbolic capital are often the most challenging to address and measure within programmes and, as a result, they are too often overlooked completely. For example, increasing economic capital through access to finance is crucial, yet without also strengthening financial literacy and business education (cultural capital) these financial services may be underutilised. Education and work experience are keys to business success. Also central to the concept of cultural capital are the habits of mind (*habitus*) that lead to the expression of gender bias against women in business. Providing women access to critical business resources such as financial capital, social capital, and cultural capital in the form of relevant business education and experience is necessary and beneficial, but it may not be sufficient to overcome discrimination and low confidence that results from legitimacy discounts. Educational programming that directly addresses personal agency, personal initiative, and/or the entrepreneurial spirit in a very individualised manner can empower women entrepreneurs against negative stereotypes that may undermine their success.

While participation in a formal training programme can provide certification and increased legitimacy for women entrepreneurs and their firms, leading to support in the eyes of other stakeholders, there may be a gap in how these women's roles are seen within the home and business community. Efforts to strengthen social legitimacy (symbolic capital) of women as business owners and leaders could include cultivating champions within the community and household. For example, working with community leaders to hold successful women entrepreneurs up as role models could go a long way towards debunking traditional gender mythologies. Such programme elements are likely to be of particular value to women entrepreneurs working in male-dominated industries and markets and, more generally, for those women starting and growing high-potential energy firms. The social legitimacy conferred by high-status advisers and mentors (social ties) on women entrepreneurs and their businesses is an important programme strategy.

In sum, it is crucial to recognise that prevailing gender ideologies lead to limited access to key business resources for women, either through direct discrimination or through self-selection. Women entrepreneurs are held back by a complex web of gender bias and resource constraints. In order to break the cycle of social reproduction of gender inequity in entrepreneurship today, programme supports are needed that break the myth of female underperformance and address all forms of capital, including the legitimacy of women entrepreneurs. Moreover, women have multiple responsibilities associated with traditional gender roles. In order for them to more effectively pursue entrepreneurship opportunities, there needs to be shifts in household and community acceptance of women's participation in these roles, and in the distribution of household labour. More research is needed to understand intra-household dynamics and their relationship and connection with various forms of capital. Given the limited funds available to support development policy and programmes in the energy sector, programme efforts that recognise the value of various sources of capital on women's entrepreneurial success and also understand the reciprocal relationship between ideologies of gender and allocation of roles and resources are more likely to result effectively in supporting women's empowerment and reaching energy access for all by 2030.

Notes

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- 1 Anita Shankar, Associate Scientist, Johns Hopkins University, Bloomberg School of Public Health, USA.
 - 2 Amanda B. Elam, Diana Project Research Fellow, Center for Women's Entrepreneurial Leadership, Babson College, USA.
 - 3 Allie Glinski, Senior Gender and Evaluation Specialist, International Center for Research on Women, USA.

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