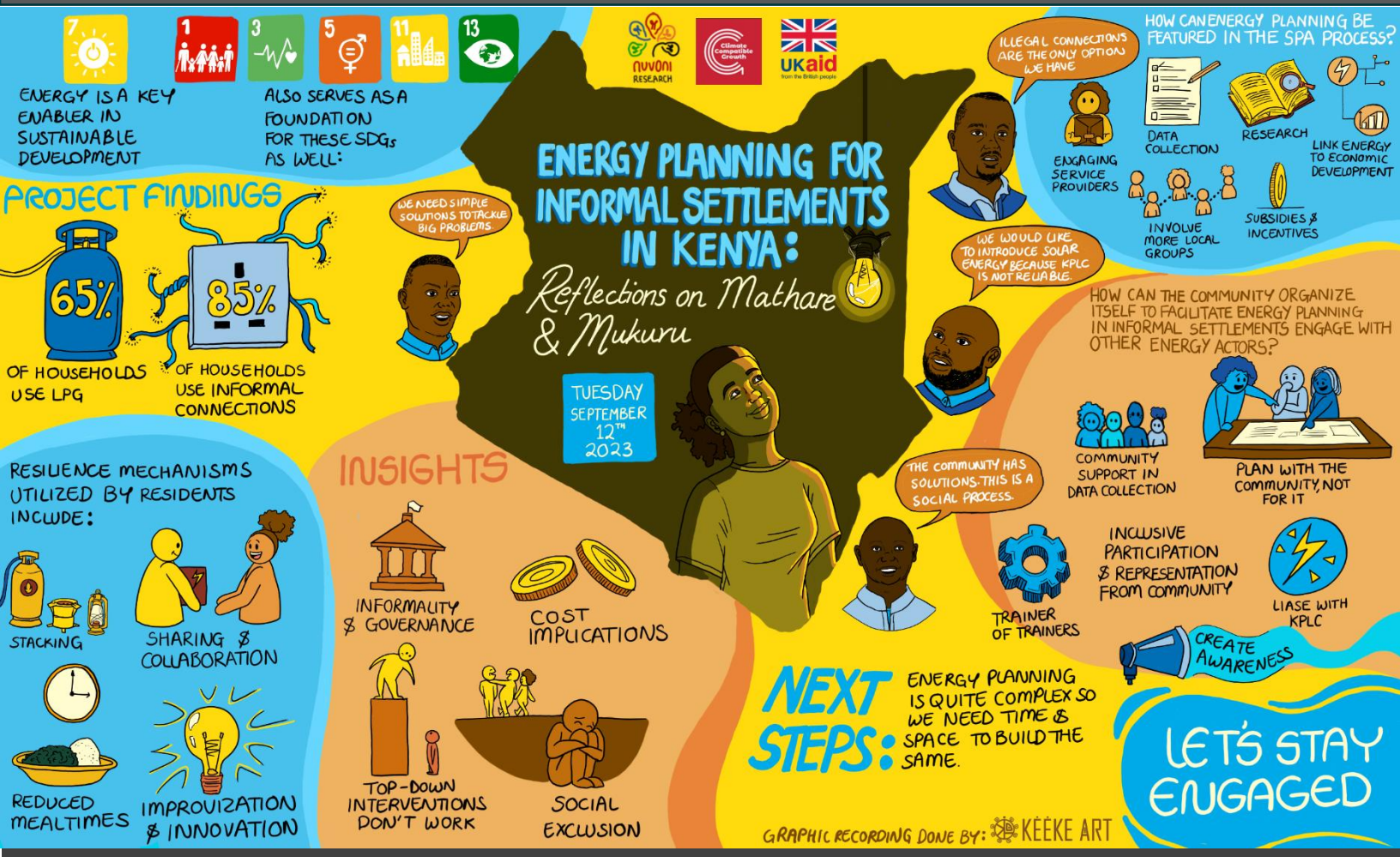

Energy Planning for Informal Settlements in Kenya: Reflections on Mathare and Mukuru

Workshop Report

September 12, 2023

Title: Energy Planning for Informal Settlements in Kenya: Reflections on Mathare and Mukuru: Workshop Report

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Summary

The workshop was conducted at Ibis Hotel in Westlands, Nairobi as part of the methodology of the project on energy access in Kenyan informal settlements in order to provide an avenue for collaboration, knowledge exchange and action. Its objectives were threefold;

- To present the findings from the Energy-enabled resilience in urban informal settlements in Kenya: A political economy analysis study, and validate the findings with the attendants, some of whom also participated as respondents in the study.
- Explore the lived experiences of informal settlement dwellers.
- Understand political economy of energy planning and explore the way forward towards collaborative energy planning for informal settlements in Nairobi.

