NOR CAP

urban a

URBAN TRANSITIONS

Clean Energy in Urban Recovery

November 2021

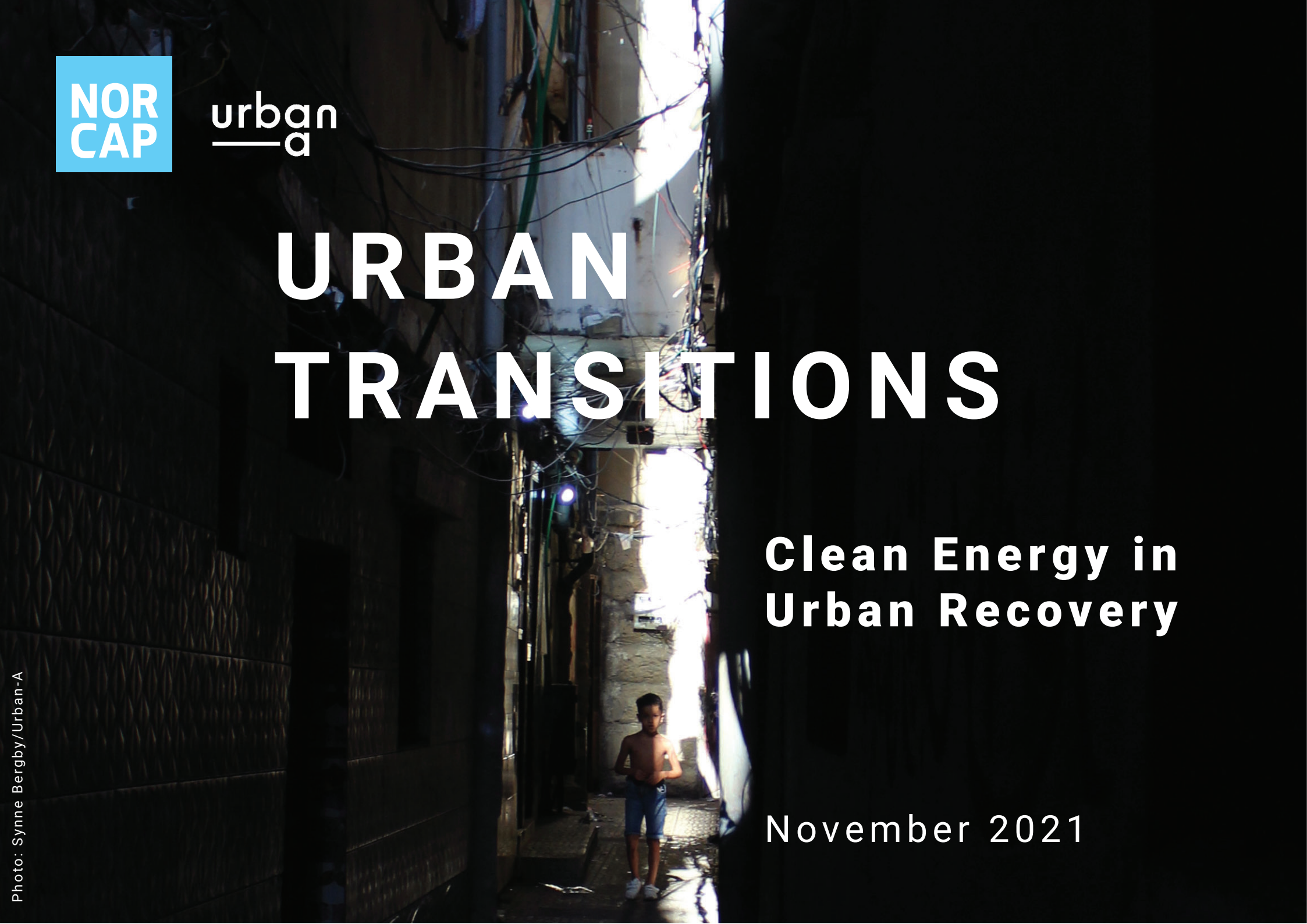


Photo: Synne Bergby/Urban-A

Photo: Karl Schembri (2016)

- Urban-A has carried out a study for NORCAP, NRC, to support the acceleration of clean energy across the humanitarian, development peace sectors in **complex environments and urban response settings.**
- The study builds on the report *EmPowering Africa's most Vulnerable* (Boston Consulting Group and NORCAP), which investigates the deployment of clean energy solutions in Africa with a focus on rural and camp settings.

