

# Locating the unintended consequences of interventions

A tool for analysing impact inequality  
in development programming

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## Introduction

Contributions exploring the unintended impacts of development programming have become increasingly prominent in the literature, as the accepted interdependence between the impacts of climate change, on the one hand, and questions relating to sustainable development, on the other, has become a mainstream topic among policymakers and researchers (Bhatasara & Nyamwanza, 2018; Serra et al., 2022). The Organisation for Economic Co-operation and Development (OECD) defines impact as the “positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended” (2013, 1:3), while the assessment of unintended consequences has been described as a “blind spot for evaluation theory and practice” (Bamberger, 2012). One reason for this is that programme logic models and results frameworks are primarily designed to explain how the intended project impacts will be achieved, meaning that the underlying theory relating to unintended consequences has remained absent (Bamberger et al., 2016). This is not only a problem for evaluation, but also – more importantly – for strategy and attempts to mitigate such impacts through effective design. Indeed, a growing body of empirical literature is demonstrating that climate and development interventions that are poorly planned and operated can exacerbate the underlying problems. This increases inequalities and, consequently, social, economic and environmental vulnerabilities, too – a process that has been described as “maladaptation” (Schipper, 2020; Eriksen et al., 2021).

Constructing logic models to gauge unintended consequences is necessarily more difficult, given the broader range of potential causes. Nonetheless, we present a tool here – “Locating the Unintended Consequences of Interventions”, or LUCI – that seeks to aid analysis of how development projects are able to create winners and losers, by assessing their broader consequences in terms of their impacts on existing group-based inequalities (Lomax et al., 2021; Sovacool et al., 2015).<sup>1</sup> Our motivation stems from the recognition that even though knowledge of how and where interventions may create unintended consequences is crucial for all sectors, the impacts on group-based inequalities are particularly troubling when they affect communities with a history of conflict, since interventions have been shown to be significant contributors to the exacerbation of conflict potential (Barrott, 2020; Froese & Schilling, 2019). This emphasis becomes even more pertinent when we acknowledge the estimation that two-thirds of the world’s poor will live in fragile and conflict-affected states by 2030 (Baier et al., 2021).

Although we argue that the LUCI tool can be useful in many contexts, we present an example here of how it can be applied to analyse the potential conflict impacts of a climate change adaptation development intervention, which is designed to deliver rural electrification to economically marginalized groups, through the introduction of solar hybrid mini-grids in northern Kenya.

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<sup>1</sup> This tool has been developed as part of the Locacons Project (Conflict Prevention and Low-Carbon Development: Opportunities for Promoting and Sustaining Peace through Renewable Energy Projects; [www.locacons.com](http://www.locacons.com)).