A significant part of the workshop was also dedicated to collaborative development of strategies that could guide future redevelopment initiatives, with a focus on the ongoing Mathare Special Planning Area (SPA) declaration process through the Mathare Special Planning Area Research Collective (MSPARC) initiative. The workshop was attended by a diverse range of stakeholders, including community leaders and residents of informal settlements, urban development experts, academic researchers focusing on energy access and urban resilience, representatives from the sector utility, policy makers, energy vendors and local service providers, industry professionals, NGOs, CBOs and organizations engaged in energy initiatives.

Regarding the research presentation, there was a unanimous agreement with the study findings. The audience offered more insights on the distribution of household energy use, market share, drivers of energy demand and the supply chain challenges faced by energy service providers. There was also a discussion on informal electricity suppliers and their role in energy planning. The lived experiences of informal settlement dwellers were analogous. Participants voiced that most of the energy-related projects have been failing due to lack of community participation and complex tech-focused interventions. Community problems require simple, collaboratively designed solutions that are responsive to the energy needs of the community members. Community participation is key in that it will ensure that the solutions offered are relevant, promote ownership and sustainability. Proposed community participation includes talking with energy service providers, local authorities, women and the youth and other energy actors.

Electricity connections also emerged as a social issue. There is a social dynamic that the authorities (Kenya Power) should be aware and considerate of, not just look at electricity connection from a technical perspective only. This means engaging with the informal electricity service providers and finding a workable arrangement.

Socio – economic empowerment is crucial. The entry point of any planning is to collaboratively curate solutions that will empower the unemployed youth, providing alternative sources of income to crime. The

authorities also need to have open, non-vindictive dialogue with the informal electricity service providers that is geared towards finding a long – lasting solution to the energy issues in Mathare. The same also needs to happen with the youth involved in crime, so as to get their views on what they'd propose to get a SPA energy plan to success.

The way forward is collaborative energy planning. Mukuru SPA process offered major lessons that the ongoing Mathare SPA process can adopt. Robust community engagement, consideration of roads construction and extensiveness of the energy plan are vital to the success of SPA energy plan. The Mathare SPA plan should additionally include monitoring and evaluation plan, accommodate all stakeholders in its development and implementation, address land tenureship issue, as well as map the community's energy choices, uses and demand.

Before the SPA energy plan is rolled out, rigorous community – led research is required to identify existing energy sources, their uses and the economic activities driving the demand and choice, map existing energy service providers and engage them in the transition journey to clean energy sources. The energy plan also needs to be informed by the pivotal role the energy sector plays in other sectors.

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Introduction

The workshop facilitator, Alice Menya, started the workshop with icebreaker questions seeking to better understand the audience in the room and their expectations for the workshop. The participants responses were captured on an interactive polling platform.

FIGURE 1: ALICE MENYA - NUVONI RESEARCH

Participants then introduced themselves, stating their names, organization/village they represent and the form of energy service they provide. The local energy service providers present offer a mix of different types of energy/fuels, including kerosene, charcoal, firewood, LPG, and electricity. Also present were community leaders and opinion shapers, who heavily participated in the discussions. Sector experts (e.g., researchers and urban planners), and representatives from Kenya Power and Ministry of Energy were also present and offered their expert opinions and perspectives on the subject.

FIGURE 2: PARTICIPANTS DOING A ROUND OF INTRODUCTION

Presentation of study findings

This session was led by Elsie Onsongo and Ann Njuguna, who presented to the room results from their study on the project *Energy-enabled Resilience in Informal Settlements; A Political Economy Analysis*. Participants were given the opportunity to react to the findings and offer more insights. Key findings that were discussed and the emerging insights/feedback were:

1. **Distribution of energy use at the household level juxtaposed against the market share of each form of fuel within Mathare.**