The “Urban Shift”

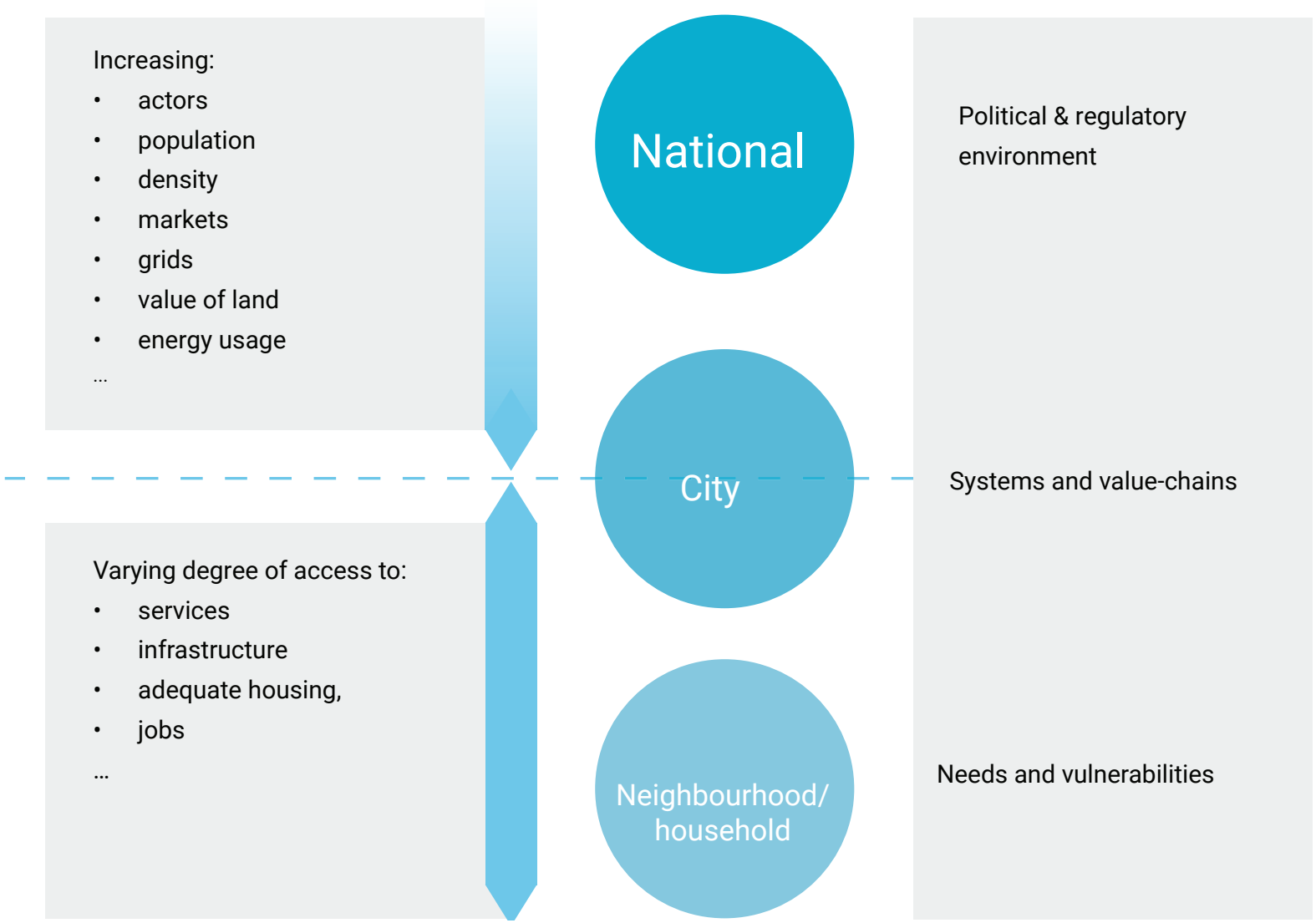
- Rapid urbanisation
- Migration and displacement increasingly taking on an urban dimension
- A growing share of humanitarian crises are unfolding in cities

This means that humanitarian actors, including NORCAP, are increasingly working within complex urban crises settings, and within cities with pre-existing systems, governance structures, and overlapping vulnerabilities.

