Towards an intersectional perspective on community energy: work-in-progress within CESET

Introduction

CESET focuses on understanding how community energy projects can contribute to sustainable energy transition. However, community projects are not intrinsically positive. All community-based interventions are open to fraught politics and appropriation by diverse actors. Any low carbon project will be shaped by the social inequalities that shape the context in which it unfolds.[1] The gender aspects of energy access are well documented. For example, in Ethiopia, Malawi and Mozambique, women tend to have greater responsibility for maintaining home energy services and cooking. However, there remains insufficient insight into how energy access interventions may challenge existing gender-based inequalities. Even grouping women's experiences in a single category may contribute to reinforcing clichéd views about these women's expectations. Moreover, there is little understanding of how gender aspects can be addressed in a transition to sustainability.[2]

At the same time, the drivers of discrimination and oppression cannot be neatly separated. Each experience of inequity is unique. People simultaneously confront multiple layers of discrimination, some of which are recognized (such as gender, but also other forms of oppression related to race, ethnic origin, age, having a disability, or sexual orientation) and some of which are more difficult to explain (such as forms of discrimination that relate to cultural or political dynamics). Intersectionality refers to any approach that seeks to challenge the drivers of oppression from within *in situ* experiences and that foregrounds people's capacities to navigate complex social relations and existing inequalities. As community energy projects unfold, they may contribute to reinforcing these inequalities, or they may challenge them.

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[1] Johnson, O.W., Han, J.Y.C., Knight, A.L., Mortensen, S., Aung, M.T., Boyland, M. and Resurrección, B.P., 2020. Intersectionality and energy transitions: A review of gender, social equity and low-carbon energy. Energy Research & Social Science, 70, p.101774.

[2] Kronsell, A., 2013. Gender and transition in climate governance. Environmental Innovation and Societal Transitions, 7, pp.1-15.

The idea of community must be questioned because "the same interventions that seek to empower seemingly homogeneous communities and their members to deliver sustainable and inclusive urban futures may reinforce intra-community heterogeneities in social structures excluding some social groups and reinforcing vulnerabilities."[3] In CESET we believe in the potential of communities to support change that benefits every community member. This can only be done by establishing a dialogue with those communities, understanding whether the project is welcome, necessary, and what kind of material disruptions it causes in the urban landscape.

Moreover, social inequalities also shape the project's dynamics. As agreed with the funders, CESET has an Equality, Diversity and Inclusion (EDI) strategy that foregrounds its commitment to promote gender equality through its project practices. This may include in terms of the formation of the research team and in terms of the relationship of the members of the team with other project partners. However, this may not always be achievable. For example, while the project has many female members (including the PI), there is no female member of the team based in Ethiopia and Malawi, and only one in Mozambique. Understanding why that is the case will help improve the development of the project.

Moreover, since the project is committed to an intersectional perspective, CESET must interrogate how wider inequalities in knowledge production impact on the project. For example, CESET is a project funded by UK research funding bodies. Researchers based in the UK may have greater levels of autonomy and recognition just because of their geographical location, which is unfair. Researchers in Ethiopia, Malawi, and Mozambique, on the other hand, hold a great deal of power in the project as they provide access to the research. All members are aware of the enormous differences of expectations that the team members face from the institutions and cultures they live in, and yet, they are willing to navigate those differences to achieve a common objective. However, the differences remain and may require attention during the project.

This briefing engages with these thorny issues, explaining how we are trying to develop an intersectional perspective in our approach to community energy. First, we discuss the idea of intersectionality and what it would mean to think about intersectionality in practice. Second, we explore the approach to EDI strategy in CESET and what such an approach means in the context of infrastructure coproduction. Our perspective departs from the recognition of a gender gap in energy access and the difficulty in applying an intersectionality perspective to

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[3] Rigon, A. and Castán Broto, V., 2021. Inclusive urban development in the global south. London: Routledge. P.2

understand transitions.[4] The third part of the briefing focuses on the practical application of intersectionality theory in one of CESET's main activities, building an energy laboratory in peri-urban Maputo.

What is intersectionality?