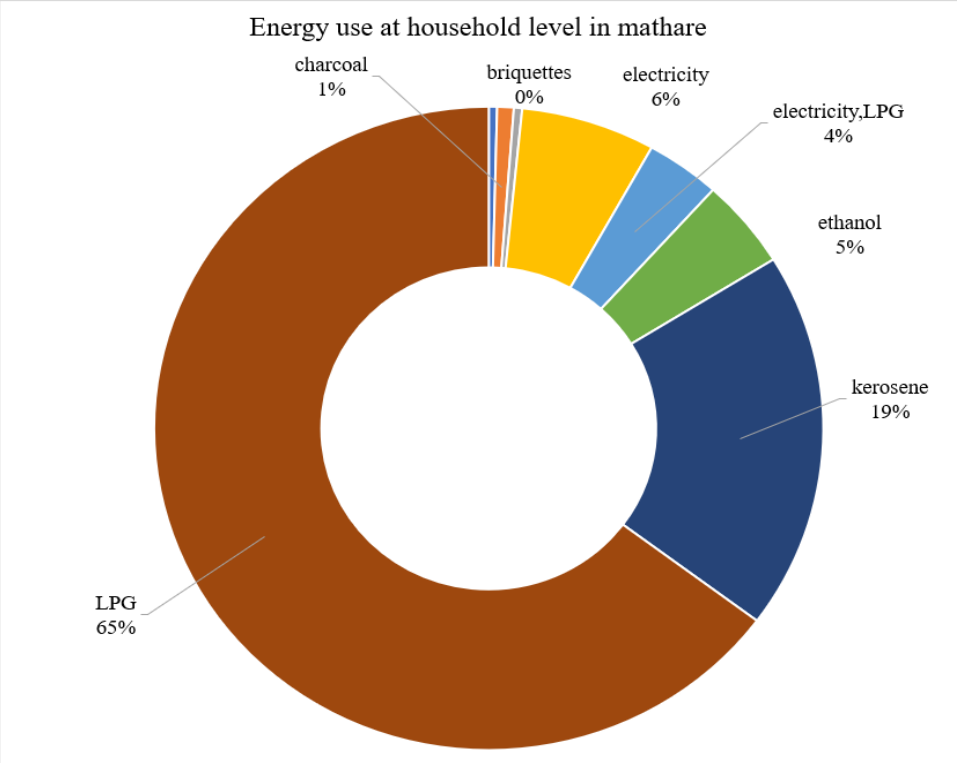

FIGURE 3: ENERGY USE AT HOUSEHOLD LEVEL

The high adoption of LPG fuel was mainly driven by the affordability and availability, which often manifests as kadogo economy where people can pay as low as Ksh 30.00 to prepare a meal with LPG (using M-Gas, PayGo). There has also been a campaign on health issues related to form of fuel used, promoting use of cleaner forms of energy sources.

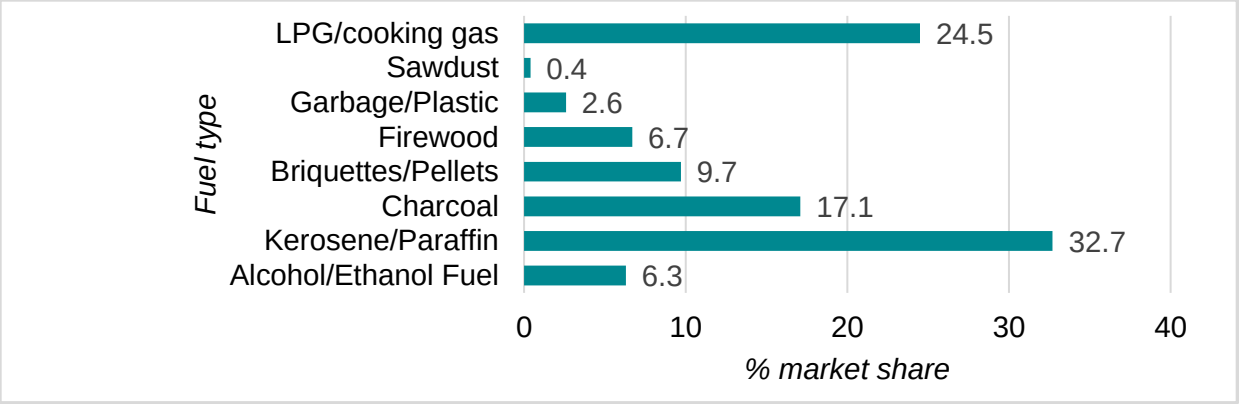

FIGURE 4: MARKET SHARE OF FUEL TYPES

The difference in the proportion of LPG users (69%) and its market share of 24.5% against other fuels' (kerosene, charcoal) market share was due to the different uses of the fuels and stacking. It was highlighted that charcoal and kerosene vendors had a significant market share because whilst residents could be using LPG in the house, they could be selling potato chips by the roadside as an economic activity for which they use different form of fuel (charcoal or firewood). Another factor was the kadogo economy, where when they run out of LPG, they will buy kerosene/charcoal in small quantities until they can be able to refill their LPG cylinders.