Photo: Alisa Reznick (2015)

Three-tiered lens:

Key considerations for clean energy spanning national to local levels



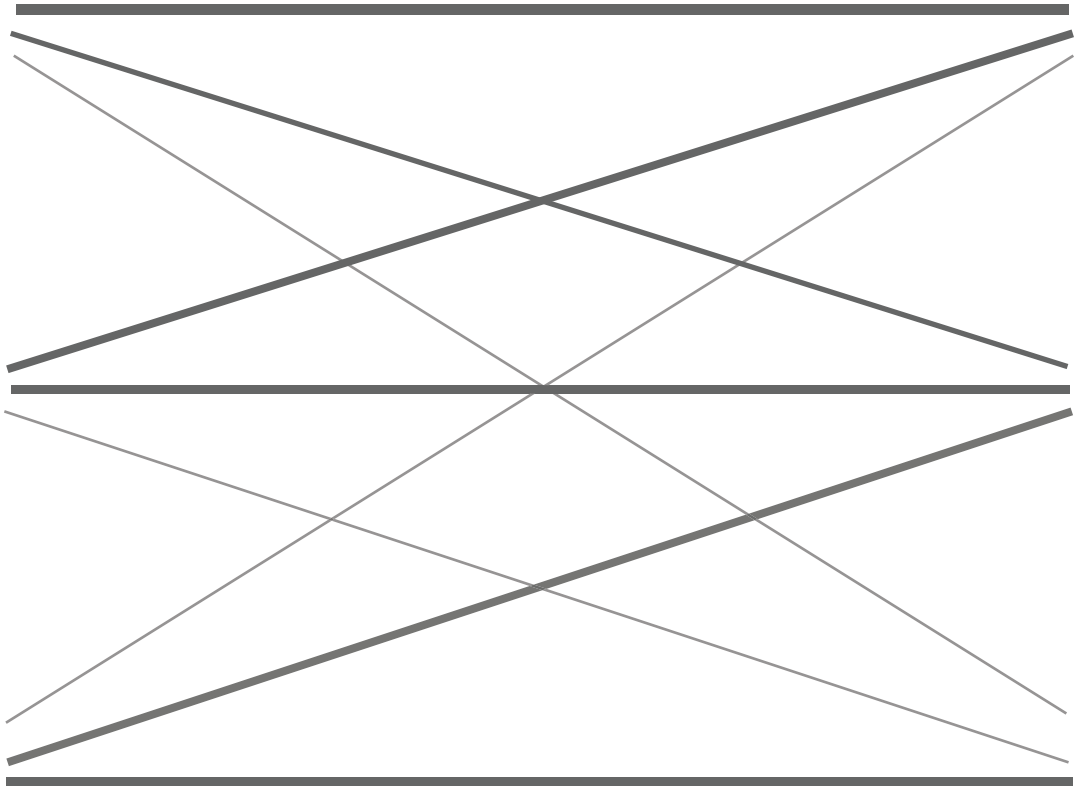
Case-studies

Three-tiered lens

National level (political & regulatory environment)

City level (systems & value-chains)

Neighbourhood level (needs & vulnerabilities)



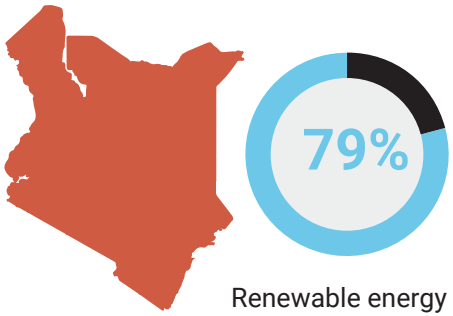
Three case studies

Syria

Lebanon

Kenya

Kenya



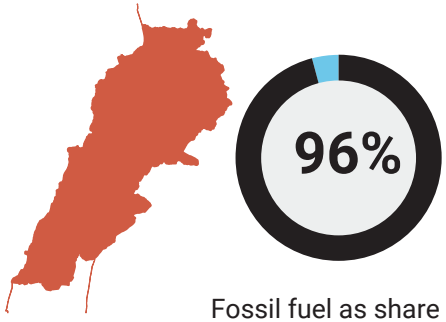
Renewable energy as share of energy mix

65,000 refugees in the country, 15 per cent live in Nairobi. Refugees are not allowed to work, or settle outside of camps. Recently the government ordered the closure of Dadaab and Kakuma camps, hosting more than 400,000 people.