Within the project CESET, we adopt the definition of intersectionality proposed by Patricia Hill Collins and Sirma Bilge. They define intersectionality as follows:

> "*Intersectionality investigates how intersecting power relations influence social relations across diverse societies as well as individual experiences in everyday life. As an analytic tool, intersectionality views categories of race, class, gender, sexuality, class, nation, ethnicity and age – among others – as interrelated and mutually shaping one another. Intersectionality is a way of understanding and explaining complexity in the world, in people, and in human experiences.*"[5]

Intersectionality is not only an antidote to seeing people as an undifferentiated mass, but also provides an analytical lens to understand how forms of structural power- from patriarchy to capitalist relations of production and colonialism- produce and reinforce inequality. As a political tool, intersectionality provides tools to describe intersecting drivers of oppression and their variegated implications for people's capacity to live and thrive. The ultimate objective is not to navigate but to dismantle existing forms of discrimination.

The thinking behind the idea of intersectionality emerged from black feminism struggles in the US. The Combahee River Collective, a Black feminist, lesbian and socialist organization, released a Statement in 1977 in which they stated that a commitment to a political struggle against racial, sexual, heterosexual, and class oppression requires "the development of integrated analysis and practice based upon the fact that the major systems of oppression are interlocking".[6] If every struggle is shaped by simultaneous factors of oppression, any response will have to tackle them simultaneously. They are particularly concerned with 'messing over people in the name of politics,' that is, justifying unjust action in the name of a broader political goal. The racism they saw in predominantly white women's movements in the US was a symptom of misguided politics that lacked nuanced reflection and were disconnected from practice.

Several scholars have worked tirelessly to rethink ideas of intersectionality in multiple dimensions of anti-oppression struggles. A legal scholar, Kimberlé

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[4] IEA, I., UNSD, WB, WHO, 2019. Tracking SDG 7: The Energy Progress Report 2019. World Bank (Depository), Washington DC.

[5] Collins, P.H. and Bilge, S., 2020. Intersectionality. John Wiley & Sons. ebook p.11

[6] Read the Combahee River Collective Statement here: https://www.blackpast.org/african-american-history/combahee-river-collective-statement-1977/

Crenshaw, coined the term intersectionality in an essay that explored how black women in the US fought discrimination in the courts.[7] This kind of work has supported long term anti-racist and anti-discrimination action internationally.[8] However, attempts to apply an intersectional perspective in infrastructure projects are rare, and mostly adopt a critical stance.

CESET is not oriented towards animating a political struggle, but a community energy project may have political consequences both locally (in terms of reconfiguring local power dynamics) and more broadly as an example of infrastructural alternatives. In CESET we believe that intersectionality is an important tool not only to diagnose the mechanisms that produce inequity, and support civil struggles, but also to ensure that our project does not do unnecessary harm. Paraphrasing the Combahee River Collective Statement, that they do not mess with people in the name of externally imposed project goals. While these aspirations are laudable, in practice there are many challenges to deliver them.

Castán Broto and Neves Alves developed an analytical tool to think of intersectionality in relation to the co-production outcomes that projects like CESET may aspire to (Table 1). Co-production projects are those projects that involve users in the delivery of services. In our understanding, community energy projects are co-production projects because they envisage that, at the very minimum, communities will participate in the governance of the project. However, the outcomes of co-production are varied ranging from the production of a design, the facilitation of institutional innovation, the development of new inclusive decision-making processes, and the creation of new systems of signification. For example, a community energy project will produce a context-specific design, new institutions to manage and maintain the project that include the community, a decision-making process that puts the community at its center and new ideas about what is energy access and the kinds of dependencies that reproduce inequalities in energy access. These are all overlapping stages at which the community will have a say. For the communities to have such say, they need to be recognised as legitimate interlocutors of the project. That, however, is not always easy. First, there is a question of what the community is, who belongs to it. Second, there is a question about how the community is perceived from the outside. Third, there is a question about the extent to which the community is recognized as a legitimate interlocutor by various actors, including scientists, Fourth, there is a question of the inherent deficit of credibility that some people face by virtue of their position in society (this deficit of credibility is called epistemic injustice[9]). Each of these elements pose a

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[7] Crenshaw, K., 1990. Mapping the margins: Intersectionality, identity politics, and violence against women of color. Stan. L. Rev., 43, p.1241.
[8] See for example: https://www.enar-eu.org/
[9] Fricker, M., 2007. Epistemic injustice: Power and the ethics of knowing. Oxford University Press.

specific recognition challenge, to which intersectionality approaches provide a range of insights.