### Inequality

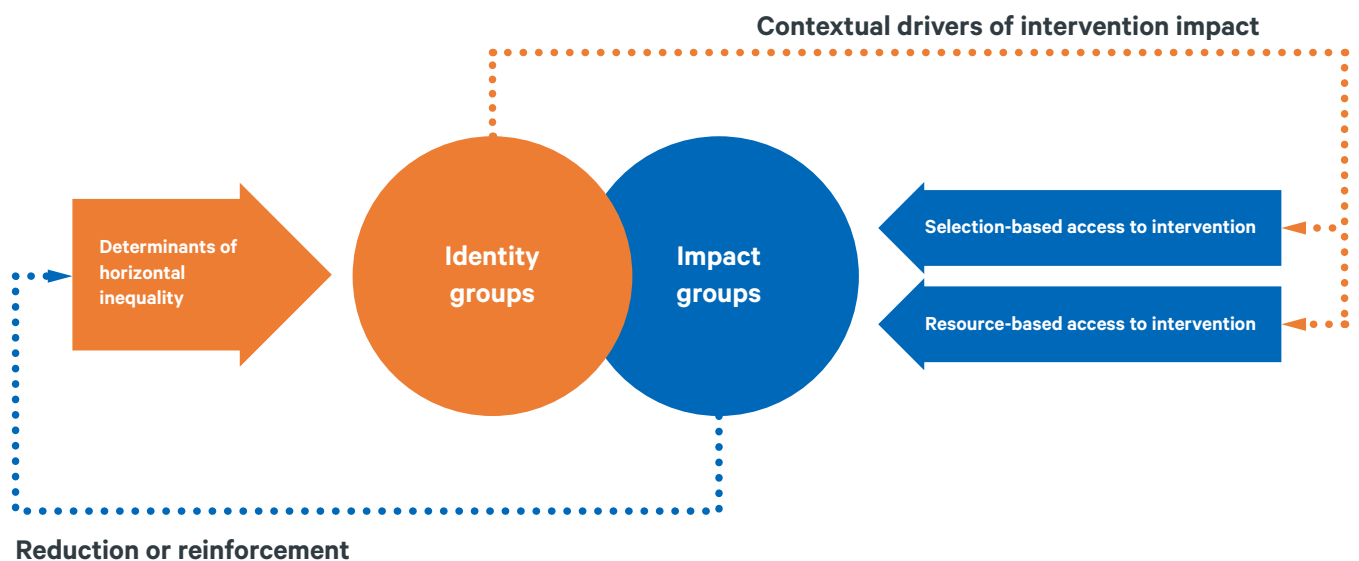
Development interventions are designed to create absolute benefits for certain groups that are targeted by the intervention. As such, they necessarily create relative losses for those groups that do not benefit or that do not benefit at the same rate as other groups. It is also the case that absolute losses may be created – for instance, a group may lose their land to the creation of an energy project, without receiving adequate compensation. Inescapably, then, the benefits and losses resulting from development projects create winners and losers (Mirumachi et al., 2020).

Here, we seek to better understand the unintended creation of winners and losers, as well as – importantly – the broader social consequences of these impacts, which we analyse through changes to group-based or “horizontal” inequalities (Stewart, 2008). Whereas inequality conventionally measures differences between individuals or households, horizontal inequalities are group-based: they may occur in relation to gender, ethnicity, class, disability or any other identity group that is important in a given context, and the interventions of development actors may reinforce or reduce existing horizontal inequalities in society (Stewart, 2018).

We refer to those groups that are impacted by interventions (for example, the groups in a community that receive aid) as impact groups. Impact groups frequently reflect inequalities in terms of their ability to access interventions, especially when such inequalities are intended as direct consequences of the intervention – for example, women or another marginalized group may be selected as the beneficiaries of a particular intervention. Unintended impacts, however, are more frequent when contextual factors have the potential to shape intervention impacts in unexpected ways. This can occur through existing resource-based inequalities that result in unequal access to intervention benefits. It can also occur through selection decisions made by other actors that have important secondary impacts – for example, customers may choose to buy products from cafes with refrigeration, such cafes being able to access electricity as a direct result of the intervention (Howard et al., 2020).

To a greater or lesser extent, intervention impact groups overlap with existing identity groups (see Figure 1). The main function of our analysis involves understanding the contextual drivers of intervention impacts.

Figure 1. The overlap between identity groups and impact groups in development interventions.