2. Drivers of fuel demand and supply chain challenges faced by energy vendors.

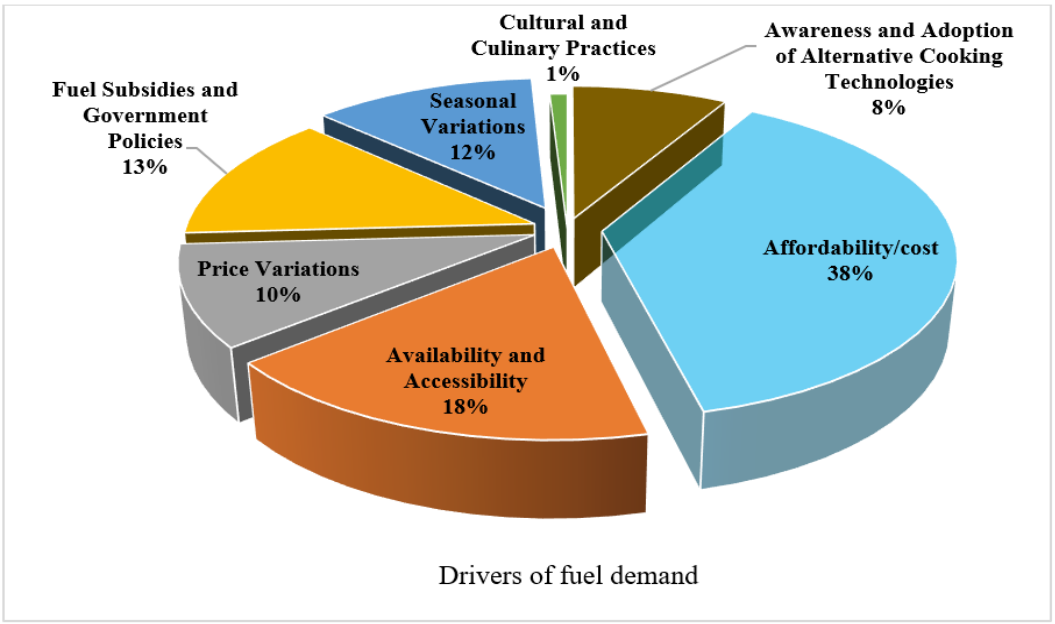

FIGURE 5: DRIVERS OF DEMAND OF FUEL

In addition to the drivers of demand of fuel types identified in the study, the participants provided the following additions:

- Hard economic times, reducing the number of meals being prepared, as well as the type of meals prepared. This affects the choice and amount of fuel to be used.
- Weather patterns, which affect the choice of fuel. For example, during the hot/sunny days there's preference of LPG/Ethanol stoves to charcoal because of the heat produced. In rainy/cold seasons charcoal is preferred as it helps in warming the houses and repel mosquitoes.
- Seasons also affect the supply chain. When it is raining, most of the charcoal -burners are busy preparing their land for planting. This affects the supply of charcoals.
- Offers on price of fuel influence adoption. Subsidies for any form of fuel result to increased demand for the particular fuel.
- Choice and amount of fuel used is highly determined by the economic activities of residents. Street food vendors use different fuels from the households.

3. **Type of electricity connection and the relationship between Kenya Power and *Mulika* – informal electricity suppliers (cartels).**

Most of the electricity connections are not only informal and unreliable, but also pose health and safety risks. Usage of informal connections is necessitated by negligence of service provision in the settlements by Kenya Power and emergence of cartels who enter the market fill in the gap in supply.

Lived experiences of informal settlement dwellers

During the mid-morning session, several residents from both Mukuru and Mathare led the session. Participants got to engage with firsthand stories that reflect the challenges and triumphs of energy access. Two of the informal settlement dwellers shared their real-life experiences with regards to energy (un)availability. Two local energy providers also shared success stories of their innovative energy solutions.

Resident 1– Community leader, Mathare

The community leader from Mathare expounded on drivers for energy choices and demand, the social dynamics of energy planning and the formal vs informal electricity connections in Mathare. They concluded by offering the way forward and potential ways of collaborating in realization of SPA status in Mathare.

The choice of energy source and use is greatly influenced by the activities the slum community engages in. For example, wood and rubber shoe soles are used for brewing illicit brews, which is a key economic

activity in Mathare informal settlements. Firewood is used by roadside food vendors, while LPG, kerosene and electricity (when it's available) are used in the households.

Regarding the informal electricity suppliers in Mathare, Resident 1 highlighted the genesis and role of these groups in the community.

- Informal settlement (ghetto) dwellers have been neglected in government planning efforts for a long time and they have, in response, devised ways of coping by finding solutions to their own problems which includes the formation and organization of informal suppliers also known as cartels around utilities such as electricity and water. For example, there are transformers that were uninstalled from the Kosovo Village and the residents have not had power for the last two years, despite Kenya Power substation and offices being nearby, illustrating the level of negligence of the informal settlements.
- The cartels were birthed as a result of unmet need for service provision by the Kenya Power. They usually start off as one person with electrical knowledge reconnecting the residents' power back after a (simple) power failure left unsolved for a long time. Soon they are known throughout the community to solve electrical problems and they start charging for it. Then they form groups, allegedly collaborating with the local authorities as well as some Kenya Power staff and control power supply in these informal settlements. Any attempts to report the informal connections to the authorities usually result in victimization of the whistleblowers since the cartels are allegedly run with the blessing of the local administration.
- He cited that there have been three projects that the government has tried to introduce but failed due to lack of community participation and, consequently, no sense of ownership of the initiatives.
- There are however solutions to these challenges. All actors should start viewing electricity connection as a social issue rather than only as a technical engineering task. Developers and the government should also aim to engage all community members, not just the few who are close to the administration who purport to speak on behalf of the residents but are instead protecting their personal interests. Broad community participation will promote ownership and will fight illegal connections, as was done with water connections in the settlements. Another viable solution presented was to cluster communities together and find bespoke solutions rather than a one-fits-all solution.