Electricity **access said to be 100%**, however the reliability and quality varies. Provision in Nairobi mainly grid through legal and illegal connections.

More than eight out of ten households in Kenya rely on firewood and charcoal for cooking every day.

Lebanon



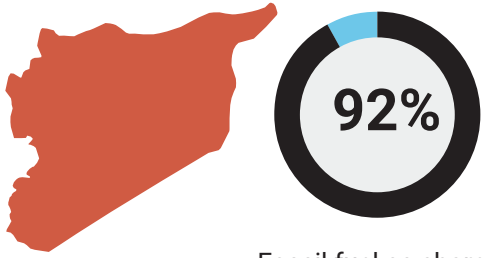
Fossil fuel as share of energy mix

Estimated 1.7 million Syrian and Palestinian refugees, 23 per cent live in Beirut. No camp policy at start of Syrian refugee crisis. Certain occupations restricted to Lebanese nationals. Palestinian refugees prohibited from owning property and accessing state-provided services, such as health and education.

Fuel shortages and infrastructure damage have decreased electricity per day from around **21 hours to 4 hours** by July 2020 in Beirut. Worsened with the Beirut explosion, and fuel crisis. Provision through national grid and diesel generators.

Most of population has access to clean cooking, including LPG. However, with the lack of fuel and hyperinflation, deforestation to get firewood for cooking and heating.

Syria



Fossil fuel as share of energy mix

Estimated 6.6 million Syrian refugees outside the country, predominantly in neighbouring countries, as well as **6.7 million internally displaced**. Increased attention to resilience policies and planning that will facilitate return.

Access and rate of electricity per day varies between cities, but **typically 3-4 hours per day**.

N/A, however situation similar to Lebanon.

Photo: Synne Bergby

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22 challenges for acceleration of clean energy solutions in complex urban environments

Challenges at neighbourhood & household level (needs and vulnerabilities)

Access and usage

1. Poor and inequitable electricity access across cities
2. Inefficient energy use in residential buildings due to construction material and lack of maintenanc

Consequences of not having access to reliable energy

3. Unsafe streets and public spaces, and dangerous power connections increases protection risks such as attacks, harassment, and injuries.
4. Less opportunity to study.
5. Reduced productivity and economic activities.
6. Reduced food security and unclean cooking solutions
7. More time allocated to drudgery.

Impediments to successfully introducing new energy solutions

8. Low uptake of new technologies.
9. Increase in demand for electricity.
10. Solar solutions require high up-front investment, while financing options are limited and investment risks high.

Photo: Anders Ese (2012)

Energy Access Nairobi

Mukuru and Pumwani neighbouhoods

Energy consumption at home

4-5% are not connected to the power grid (all in Mukuru)

3 respondents rely on parafin
1-2 respondents use solar power (portable solutions)
2 of the above respondents do not use energy sources at work

39% of respondents have **INFORMALLY** connected electricity in their homes, or are unsure of whether it is formal or informal.