## Conflict and inequality: applying LUCI to better understand conflict impact

How conflict affects development is a topic that has been well studied, with a significant body of researchers demonstrating the ways in which violence can lead to a process of “development in reverse” (Bannon & Collier, 2003). Recently – especially over the last five to seven years – the climate emergency has drastically shifted the priorities of the major international donor communities, with significant volumes of international development aid being allocated and re-allocated, as well as redefined, in order to support the adaptation and mitigation efforts of developing countries, including those in regions that are affected by fragility (Arndt & Tarp, 2017; United Nations, 2021). But even though it is a necessity for donors and development agencies to design and operate interventions that specifically account for existing and potential conflict dynamics, there has been little evidence to date suggesting that climate change programming is now being conducted in a conflict-sensitive manner (Peters et al., 2019; Busby, 2021). In fact, a growing body of empirical research is demonstrating that climate and development interventions which are poorly planned and operated can not only exacerbate underlying problems, but also increase vulnerabilities. As previously mentioned, this process has been described as “maladaptation” (Schipper, 2020; Eriksen et al., 2021). In this context, the increasing number of anecdotal reports suggesting a causal relation between programming and increases in conflict occurrence have been particularly troubling, with examples including the consequences stemming from the capturing of the elites in Ethiopia and Uganda (Rüttinger et al., 2015), the misalignment of conservation imperatives in Myanmar (Woods & Naimark, 2020) and the land tenure disputes in Sudan (Dutta Gupta et al., 2021).

### Summary

The climate emergency has seen the significant refocusing of development finance and programming efforts, as well as priorities, in countries in the global South. On the one hand, the growing recognition of the interdependence of the climate, the environment and sustainable development processes has been welcome. On the other hand, the consolidation of agendas and perspectives has ultimately increased the demands on programmers, not only in terms of the levels of complexity that need to be considered, but also in terms of the increasing expectation that impacts will be delivered at scale and speed. These imperatives have only increased the concerns about development and climate mitigation and adaptation programming having the potential to create unintended consequences – and bring about significant negative impacts. What is more, these related issues become especially problematic when they overlap with the dynamics of historic conflicts, with the result that poorly planned or implemented activities can exacerbate horizontal inequalities, increasing the probability of conflict.

Many tools and frameworks exist to guide the conflict sensitivity analysis that is required for development projects, but most of these frameworks only provide guidance for the initial conflict analysis, before including a further step exploring how the various contexts may be impacted by the project. To date, comprehensive frameworks detailing how this analysis is to be conducted have largely been absent, with the result that we are unaware of any tools that guide practitioners, donors or evaluators through a detailed search for the possible unintended conflict impacts that may stem from interventions. Lomax et al. (under review) have set out three ways in which conflicts may be impacted by energy access projects: inequalities, incentives and ideologies. Of these, group-based inequalities have been established as particularly important causes of conflicts (Stewart, 2008). To take one example, the propensity for low-carbon development projects to have impacts on existing conflicts is a consequence of the nature of the overlap between the horizontal identity group inequalities that are present in a given context and the impact groups that are created by the intervention. While we do not claim to be able to comprehensively analyse all the potential causes of conflict in any given situation, we nonetheless suggest that LUCI is able to provide important information about the likely conflict impacts of development interventions – and, going forward, we would welcome the opportunity to learn from its applications.

