



CHAPTER 1

Gender and Energy and the Rationale for Resource Recovery and Reuse (RRR) for Energy

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1.1 Placing Gender and Energy in Dialogue

A common conception of energy in the modern world is of a centralized system, linked to a grid with large energy production facilities fired by fossil fuels supplemented by renewable sources such as large-scale wind farms, hydrogeneration plants attached to dams or industrial solar installations (Sovacool 2016; Burger et al. 2011; Capellán-Pérez et al. 2017; Anderson 2016). These large-scale systems are conceived of as neutral, disembodied technological models of progress because they supply energy indiscriminately to private residences, governments and industry. This easily leads to the illusion that power itself is a sociocultural neutral force that various types of people (men, women, youth, the elderly) simply use as their needs and wants dictate. By assuming a rhetoric of choice for individual users this hides how commercial energy systems impose certain requirements on their users such as the need to purchase and maintain devices like stoves, washing machines or heaters. In addition, it disguises how the cultural positions of particular groups differ, for example the impact of paying the electricity bill; individuals are

affected differently depending on their access to financial technologies, space and resources.

Globally, women's employment has mostly taken place in the informal or unpaid sector. Informal care work for children and the elderly, cooking food and general housework are jobs typically done by women that go unremunerated and can place women outside of infrastructures to access large-scale energy systems. Thus, by paying attention to who has access to what types of energy are needed for daily life and how they access their energy needs can illustrate the gendered relationships and social norms that are structuring energy use or dis-use beyond the flick of a switch.

1.2 Gender and Energy in the Global South

In much of the southern hemisphere, Latin America, sub-Saharan Africa, Southeast Asia and some rural parts of China, the grid infrastructure used elsewhere has not been fully created and implemented (Hou et al. 2018; Bonjour et al. 2013; Mensah and Adu 2015; Chikulo 2014). Industrial and home energy tends to be generated locally or regionally (Burger et al. 2011). In many of these locations, an energy

grid may be used for specific purposes: lighting, cell phone charging and entertainment and may encompass as few as five-to-ten up to hundreds or thousands of customers. However, in many communities the private or public energy grids may not be affordable or accessible to all community members. Thus, the core energy use within the home, such as cooking and, when necessary, heating, tends to be achieved using traditional biomass sources: firewood, charcoal and sometimes dung by women or other subordinated individuals. In communities where decentralized energy production is the norm, their energy systems support fundamentally more different social infrastructures than the typical market economy model. For example, a grid-based system frees all users from needing to allocate household time to the sourcing of fuel. Energy access thus becomes a consumer product that is delivered in exchange for money but requires no direct effort. At the same time, the ability to purchase energy morphs quickly into the need to generate sufficient income to pay for centralized energy which may fall equally on men and women or disproportionately on the male or female head of a household, depending on cultural gender norms. The option to individually substitute unpaid household labor for cash is reduced and can mitigate the burden on women who typically do the unpaid household labor. The decentralized energy system, depending upon the biomass used, requires significant time of the user, who is frequently a woman, to find, carry, store and prepare the fuel for use. Cooking time may itself be constrained by the necessity to haul firewood by back, for example. The physical burdens of the woodfuel system seem extreme when compared to centralized energy and yet, one very real benefit of such a system is the relatively low cash price. Depending on the cost and accessibility of centralized energy the impact on men and women's lives is quite different and cannot be assumed to be neutral and affecting all users equally.

1.3 Provisioning vs. Use of Cooking and Heating Energy

When we consider energy provisioning and use, the question of who is primarily responsible for activities that require energy needs to be at the forefront of our considerations. In centralized systems, those who acquire energy may be separated from those who use it. For example, if energy acquisition is primarily a function of paying for access, any individual who earns money and contributes to household expenses can be said to be involved in the energy acquisition process. If household members include those who earn paid incomes and those who do not, the division may emerge between those who purchase energy and those who consume it. Another way to think about this would be, if one joins a centralized, monetized energy system, an electric grid, for example, the cost of buying electricity may shift from women who keep biomass fires burning for lighting, to men who earn formal incomes.

By contrast, when energy provisioning is decentralized to the household level, as is frequently the case in homes where biomass is the primary or exclusive energy source, the responsibility for fuel acquisition may fall more closely on the shoulders of those who are designated as responsible for household maintenance. It is important to note that this reality can play out in many ways. It may be that biomass must be purchased even when it is used at the household level and thus, as with centralized systems, those who earn an income will carry primary responsibility for obtaining energy needed by everyone. If, however, a source of biomass is available that does not cost money, the responsibility for acquisition may shift to household members who are not wage earners and who thus can be understood to have free time. It is critical to understand that non-wage-earning individuals' efforts constitute a cost, even if this cost is discounted or undervalued by others. Children, for example, who spend time collecting firewood for home cooking use, could be spending time on a less burdensome and potentially dangerous chore when they could be more fruitfully occupied in studying or gaining mastery in a trade or other skillset. Similarly, in circumstances where women are farm laborers who on any given day may not be able to find paid employment, the time they spend collecting firewood may go unrecognized as contributing resources to the households' well-being and decrease their social status in the family.