Type of connection

43% of informal connections have an arrangement through their landlord

26% of informal connections have a pre or post paid meter (all in Pumwani)

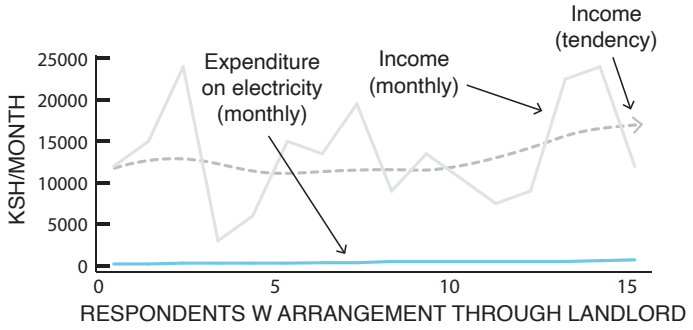
28% of informal connections pay through an agent (all in Mukuru)

61% of respondents have **FORMALLY** connected electricity in their homes

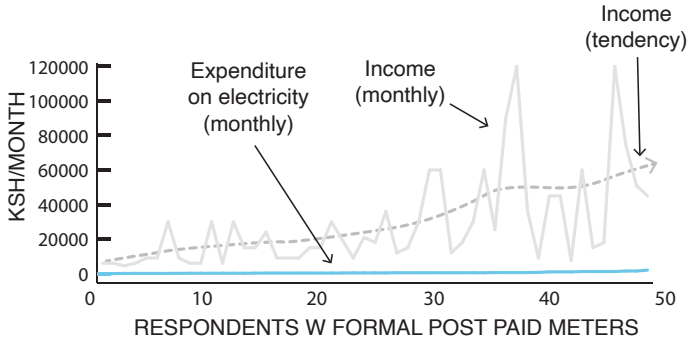
11% of formally connected homes negotiate electricity bill with landlord

8% of formally connected homes pay landlord a fixed price

81% have a pre paid meter (incl 3 post paid)



Although there are great variations between respondents incomes and energy expenditure, there is an overall tendency for spending to increase slightly with added income. Differences between income and expenditure is more pronounced with higher incomes. This is true for formal and informal connecitons.

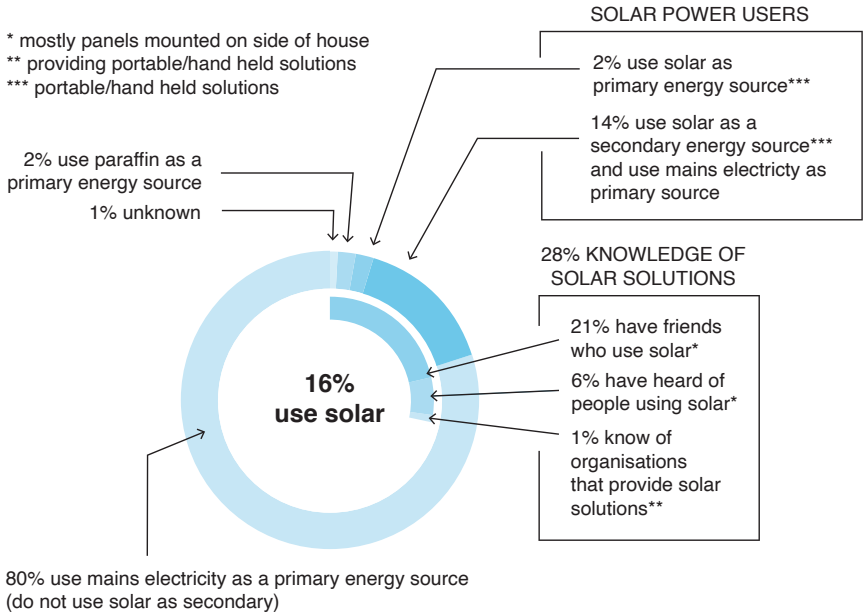


Source: Urban-A, 2020.