Outcomes	Recognition challenges	Intersectionality insights
Context-situated technological and co-produced design	Whose uses are prioritized in the design of a project? Whose values are taken into consideration when developing context-based solutions and technologies? What uses and needs are constantly overlooked?	Single categories for social analysis (e.g., gender, age, income) do not reflect the needs of diverse groups. Access to services depends on individuals' position in the household, the community, and society more broadly. It is also shaped by the everyday practices of different social groups. Focusing on these everyday practices can help understand the mechanisms and power dynamics shaping uneven access to services, and to assess how co-design can help overcome this.
Institutional innovation and collective organization of service provision	Whose needs are prioritized in service delivery? How do existing systems of provision serve different groups? What capacity do those groups have to participate in institutions for service provision?	Co-production may disrupt existing social categories that give power to certain actors over others. These disruptions may also affect social strategies that depend on people's changing individual identities in multiple situational contexts as well as the changing social categories and groups they belong to in equally diverse situations– co-production processes are part of subjectivity-making processes.
New and inclusive processes of decision making, planning, and urban governance	Who can access decision-making processes, and in what terms? Who is excluded and how?	The specific conditions of decision-making already have consequences for the inclusion and exclusion of particular social groups. Requirements to participate in the decision-making processes may pose an additional burden to comparatively vulnerable groups if the conditions for participation are not favourable. Rights-based approaches may contribute to the exclusion of people who suffer forms of oppression that cannot be reflected in a streamlined framework.
New systems of signification, change of paradigms	What perspectives on reality create instances of symbolic violence and reproduce existing forms of oppression and exclusion?	The principles of patriarchy, racism and colonialism continue to be reproduced through well-intentioned practices of emancipation if they do not recognize experiences that are not reflected in well-established social categories. Attempts to claim the right to free oneself from oppressive structures may inadvertently reproduce inequality.

Table 1: Intersectionality dimensions of service coproduction[10]

The way intersectionality is operationalized varies widely across contexts of application, but they all have in common a dual-objective strategy for recognition:

1) To recognize people at the receiving end of diverse forms of institutional, structural and cultural discrimination that prevent their flourishing; and
2) To recognize people as active agents in charge of their own futures, rather than as passive receivers of the benefits of a given community energy intervention.

Intersectionality demands both the dismantling of structural barriers to emancipation and making possible for people to use their capacities to improve their autonomy and flourishing. Often the term intersectionality is approached in analytical terms. For example, a workshop on the use of intersectionality principles in GCRF-funded projects distilled the intersectionality approach into three principles (see table 2).

Principles of considering an intersectionality lens in infrastructure projects	Implications
Gender, intersectionality and identities should not be treated in isolation.	These are interlinked, but equally, such a broad category incorporates too much, diluting the importance of gender perspectives which would be of value as an area of focus across and within projects.
Gender, intersectionality and identities should also not be treated as synonymous with marginalization.	There are intersections with issues around mobility, political economy, class and identities, but there needs to be a recognition of the relational experiences of women, men and children, and in a way does not dilute gender as a cross-cutting perspective.
Likewise, separating gender from issues of ethnicity and identity is unhelpful.	Feminist approaches and an emphasis on race/ gender / class/ caste need to be threaded through these [GCRF] projects and the [GCRF] thematic clusters.

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[10] From: Castán Broto, V. and Neves Alves, S., 2018. Intersectionality challenges for the co-production of urban services: Notes for a theoretical and methodological agenda. Environment and Urbanization, 30(2), pp.367-386.

Table 2: Summary of insights on intersectionality emerging from the GCRF virtual workshop on Off-Grid Cities and Sustainable Energy Projects, June 11, 2020.