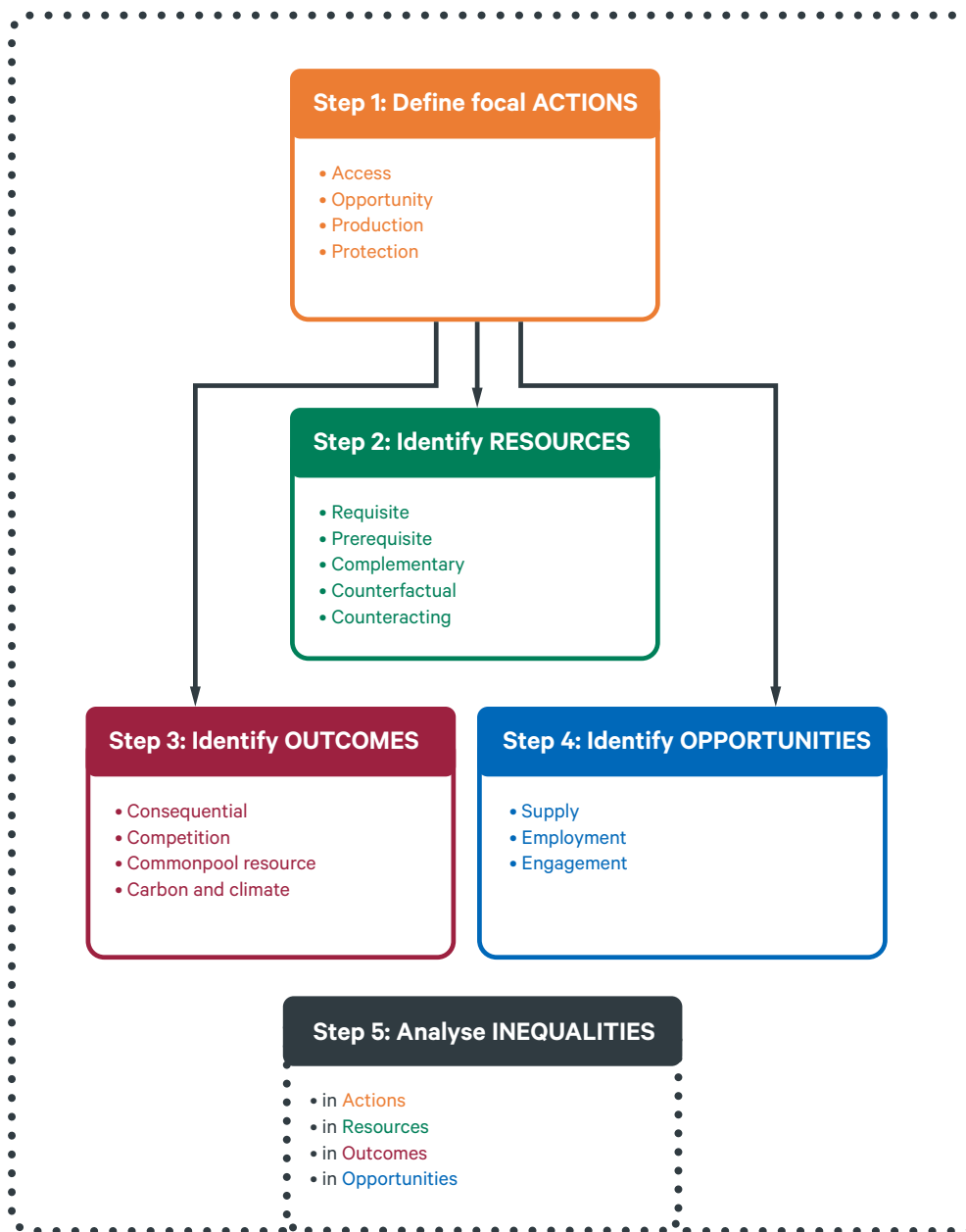
## The LUCI analysis tool

LUCI analysis comprises five analytical steps that take the user through a process that deepens their understanding of the various impacts resulting from energy access projects (see Figure 2). The first step involves defining the starting point: the actions of the intervention's

Figure 2. An overview of the five steps of LUCI analysis.

### LUCI analysis

Locating unanticipated consequences of interventions



target group through which the intended benefits are to be realized. These are referred to as the “focal actions”. The second step involves identifying the resources that the target group will require in order to access the intended benefits or through which the intended benefits will be mediated. The third and fourth steps then involve identifying the sets of actors who may access other impacts or opportunities relating to the focal actions. Finally, the fifth step involves analysing how the inequalities that are prevalent in the social groups are interrelated with these four groups of direct and indirect intervention effects.

The next section sets out how each step of the analysis is to be conducted. Following these steps will not necessarily uncover all the unintended consequences, but it should provide a robust overview, which may provoke deeper investigations. Note that continuing reference is made to a “target group”, which is defined here as the whole population of a given set of sociodemographic characteristics that a programme may be attempting to target.