Resident 2 - Moto Brix CBO, Mathare

This was one success story of the community members experience, where one of their own was able to innovate an energy solution in the form of briquettes. The founder highlighted the journey of their briquettes initiative which started as a social enterprise and has culminated in the establishment of an innovation center

where they are nurturing and developing ideas from innovators within the community to solve the community's problems.

Through his experimental mobile journalism and background in community-led research, he found that over half of Nairobi was not served by waste collection services and there were youths reforming from crime who had ventured in the informal waste collection. It was, however, unsustainable due to the meagre returns compared to what they could be making in criminal activities, and most would abandon it and relapse to crime.

FIGURE 6: MOTO BRIX CBO FOUNDER HIGHLIGHTING THEIR JOURNEY IN ENERGY PROVISION

That, coupled with his experience growing up where "food kept him in school", and the appreciation that fuel is a significant expense in meal preparation especially in institutions like schools, inspired him to seek alternative ways of providing cleaner and affordable energy source while keeping the informal waste collectors in the waste collection business by increasing their income through value addition of the waste collected. Through design thinking, they have been able to guide innovators with brilliant ideas to conceptualize, develop, prototype, and sell their solutions to the community and beyond.

The community cares about climate change and clean energy but when it comes down to survival or putting food on the table, these become secondary considerations. He therefore proposed the following to be considered in the SPA energy planning:

- Simple solutions are what are needed to solve the challenges.
- A different thinking is required in housing planning and designing, e.g., most houses lack natural lighting and use electricity for lighting even during the day.
- Find a way of bridging the gap between where knowledge of say, renewable energy is, and where the solutions are needed. – Finding ways of transferring the knowledge in higher institutions of learning to community members, schools in the settlements, etc.

Resident 3- Community leader, Mukuru

As a long serving member of the settlement, the community leader explained the experiences of Mukuru residents and highlighted one initiative of the World Bank in collaboration with Kenya Power on electricity connection. He also explained how evictions, unemployment, and ill planning when it comes to energy planning in Mukuru are challenges that are prevalent in the area.

Illegal electricity connection is not the preferred mode of connection but sometimes it is the only option that residents have due to unavailability of formal connection services. The informal connections are not reliable and pose extreme risks, including death. The informal settlement dwellers are aware of this and would appreciate safer alternatives but at the moment, it's all they have. During the above-mentioned World Bank and Kenya Power electrification project, households were given the equipment. However, due to lack of community participation in designing and implementing the project, coupled with unemployment among the youth, this equipment was vandalized.

Regarding the ongoing SPA process in Mathare, resources also need to be dedicated to infrastructure development in order to achieve the objectives of the process. The government also needs to have better planning to mitigate resource wastage. For example, during the evictions, they were destroying the same infrastructure that they had installed, instead of reusing them elsewhere.

Resident 4- Sinai Reli Youth Group, Mukuru

A leader and member of the youth group also highlighted their biogas community facility as a success story in energy production. He has been running a community facility that was constructed with support from Umande Trust in 2016. The facility has a social hall, toilets, bathrooms and a kitchenette.

The initiative was a measure of mitigating open defecation and human waste management. The biogas plant has been producing biogas from human waste and this energy was being used to cook, heat water for the bathrooms. The initiative has been a source of income from people using the toilets, hot showers. The locals used it as an income generating opportunity e.g., the people in food vending business would cook, say, *githeri*, using the biogas and go sell it.

However, the innovation is not without its share of challenges. Currently, energy production has ceased due to overflow of soapy water from the bathrooms into the biogas plant. They are hoping to resume biogas production after construction of the sewer lines by the Municipal Council has been completed, after which they'll transfer the waste that's unfit for biogas production from the biodigester.

He stated that for SPA to succeed, community involvement and proper planning is necessary. Community involvement to include dialogue and capacity building for energy service providers.

Understanding the political economy of energy planning and the SPA process

Figure 7: Dr Musyimi Mbathi explaining the Mukuru SPA

This session was led by Dr Musyimi Mbathi and involved conversations with the community members and the representatives from Kenya Power, Ministry of Energy and Petroleum and other energy stakeholders. He explained the origin of SPA and what necessitated its inception. Mukuru SPA was born after a conversation about poverty penalty sparked the interest of national leaders in 2019. The visit by the then president to Mukuru informal settlements resulted into formation of a consortium that sought to collaboratively develop a redevelopment plan, addressing all sectors of development such as health, energy, education, transport, housing, etc. Since then, the SPA process has been in phased implementation with successes and challenges.