These principles constitute an example of the mobilization of intersectionality principles in infrastructure projects. The table provides important insights, such as for example, the way broad categories dilute the importance of localized experiences and the need to understand the relational experiences that construct people's lives. At the same time, the table casts intersectionality in terms of overlapping distinct identities and de-emphasizes the political orientation of intersectionality theory. Intersectionality cannot be separated from its origin, grounded in civil society struggles and politically motivated social movements. Every infrastructure project is political because it realigns social and material relations[11]. Thus, every infrastructure project must be considered from an intersectional perspective that challenges the drivers of inequality and supports local capacities. If the infrastructure project does not do that, it should be reconsidered.

This intersectional approach to community energy resonates with a wider range of justice concerns, including those that scholars and practitioners have begun to examine through the lens of energy justice. These are commonly articulated as areas or types of justice, which rest on a three-legged framework, including distributional, procedural and recognition dimensions. This perspective emphasizes that changes in energy systems must address inequalities in power and injustices across entire socio-energy systems[12]. Some critics have observed the energy justice framework has less to say about the ways that historical experiences of shared injustices might complicate contemporary justice issues, or how these injustices historically arise.[13]

Intersectional aspects of project delivery in CESET

Providing a gender equality strategy was mandatory for CESET. CESET's proposal engaged with three aspects of gender equality: 1) within the project team 2) across the CESET network including project partners and research participants and 3) within the communities we will engage with throughout the project. Table 3 below summarizes some of the commitments made by CESET which we will uphold during the development of the project.

Gender equality in the project team

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[11] Berg, A.-J. and Lie, M. (1995) 'Feminism and Constructivism: Do Artifacts Have Gender?', Science, Technology, & Human Values, 20(3), pp. 332–351. doi: 10.1177/016224399502000304.

[12] Tomei, J and To, LS (2021) Access to energy: the contribution of the social sciences to delivering energy equity and justice. In Webb, J, Wade, F, Tingey, M (ed) Research Handbook on Energy and Society, Edward Elgar Publishing, pp.126-140, ISBN: 9781839100710.

[13] Newell, P. and Adow, M., 2021. Cutting the Supply of Climate Injustice. *IDS Bulletin*. Also see Healy, N. and Barry, J. 2017. Politicizing energy justice and energy system transitions: Fossil fuel divestment and a "just transition". *Energy Policy* 108: 451-459.

- The CESET team is committed to ensuring equal opportunities for all project members, partners, and participants.
- Women occupy leadership roles within the project team and will take an active part in the governance of the different work packages.
- The project will support women in the core team to develop their research profile. The team has agreed on a code of conduct to ensure the even distribution of tasks and mutual support to deliver the different tasks.
- The research team will follow shared research integrity protocols. Every member of the team will adhere to the code of conduct for dealing with harassment and discrimination of the University of Sheffield or equivalent regulation in partner organizations. The PI will develop a project policy in consultation with the Harassment and Bullying Network at the University of Sheffield. CESET will have a 'Harassment and Bullying' independent point of contact open to all the members of the team for any complaint.
- Senior members of the team will offer mentorship and support tailored to the needs of early career researchers in the group, with emphasis on training women who are underrepresented in energy studies.
- The project will connect with emerging networks to support women such as UKERC's Women and Energy in Academia and the Global Women's Network for the Energy Transition.
- In the long-term, the Regional Energy Learning Alliance (RELA) will develop a diversity policy to recognise gender alongside other structural inequalities and forms of discrimination that intersect and shape people's experiences. RELA inclusiveness policies will also take into consideration the representation of disabled people as well as the representation of members of marginalised groups, depending on the context. For example, in the UK, we will be monitoring CESET's role in improving the representation of academics from different backgrounds within the energy field.

Gender equality across the CESET network

- CESET's project team is aware that male business leaders, academics, and policymakers continue to be over-represented in scientific and policy committees, public events, and knowledge exchange structures. To counter these structural inequalities, the team will facilitate equal gender representation and opportunities in the project's events. For example, all public-facing events will feature female or non-binary keynote speakers.
- Diversity concerns will be part of the agenda in event planning meetings.
- Gender equality will be monitored over the three years of the project explicitly looking at gender representation on communication and dissemination events and women's participation in the project's activities.

Gender equality monitoring will be complemented with monitoring of non-conforming gender orientations, particularly when relevant to the project
● In the long term, RELA must provide a platform for women leading the field to promote their work and networks.