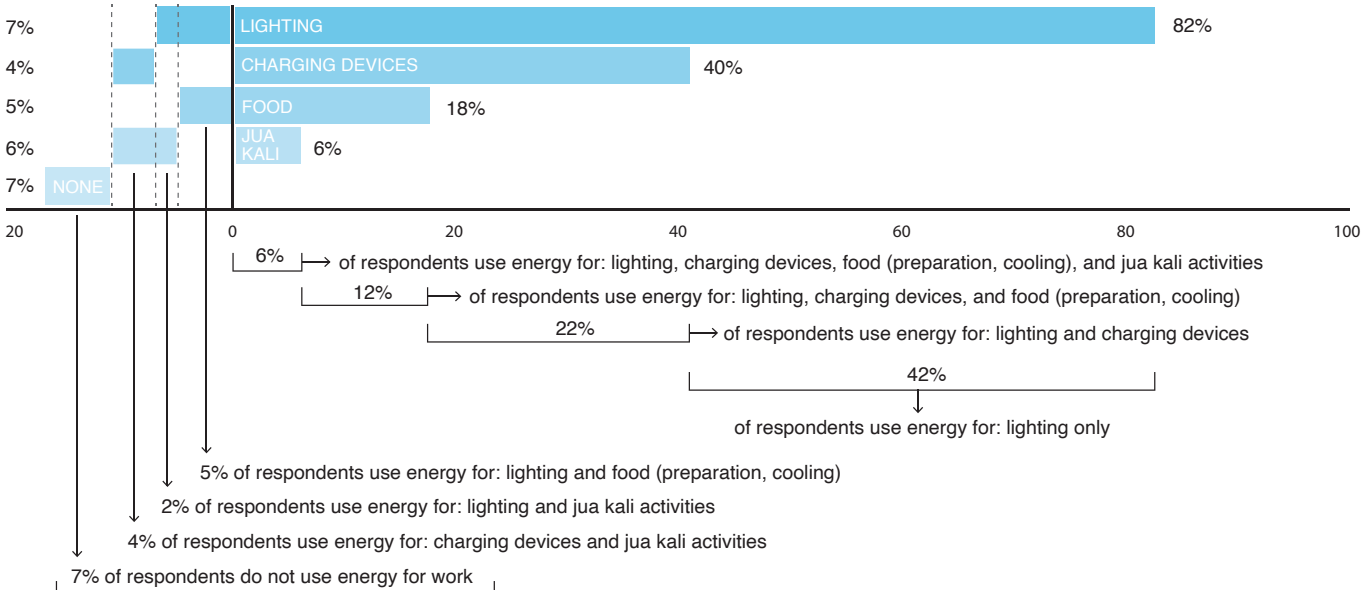
Energy Access Nairobi

Mukuru and Pumwani neighbouhoods

Use of solar energy



Energy consumption in the workplace

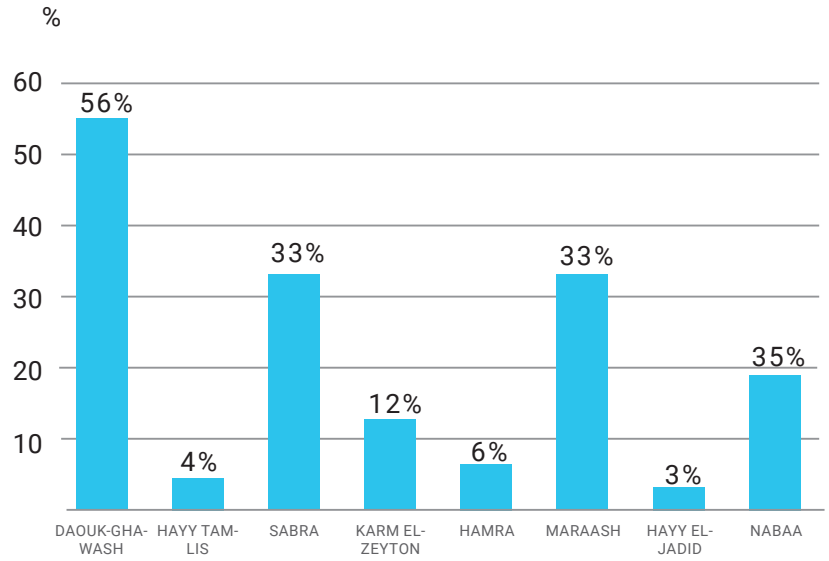


Source: Urban-A, 2020.