The main social challenges facing Mathare are theft/crime and illicit brew. For SPA to succeed, a social and economic view of the challenges is necessary. Borrowing from past experiments, the entry point would be to engage the youth involved in vandalism and crime and tap into that energy to activities that are constructive instead. All actors involved should seek opportunities to economically empower the jobless youth, through provision of equally rewarding alternatives to crime.

The government should engage in open, non-vindictive dialogues with the cartels to find long lasting solutions to the problems of energy. It could manifest in the form of confidential engagements or meetings with the unemployed youths perpetrating crime to get their views on way forward.

To address poverty penalty- a status where informal settlement dwellers actually pay more for basic services e.g., electricity than people living in 'formal' planned neighborhoods- the Ministry of Energy and Petroleum has put in place some initiatives to address this. Community-led research and more data could be used to further inform these initiatives. The policy makers, regulators and formal service providers expressed willingness to engage with the other energy stakeholders including the informal service providers, academia and development partners for an inclusive Mathare SPA process.

Towards collaborative energy planning

This was an interactive session in the afternoon where the facilitator got the participants into four random groups for 45 – minutes breakout sessions. The two questions to be discussed in the breakout sessions were:

1. *How can energy planning be featured in the SPA process?*
2. *How can the community organize itself to facilitate energy planning in IS and engage with other energy actors*?

After the discussions, each group presented their deliberations and all participants chimed in by asking questions for clarifications or engaging with more viewpoints. The outcomes for the discussions were:

Featuring energy planning in the SPA process

This can be achieved through rigorous research and data -driven planning. Availability and utilization of data about the Mathare settlement will facilitate proper planning not only for energy but other sectors as well. Given the pivotal role energy plays in the development of the other sectors, there needs to be a link between energy and economic development plans. This way, better energy plans will spur economic development, growth and increase productivity.

There is need to map all energy sources and their uses, in relation to the local economic activities driving their choice and demand. Mapping existing service providers, categorizing them along energy forms they sell (renewable/nonrenewable), then engaging with all energy service providers will aid in the transition process.

Incorporating proper housing planning in the SPA is also key. For example, ensuring the houses are designed such that they have adequate natural lighting, have provision of installing solar panels and proper electrical wiring will afford residents proper lighting and electricity.

Community participation is central to the adoption and sustainability of any project that touches on the community. Authorities and development partners were asked to engage the community members as this will ensure relevance and foster community ownership of the proposed projects. Proposed approaches for community participation include:

- Having dialogues with the community (civic engagements) for them to understand their roles and responsibilities, thus minimizing vandalism.
- Working with Barazas, community groups (Chamas) and service providers within the community.
- Having a genuine, non – vindictive engagement with the political representatives (MCAs), illegal service providers as well as youths perpetrating crime in the community, with the aim of finding a mutually acceptable solution to the community problems.
- Emphasize and prioritize the participation of women, the youth as they are the primary users of the energy and drivers of change.
- There needs to be discussions and brainstorming about the last mile connectivity in Mathare. There needs to be provision of installment payments for the correct installation of electricity infrastructure (posts, meter boxes, token machines, etc.). Currently, Kenya Power does not have that provision and all costs are transferred to the consumer, deterring them from following the correct procedure.
- Other ways planning for energy can be part of the SPA process is government and institutions expressing political goodwill to have the real problems/issues resolved, with the best interests of the community at heart. Addressing tenure challenges will also promote ownership and accountability when making long – term commitments to land use.

Lessons from Mukuru SPA

- There was robust engagement with community members, NGOs and other stakeholders.
- Roads were a key factor to energy access especially in schools, hospitals and churches that are near the newly constructed roads.
- Implementation was done after completion of road constructions.
- The energy plan was not extensive.

From the above lessons, the way forward for energy planning inclusion in the Mathare SPA process include ensuring there is a structured energy monitoring and evaluation plan. The plan should attempt to address land tenureship issues as it is a crucial factor in ensuring success of energy planning. The plan should also incorporate community participation so as to ensure local ownership of development projects.

Energy usage of the residents should be taken into consideration when developing the plan to promote relevance and sustainability of the solutions. To include informal service providers in the development projects, they should be given management roles and not alienated. Energy utilities and related government actors should consider having offices closer to the Mathare settlement for ease of access and to further enhance community participation.