## STEP 1: DEFINE FOCAL ACTIONS AND ASSOCIATED BENEFITS

Q1: What are the key actions through which the target group is expected to benefit, and what are the expected benefits? [Set out the most important]

- **Access** to resources (e.g. access to sources of electricity) that may be improved (e.g. access to more reliable sources of electricity).
- **Opportunity** to sell resources (e.g. to sell labour) that may be improved (e.g. to sell labour for higher wages).
- **Production** of outputs (e.g. cooking) that may be improved (e.g. cooking more efficiently).
- **Protection** of household resources (e.g. human health) from threats (e.g. the inhalation of harmful smoke from cooking) that may be improved (e.g. the reduced inhalation of smoke from cooking).

**TIP**

Are these improvements in quantity, quality, price, productivity, timing or type?

## STEP 2: IDENTIFY RESOURCES

Q2.1: What resources does the target group require to perform the focal actions?

- **Requisite resources:** the resources that are directly required as inputs for the focal actions – these are likely to include any resources that are provided by the intervention (e.g. an ongoing electricity supply, a connection to a mini-grid).

Q2.2: What additional resources does the target group need to access the requisite resources?

- **Prerequisite resources:** the resources that are indirectly required for the focal actions (e.g. cash to pay for the connection to the mini-grid).

Q2.3: What additional resources among the target group will result in differing impacts of the focal actions?

These different resources<sup>2</sup> may be:

- **Complementary resources:** resources that result in additional benefits from the focal actions.
- **Counterfactual resources:** resources that determine the extent of the benefits from the focal actions relative to the status quo.
- **Counteracting resources:** resources that mitigate the benefits resulting from the focal actions.

**TIP**

### Resources include:



Time or labour resources, including skills.



Finance (cash or credit).



Physical resources, such as stoves, fuel, grid connections.



Natural resources, including land and water.



Social information resources, including formal or informal permissions, as well as social capital.



Practical information resources, including information about how to perform the actions and the possible outcomes.



### STEP 3: IDENTIFY OUTCOMES

Q 3: What sets of actors will be affected and how will they be affected by the outcomes of (a) the focal actions and (b) efforts to change the focal actions?<sup>3</sup>

- **Consequential outcomes:** outcomes that follow directly from the focal actions, for the actors themselves, as well as their suppliers and buyers.
- **Competition outcomes:** outcomes that result from increased competition, as a consequence of the focal actions.
- **Common pool resource outcomes:** changes in natural and other common resource stocks, as a result of the focal actions.
- **Carbon and climate outcomes:** changes in the emissions rates of greenhouse gas, carbon storage, etc.

TIP

Consider the outcomes for:

- the actors themselves (i.e. the target group)
- their suppliers
- their buyers
- their peers
- overseers (such as the government and the media)
- the natural world.

### STEP 4: IDENTIFY OPPORTUNITIES

Q4: What sets of actors may be able to access the new opportunities resulting from efforts to change the focal actions?

- **Supply:** new opportunities to sell goods and services.
- **Employment:** new opportunities in the form of formal as well as informal jobs.
- **Engagement:** opportunities to be involved in the project's design, and hence the ability to influence its impacts.

### STEP 5: ANALYSE INEQUALITIES

Q5.1: What are the relationships between the important horizontal inequalities at the location and the inequalities relating to the intervention, in terms of the actions, resources, outcomes and opportunities that have been set out above?

Q5.1 is answered by transferring the previous analysis into the table that follows. The analytical focus on inequalities – as opposed to absolute impacts – means that both material and relative impacts are included.

How to complete the table:

**Actor Inequalities column.** Go through the analysis for Steps 1, 3 and 4 and enter the identified sets of actors in the Actor Inequalities column. When it comes to Actions, consider the whole target group, as well as any relevant subgroups – for instance, any subgroups by geography (as an example, intra- and inter-area inequalities have been entered into the table).