Gender equality in communities
● CESET' is committed towards applying an intersectional perspective to understand energy problems. An intersectional perspective requires recognizing multiple structural drivers of inequality in energy access, and foregrounds gender issues when appropriate. The programme of work incorporates intersectionality as a central concern in each work package.
● CESET will analyse how different CES projects in Ethiopia, Malawi, and Mozambique are sensitive to gendered power dynamics and how gender shapes energy access and needs.
● This intersectional perspective is not only an object of research but also constitutes the basis of an ethical commitment underpinning all interactions between researchers and participants. The ethnographic approach adopted in CESET's Work Package 4 and the co-production efforts in the project require researchers to be aware of embedded power relations and discriminations. Ethically, researchers will take appropriate steps to ensure that their relationship with participants is respectful and does not cause any harm.
● An intersectionality perspective should inspire researchers to go beyond a no-harm principle and consider opportunities to challenge unjust power relations within ethical boundaries of research practice.

CESET's strategy was inspired by intersectional concerns, but on its delivery the project must move beyond addressing gender into transforming gender. Gender transformation seeks structural change in gendered power relations via collective action, contestation, and negotiation:[14] It focuses on gender because it is a central factor constituting difference, but the objective, again, is to challenge the drivers that generate gender-based inequalities. Much can be learnt from gender transformations to tackle intersectional experiences of inequality, particularly from the longitudinal engagement with communities over time. Gender transformations focus on inherent political acts that tie to the practical aspects of the lives of women: their experiences of work, home, domestic violence, mobility, aspirations. Such feminist experiences are not tied to only 'women' but to all kinds of experiences of inequity- whether these are inequities in access to resources or in access to a political voice. This is work in progress, and the whole CESET team will

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[14] Moser, C.O.N., 2017. Gender transformation in a new global urban agenda: challenges for Habitat III and beyond. Ibid., 29(1): 221-236.

need to step up their efforts to ensure that intersectionality remains a central concern for the project.

Developing an intersectional approach for the CESET lab

As explained above, an intersectional approach means for CESET two things: 1) recognizing the drivers of inequality and use the project to challenge them; and 2) recognizing existing capacities and possibilities that support emancipatory directions. These questions may have relevance for each work package. However, our focus here is, specifically, on the delivery of an energy lab in Maputo, because the lab will demonstrate how co-production works (or not) in practice. The lab will represent an exercise of co-production with communities requiring specific attention.

The off grid energy lab (CESET's Work Package 4) will be implemented by the Universidade Eduardo Mondlane together with CESET's delivery partner, SCENE and the University of Sheffield. The objective is to create a laboratory to build local capacities for understanding and delivering renewable energy. We are also investigating how the project could provide energy services to a local community (e.g., energy for a community hub, street lighting, or directly to households). CESET's plan is to develop an off grid system that could grow organically through the support and collaboration of local residents.

As the project team are narrowing down possible sites and meetings have been held with local leaders and local planning institutions in peri urban Maputo, it is now an appropriate time to consider equality, diversity and inclusion in the design of the off grid energy laboratory, as well as in research activities. A key aspect of the project will be to facilitate community engagement through the municipality and the local governance structures.

CESET's strategy to develop intersectional thinking is three-fold:

1) Understanding the state of the art of the debate on intersectionality aspects of energy access and intersectionality aspects of energy transitions
2) Examining existing examples of energy projects that demonstrate the possibilities of applying an intersectional approach
3) Develop an approach to facilitate the ongoing monitoring of the project alongside intersectionality principles.

In terms of examining the state-of-the-art of intersectional practices, the objective is to understand current thinking on how multiple drivers of discriminations with communities, and within the project itself, shape individuals and groups' access to energy and capacity to participate in the off-grid energy lab. This requires examining both the feminist literature on energy access but also, detailed ethnographic studies

that engage with people's experiences. In terms of policy approaches, IRENA recently published a report developing a gender perspective on renewable energy.[15] The report contains key recommendations relevant to CESET, and summarized in Table 4.