Collecting fallen wood is a common source of firewood in biomass-using regions. Women who are engaged in unpaid childcare, home maintenance and cooking for their families, are frequently the family members designated to collect fuel as well as how to use it. In these cases, switching from biomass energy to a centralized energy system such as electricity, has far ranging implications. If electricity requires payment, switching energy sources means shifting costs from the labor of the firewood collector to the pocketbook of the income-earning household members. If local norms are such that women are generally responsible for the home and men tend to earn more or be more frequently employed, a shift in energy type means a fundamental shift in gender responsibilities and roles. Alternatively, in households where adults are single, a shift in energy use requires that the household be certain that it can continuously obtain sufficient income to pay the bill. Moreover, the bill may include specialized cooking and/or heating appliances which carry an up-front cost as well as ongoing maintenance expenditures. By contrast, the traditional open fire requires little cash input, and allows the user to maintain an autonomous sphere of influence.

While firewood is mainly used in rural areas, charcoal on the other hand is a primary source of cooking and heating fuel for urban and peri-urban households and is also used for small-scale businesses such as restaurants, bakeries and street food stands (FAO 2017). Charcoal is a clear illustration

of a resource that sustains rural-urban linkages as it is mainly sourced from rural areas. The demand for charcoal is predicted to grow in sub-Saharan Africa (SSA) especially given that the population living in urban areas is predicted to rise from 36% in 2010 to 50% by 2030 (The World Bank 2014). Households spend a lot of money purchasing charcoal; for instance a third of the urban household income is spent on charcoal alone in Kampala, Uganda (RoU MEMD 2016). This implies that poor families spend much income on cooking energy at the expense of other basic needs such as food. This necessitates the development of innovations for cheaper and cleaner sources of cooking and heating energy in urban areas and as well as to reduce pressure on tree resources. Briquetting organic wastes/resources has been proposed as one option for alternative or supplementary biomass energy (FAO 2017). Women's participation along the energy supply chain is mainly small scale and largely informal with minimal benefits; as such capacity development aimed at women's empowerment is warranted.

1.4 Rationale for RRR for Energy

Although using biomass can maintain existing arenas of gender-determined responsibility, an increase in cooking and heating households with traditional open-fire technology has implications for public, individual and environmental health. As the case studies that follow show, open fire use of firewood or charcoal cause public health and environmental damage when sustainable harvesting practices are not followed. Less commonly cited is the physical damage to the bodies of generally women and children but also low-income men in some instances, who haul wood over long distances. Charcoal, the most favored woodfuel for urban populations, produces particularly noxious fumes and is increasingly becoming more expensive.

The case studies demonstrate that it is possible to improve woodfuel (charcoal and firewood) systems in a number of ways without disrupting the decentralized, culturally acceptable cooking and heating systems that currently exist. The key to these improvements is the focus on using various kinds of waste materials to generate biomass fuels that are cleaner, less expensive, less damaging to the environment and cost effective. As a significant additional benefit, using waste materials provides a range of benefits to women and children who might not be as well served by centralized systems. Using waste materials allows producers to operate in places where trees and shrubs are in short supply. By using an input which is typically something to be disposed of keeps the cost of production low. This lower cost enables women who earn very little to easily shift to biomass alternatives without requiring additional cash resources that their current circumstances prohibit.

In some communities where wood is scarce, such as in a refugee camp, collecting woodfuel puts women and children at risk from violence. If they can use alternative forms of

biomass that are immediately available within their existing space, the risk of gender violence decreases. For example, having a way to produce a burnable product from their own human excrement would prevent refugees, especially women and children, from having to go out and to use pit latrines at night and give them an input for biomass energy; this technology would decrease risk and increase access to cooking energy. Briquette enterprises offer women and youth employment opportunities and a source of income especially in informal urban settlements that typically suffer from higher levels of poverty (Njenga et al. 2013). Recovering energy from organic waste in these settings that often have poor sanitation and garbage collection services would also contribute to improving the health of the community. Additionally, the use of an improved cookstove for some portion of the cooking process reduces the amount of firewood needed and improves soil productivity.

Using waste materials to supplement and enhance existing biomass systems protects women and low-income households from becoming dependent on energy sources requiring cash incomes. While all household members benefit when smoke levels decrease, and energy collection takes less family time, women in particular are favored economically and physically from improved biomass systems that focus on recycling and reuse. Despite the contributions made by small-scale waste-to-energy enterprises such as those making briquettes, they are largely informal, poorly funded and mainly run by women with low education levels and poor access to resources (Njenga et al. 2013). Nevertheless, the low capital requirements of these enterprises allow women with extremely limited incomes to start businesses with little or no capital at all. Further these types of enterprises give women the power to make decisions and run low-risk businesses with benefits going directly to their households.

Further use of cleaner fuel, such as the use of biogas produced from animal waste in rural settings, promotes men's participation in cooking, thus reducing women's workloads. Although the installation capital is high it has multiple benefits in the long run. In rural Kenya, average, expenditure on firewood declined 71% per household per week among biogas users (Dohoo et al. 2013). Other reduced household expenses include those on chemical fertilizers and medical expenses from illnesses associated with indoor air pollution (Smith 2012).

The case studies in this document discuss a range of options available to improve biomass use in locations and among populations who currently depend on conventional fuels like firewood or charcoal. In addition, they take into consideration local gender norms by analyzing implications for roles and responsibilities of men and women in the adoption of new technologies. While specific contexts inform each organization and approach, these examples demonstrate that options exist to improve energy access, reduce waste and empower women.

1.5 References

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