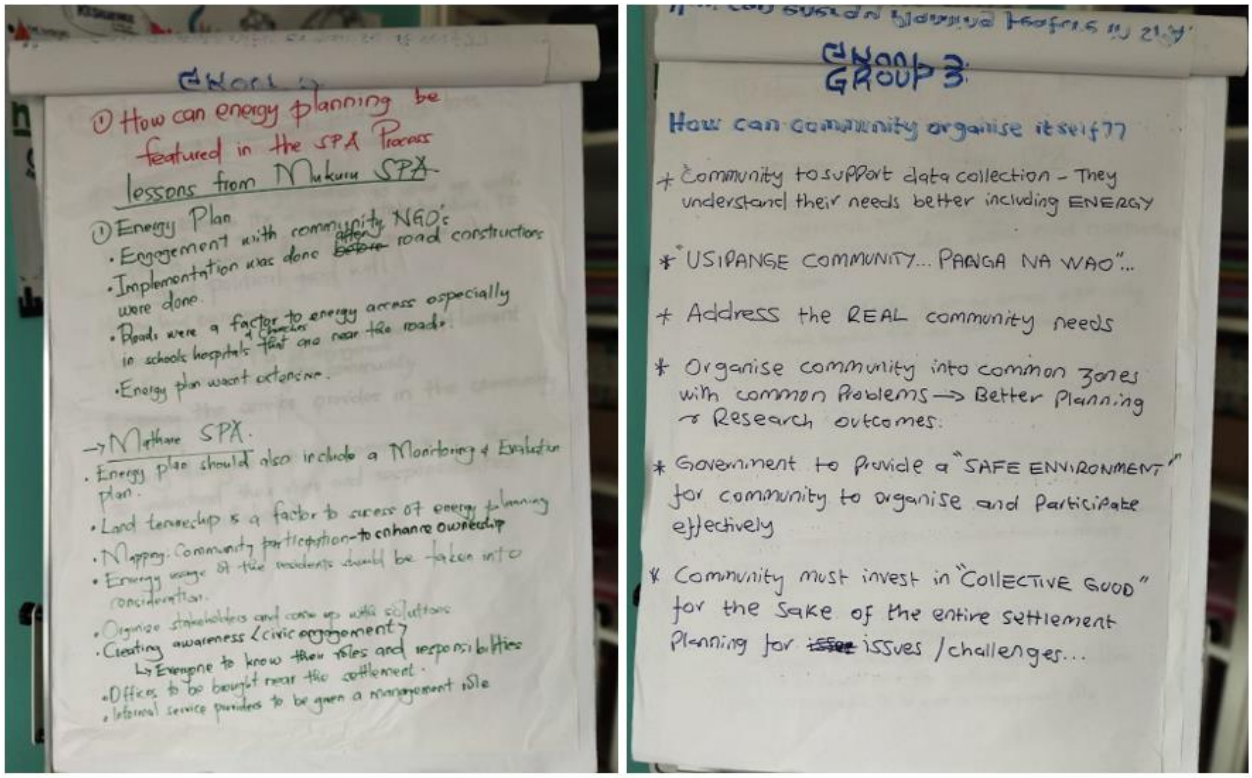

FIGURE 8: BREAKOUT SESSION OUTPUTS 1

Community organization and stakeholder engagement

The group leaders of the breakout session groups were able to present their summarized discussions infront of the audience. Key insights were gathered from this session with regards to how the communities from informal settlements can better organize themselves to facilitate energy planning in IS and how they can better engage with other energy actors.

The community members could organize themselves and form energy committees to engage with energy actors, as well as participate in and support data collection in the community as they best understand their issues. As one participant aptly said, *USIPANGE COMMUNITY… PANGA NA WAO*. (Do not plan for the community…plan with them). These committees could be made of community elders that are able to

approach and engage energy actors or be formed through election of community point men who will be responsible for ensuring access to fuels such as electricity.

The community could also organize itself into zones or clusters with common energy issues and come up with bespoke actionable solutions to their specific problems. This would facilitate better planning and research outcomes. It was emphasized that all projects should be led by the community, being keen to ensure actual representation in the implementation of the projects.

Additionally, the community could engage political offices to lobby for energy planning and subsidies for all energy fuels in their respective offices. This could include engaging political leaders to also advocate for energy planning in their respective offices. The community also should be involved in the policy making process. e.g., they could present policy drafts and recommendations to the relevant authorities. In return, the government needs to provide a safe environment for the community members to organize and participate effectively.

Another suggestion tabled was ensuring the correct information about energy related projects gets to the community members. One way suggested of realizing this was through empowering trainers of trainees (ToTs) who can then go out in the community and educate community members on SPA, climate change and clean energy, and behavior change (e.g., safety and risks of improper electrical wiring).

The community could also self-organize by establishing local community initiatives, e.. The community must invest in "collective good" for the sake of the entire settlement, allowing for planning of real issues/challenges facing them. Have barazas in which communication on community issues can be made.

Outlook

- There is community mobilization ongoing in Mathare. We need to structure the meetings according to the SPA themes. A coordinated community dialogue will enable us to meet the SPA agenda. Local organizations within Mathare, including the CBOs, should catch up on the SPA process.
- We need to enhance engagement and involve all the partners in MSPARC. Currently, only a few organizations are actively engaged in MSPARC conversations.
- There is a complete lack of geospatial data from the repository. We need to dedicate time to understand what spatial data is available and easily accessible. We can showcase the data available and request other organizations to assist with what is unavailable. We need to create a common vision of what the data will be used for.
- Can we organize a consortium? African Cities Research Consortium (ACRC) has been doing city-wide research in Mathare; they can assist in organizing the Mathare SPA consortium.