Recommendations for the delivery of the CESET lab	
Engage women along different segments of the off-grid renewable energy value chain.	A gender perspective needs to be integrated from the very beginning in the design, implementation, and monitoring of energy access programmes. Women need to be seen as key actors in the delivery of energy solutions and not just as primary end-users and beneficiaries of such programmes.
Recognize the specific set of challenges and opportunities faced by women in energy access contexts	Off-grid renewable energy solutions promise substantial improvements in women's quality of life through reduced indoor air pollution, better lighting to enable girls to study, less day-to-day drudgery and more opportunities to earn income from productive uses of energy or from the jobs that modern energy induces in rural economies.
Ensure women's participation in planning	Given women's role as primary energy users in the household, their participation in planning and implementing a sustainable renewable energy system is essential if their priorities and preferences are to be reflected in the system.
Involve women in project delivery	As women become engaged in delivering energy solutions, they take on more active roles in their communities and consequently facilitate a gradual shift in the social and cultural norms that previously acted as barriers to their agency.
Support skills development	Support skills development in technical and non-technical subjects, and in broad business and leadership skills and emphasize the need to engage women in design, delivery and operations. Some skills needed to install, operate and maintain off-grid solutions require little past education or prior experience, thus can skills be developed locally and training for the technology be done on-site or on the job.
Contest the broader context insofar as actively promotes the discrimination based on	Examine the cultural beliefs about the different roles of energy in people's lives and the way energy is used and examine the regulatory context of

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[15] IRENA (2019), Renewable Energy: A Gender Perspective. IRENA, Abu Dhabi

| gender or other protected characteristic | energy provision as a means to examine whether active discrimination is taking place |

Table 4: Recommendations to advance gender equality objectives in CESET (adapted from IRENA 2019)

Some of the suggestions are already integral to CESET. Gender transformations were central already for the development of the proposal, but we need to work further to make them part of the ethics of the research team. The project also built on an understanding of women's practices of energy access in Maputo, and this was one of the main reasons to develop the lab in that city. The main challenges however will come with the practical implication of the project, in terms of the extent to which women will be part of the delivery of the project and facilitating skills development. Upgrading experiences in Tanzania, for example, show that actively involving women in the delivery of housing had benefits for all the community.[16] However, CESET must move beyond gender equality and embrace gender transformations in ways that do not overlook the wide range of capacities that shape the community.

For this reason, CESET's approach cannot rely solely on a set of policy prescriptions. Now, we are working to understand how different projects may have engaged in gender transformations and helped build an intersectional approach to project delivery. The point is to move from aspirational utopias and engage with practical actions on the ground, with the kind of care already anticipated in the black feminist thought.

This is very much work in progress. For this brief we have examined the case studies provided in the IRENA report, about how gender inclusion works in practice (see Table 5). In the following months we will be looking at a range of other projects, particularly those that put intersectionality at their core. However, the projects discussed below highlight some key aspects to be considered in CESET:

1) The centrality of ideas of care and mutual support to enable the participation of all kinds of people
2) The need to demystify technologies and make them accessible
3) The importance of breaking with epistemic injustice and give credibility to people's experiences

Case study	How did it advance gender?
Training solar grandmother's: The case of Barefoot College	**Outcome**: To demonstrate how to democratize power of off-grid renewable energy solutions and the transformative potential of training women in rural areas. **Activities**: the programme has trained over 1 000 women from more than 80 countries, leading to the deployment of at least 18 000 solar systems. The trainees are often illiterate or semi-literate women who maintain strong roots in their rural villages and have the potential to play a key role in bringing off-grid

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[16] Kombe, W.J., Kyessi, A.G., Limbumba, T. (2021) Understanding the make-up of community in basic service delivery projects: retrospective analysis in a coproduction in Dar es Salaam. In Rigon, A. and Castán Broto, V. (2021) Inclusive Urban Development in the Global South. London, Routledge.