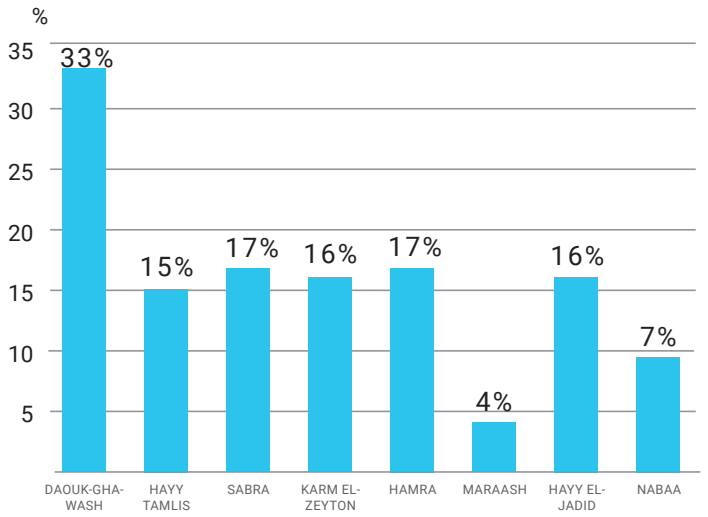
Energy Access Beirut

Eight neighbouhoods

Buildings connected with critical defects to the public electrical grid (%)



Streets with no street lightning (%)



Sources: UN-Habitat and UNICEF, 2017-2020;
UN-Habitat and RELIEF Centre, 2020.

Challenges at city level

(systems: integration with response, reconstruction, and development efforts)

City governance

11. Lack of shared understanding of energy access, with multitude of actors involved and benefiting from current set-up
12. Transmission and distribution networks are poor quality and overloaded.
13. Low lifespan and poor afterlife management for solar solutions.

Land governance

14. Disputed land rights, precarious tenure, and threat of redevelopment of informal areas.

Energy provision

15. Parallel systems for energy provision.
16. Not advancing from pilot to scale.

Linked service provision

17. Limited or non-operational water pumping and treatment.
18. Public health and provision of health care services suffering.

Challenges at national level

(political, legal, and regulatory environment)

19. Weak legal framework, regulatory hurdles and / or rapidly changing regulatory environment.
20. Complex decision-making and power structures.
21. Markets not economically viable for private providers of clean energy.
22. Energy sources as a root cause and driver of crises.

Photo: Anders Ese (2012)

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Approaches to clean energy provision

Photo: Synne Bergby (2019)

20 considerations and principles

to guide interventions

Photo: Synne Bergby (2021)

Considerations and principles at neighbourhood level

1. Base the design and implementation of interventions on **evidence and contextual understanding** of interlinked needs, systems, practices and formal and informal service provision and governance.
2. **Embed energy projects and accountability** at the local level.
3. **People-centred and community-led initiatives are key** to respond effectively to real needs, “do no harm”, and to increase uptake of new solutions.
4. **Find anchor client to solar PV systems** and explore solutions to sell back excess electricity to the city grid (quality, connections, payment schedules, legal frameworks) and expansion of local provision to industries.
5. Consider providing additional energy through a **solar panel stand-alone and mini-grids to supplement public grid electricity**.

Photo: Alisa Reznick (2015)

Considerations and principles at neighbourhood level

6. Explore the potential of **mobile renewable energy sources**, particularly in places with high fluidity in the population, and places subject to redevelopment plans and / or regulations do not accommodate mini-grids or connecting to the main grid.
7. Use **electricity access as leverage** to address other challenges such as precarious tenure.
8. Identify and seek to mitigate **cultural barriers to implementation** of clean energy solutions
9. Improve and streamline assessments to **capture the impact of clean energy solutions** on unmet needs and vulnerabilities

Photo: Sarla Varma

Considerations & principles at:

City (systems) level

10. Strengthening of **value chains and rural-urban market linkages.**
11. Anchor at **local government** level.
12. Analyse and **segregate the market** to reach different population groups through different channels.
13. Integrate **energy solutions in redevelopment** processes.

National (policy) level

14. **De-risk investment** through policy and financial instruments.
15. **Move towards finance-oriented market** using effective finance mechanisms, including financing of small-scale investments.
16. **Use policy and regulatory permits,** such as transparent power purchase agreements (PPA) and Energy Accreditation Certificate schemes, to limit corruption.
17. **Digitalise the energy market,** either in terms of payment or dissemination methods.
18. **Scale up solutions,** based on financial and environmental viability and sustainability.
19. **Incorporate sustainable energy access for displaced people** into international, national and agency agendas.
20. Encourage and, where possible, **incorporate new technology and innovation** through legislation and incentives.


THANK YOU