- How do we ask institutions to share their data? A data sharing agreement? We can also help the partner organizations use data and information they have in the SPA consortium. Meanwhile, we should seek more information from the government.
- We need a core working group (steering committee) in MSPARC to coordinate the SPA process as "many rats do not dig a hole".
- The following are the challenges we foresee;
    - Coordination of MSPARC activities. We need collective responsibility to make it a collective goal.
    - Mapping of all the groups in MSPARC
    - Structuring the SPA activities and discussions according to thematic areas.
    - Facilitating and supporting monthly community dialogues.

Appendix 1- List of participants

S/no.	Name	Organisation
1.	Elsie Onsongo	Nuvoni Centre for Innovation Research
2.	Jason Waweru	Community leader, Mathare
3.	Simon Trace	Oxford Policy Management (OPM)
4.	Benson Mbwangu	Resident, Mathare
5.	Joseph Karanja	Resident, Mathare
6.	Beatrice Kalunde	Resident, Mathare
7.	Anthony Mburu	Resident, Mathare
8.	Salome Maina	Resident, Mathare Kosovo
9.	Sarah Wanjiru	Resident, Mathare Kosovo
10.	Margaret Ngugi	Resident, Kosovo
11.	Margaret Wangui	Resident, Kosovo
12.	Edward Oyego	Muungano wa Wanavijiji
13.	Milka Kori	Slum Dwellers International (SDI)- Kenya
14.	Peter Ndichu	Know Your City TV (KYCTV)
15.	Sheila Muthoni	Know Your City TV (KYCTV)
16.	Ann Wanjiru	Mlango Kubwa
17.	James Musembi	Sinai Reli Youth Group, Mukuru
18.	Lilian Waihila	Mlango Kubwa
19.	Christina Kiwiri	Kenya Power & Lighting Company (KPLC)
20.	Meluami Parori	Ministry of Energy and Petroleum
21.	Stanley Yator	Ministry of Energy and Petroleum
22.	Wycliffe Nandwa	Charcoal vendor – Kosovo
23.	Benazir Omotto	Umande Trust
24.	Festus Mutunga	Mlango Kubwa
25.	Pauline Waigumo	Muungano wa Vijiji
26.	Bob Orengo	Zindua (Mukuru)
27.	Baraka Mwau	UN – Habitat
28.	Diana Mutindi	Graduate Planner
29.	Musyimi Mbathi	University of Nairobi
30.	Calvin Shikuku	Motobrix Innovation

31.	Shamim Zakora	Oxford Policy Management
32.	Peter Mwenda Kaberia	Nuvoni Centre for Innovation Research
33.	John Marvin Ayara	Ministry of Energy and Petroleum
34.	Ann Kingiri	African Centre for Technology Studies (ACTS)
35.	Mijide Kemoli	Keeke Art
36.	David Mathenge	ArcPlan Surveys
37.	Martin Mutembei	Strathmore Energy Research Centre (SERC)
38.	Edward Kariuki	Nuvoni Centre for Innovation Research
39.	Ann Njuguna	Nuvoni Centre for Innovation Research
40.	Alice Menya	Nuvoni Centre for Innovation Research

Appendix 2 - Workshop programme

Energy Planning for Informal Settlements in Kenya: Reflections on Mathare and Mukuru

Workshop on Energy Planning in Informal Settlements

Programme

Time	Activity
8:00 – 9:00 AM	Arrival, registration & breakfast
9:00 – 10:30 AM	**Introduction** • Welcome and introductory remarks • Overview of workshop objectives and expectations • Presentation of project findings • Q&A session
10:30 – 11:00 AM	**Tea Break**
11:00 - 12:00 PM	**Lived experiences of IS dwellers** • Community perspectives; Lived experiences of Mathare and Mukuru residents • Success stories of energy solutions
11:30 – 1:00 PM	**Understanding the political economy of energy planning** • Discussions on the current policy framework • Electrification in informal settlements • Energy planning in IS; opportunities and challenges
1:00 – 2:00 PM	**Lunch Break**
2:00 - 4:00 PM	**Towards collaborative energy planning** • Lessons from Mukuru and Kibera SPA approach **Breakout Groups** • What policy strategies would support energy access and resilience in Mathare and Mukuru? • How can energy planning be featured in the SPA process? Pathways for energy planning in IS • Explore how to integrate energy planning into the current policy framework.
4:00 – 4:30 PM	**Plenary discussions** • Reporting on breakout sessions • Synthesizing Workshop Outputs and Prioritizing Action Items
4:30 – 5:00 PM	**Closing** • Key Takeaways and Insights from the Workshop • Acknowledgments and closing remarks • Workshop Evaluation and Feedback collection