	solar solutions to remote, inaccessible villages. The initiative works to demystify the technology and place it in the hands of local communities. Over a period of six months, trainees receive instruction on assembly, installation, operation and maintenance of solar lanterns, lamps, parabolic cookers, water heaters and other devices. The women return to their villages with equipment to deliver sustainable electricity to their community and become role models for other women in the village.
Empowering women through training: The case of Wonder Women in Indonesia	**Objective**: This initiative of the non-profit Kopernik, empowers women to expand last mile electricity access through off-grid solutions. **Activities**: Since 2013, the programme has recruited more than 500 "wonder women", who have sold more than 55 000 clean energy technologies (e.g., solar lighting solutions) reaching more than 250 000 people in some of Indonesia's poorest and most remote areas. The programme provides training to female social entrepreneurs to develop their capacity to build and sustain businesses. The training focuses on technology use and maintenance, sales and marketing, bookkeeping and financial management, and public speaking. The entrepreneurs sell from home, through their networks, at market stalls and small shops, or at community events.
Empowering women entrepreneurs to deliver off-grid renewable energy solutions: The case of Solar Sister	**Objective**: this is a training and job creation initiative for women that distributes portable solar lights in rural Sub-Saharan Africa through female entrepreneurs. **Activities**: Entrepreneurs are trained to sell solar lanterns and are given the opportunity to build sales and a cash flow by earning a commission, which they then re-invest in new inventory. Solar Sister equips women to build their own technology-driven businesses and provides a holistic package of inputs (including business and technical training, a quality brand, access to world class products and service, marketing support and ongoing coaching). As of 2018, it has benefitted 3 554 entrepreneurs, of whom 83% are women.

Table 5: Examples of projects that advance gender equality (adapted from IRENA 2019)

Finally, the third pillar of CESET's strategy to deliver an intersectional approach to community energy is the need to facilitate the continuous evaluation of the project. The challenge of intersectionality for CESET operates at different levels, relating to the operation of the project, the engagement with stakeholders and, most of all, the impact on communities. This last aspect is very important because of the need to recognize the heterogeneity of the communities we will be working with and to understand how they operate. Following the strategy described above to reflect

upon the intersectional aspects of co-production projects, we have applied the critical questions to the constitution of the lab (Table 6). [17]

Critical questions	
Whose uses are prioritized in the design of our activities? Whose values are taken into consideration when developing context-based solutions and technologies? What uses and needs are constantly overlooked?	Coproducing an offgrid energy project with a local community in Maputo will require understanding different energy uses within the neighbourhood and how they relate to people's perceptions of their energy needs. Involving diverse potential users in the early stages of research through surveys and informal contacts will be essential. The team will also need to reflect on how working with official authorities (e.g., municipality) will affect different groups and individuals' willingness/capacity to take part in the project. The research team may have biases that may also influence whose needs are prioritized.
Whose services are prioritized? How do existing systems of provision serve different groups? What capacity do those groups have to participate in institutions for service provision?	The emphasis of the laboratory is on collective services, but the team will need to reflect on who is defining what important collective usage might be and what collective services are needed. The structures of governance at the neighbourhood level will influence CESET's perceptions of needs, because the local leaders involved in the project might not represent the whole community. Thus, it will be important to create opportunities to discuss those needs openly.
Who can access decision-making processes, and in what terms? Who is excluded and how?	CESET must create the possibility to hear a diversity of voices through a diversity of means. The aspiration is to create non-confrontational, open processes in which different people feel sufficiently safe to speak their mind. Previous experiences in Maputo suggest that while energy is a difficult topic, emphasizing the enjoyment of being together and discussing common problems may be a means to bring together different groups. This also means paying attention to the role that local leaders play redirecting the discussion and possibly silencing some voices.
What perspectives create instances of symbolic	This question raises concerns about community energy as a unique solution and how it meets the

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[17] For a practical application in a different context see: Sawas, A., Castán Broto, V., Anwar, N.H. and Rehman, A., 2020. Intersectional coproduction and infrastructural violence: experiences from Pakistan. *Community Development Journal, 55*(1), pp.83-101.

violence and reproduce existing forms of oppression and exclusion?	needs. The project may become a project for its own sake, without really taking into consideration what the energy needs of the community are. Making sure that diverse community perspectives are represented in the project is essential. Also, understanding the kind of energy futures that are desired by communities is of vital importance, particularly if the community energy project risks displacing alternative livelihoods or means of understanding the city.

Table 6: Initial evaluation of intersectionality concerns in the CESET lab

CESET Briefs are short reports on ongoing matters of importance for the project development and delivery

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Thanks to: CESET Team

Community Energy And The Sustainable Energy Transition In Ethiopia, Malawi And Mozambique (CESET)

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