**Basis for Resource and Selection Inequalities column.** When it comes to the Actor Inequalities, this analysis has already been conducted in Step 2 – simply enter the results of the Resources analysis for each relevant category of the target

<sup>3</sup> Note that the main drivers of change for the focal actions should be included here – for instance, if the focal actions involve employment opportunities, then the main business activities of the employers should be included.

group. Many of these results will also apply to the Outcome inequalities. By contrast, the Opportunity inequalities usually relate to different resources, which should be specified here. Where selection – as a result of the intervention (or other actors) – could be a factor driving the impact differentials, this should be specified.

Nature of ACTION/OUTCOME/OPPORTUNITY Inequalities column. In this column, present the results of the Outcome and Opportunity analyses from Steps 3 and 4. The Action inequalities relating to Step 1 will always be in the form of a differential benefit for the target group, as the example demonstrates, while the Outcome and Opportunity inequalities will refer to wider sets of actors, not all of whom will be of concern for the analysis of the inequalities. For instance, the Outcome impacts of a particular intervention on nature – specifically, the intervention’s carbon impacts – will only have a small and indirect impact on a given population, while the Opportunity inequalities between different evaluation service providers, for example, may not be an important consideration. As such, these results may be entered into the table for completeness or left out entirely.

The following questions should then be addressed, using the completed analysis presented in the table.

Q5.2: Who is affected – to what extent do the intervention inequalities overlap with existing horizontal inequalities in the society?

Q5.3: How significant are the impacts of the Outcome and Opportunity inequalities? Could they be perceived as being significant? Do they reinforce or reduce existing horizontal inequalities? The analysis of inequalities can be strengthened by considering the following:

- Duration: how long will the impacts last?
- Dependency: to what extent will the impacts be reliant on the continuing presence of the intervention?
- Displacement: will there be any consequent reductions in activity elsewhere in the economy that could affect the nature of the inequalities?
- Diversion: what else would the public money or foreign aid have been spent on, if not this project, and would this have had any bearing on the nature of the inequalities?

<b>Q5.1: WHAT?</b>			
	<b>Actor Inequalities</b>	<b>Basis for RESOURCE and SELECTION Inequalities</b>	<b>Nature of ACTION/OUTCOME/ OPPORTUNITY Inequalities</b>
<b>ACTION</b>	Target group inequalities [overall]		Differential benefits for the target group
	Target group inequalities [intra-area]		
	Target group inequalities [inter-area]		
<b>OUTCOME</b>			
<b>OPPORTUNITY</b>			

**Q5.2: WHO?**

**Q5.3: HOW SIGNIFICANT?**

## Applying LUCI to mini-grid projects in Kenya

This next section presents a worked example of the LUCI analysis tool. The example is based on mini-grid projects in Turkana County, in the northwest of Kenya (for more details, see Lomax et al., 2021), where there are no realistic prospects of national grid coverage over the medium term. The target group comprises a widespread population of remote villages with little to no existing electricity provision. The projects seek to subsidize the construction of hybrid solar/diesel mini-grids, supplied by either the government or the private sector, within these communities. The individual households will then pay for a connection and an ongoing supply of electricity. Significantly, this region has a long history of conflict tension, which has been driven by overlapping ethno-economic pastoralist and arable farmer practices, increased migration and economic marginalization, as well as the area's geo-strategic location and its very significant vulnerability to climate change.

### STEP 1: DEFINE FOCAL ACTIONS

In mini-grid projects, the target group is intended to benefit from the use of the electricity that is provided by mini-grids.

### STEP 2: IDENTIFY RESOURCES

**Requisite:** to be able to use electricity, the target group requires access to an ongoing electricity supply. In most cases, this is achieved through a connection to the mini-grid.

**Prerequisite:** to access an ongoing electricity supply by means of a connection to the mini-grid, the target group requires finance to pay for the initial connection and the ongoing electricity supply. The target group also needs to be in sufficient proximity to a mini-grid.

**Complementary:** the differential benefits among those using the electricity supply will arise from the possession of complementary resources, such as water pumps and formal or informal permissions to pump water, or the ownership of a business – a cafe, for instance, which could benefit via the use of refrigerators.

**Counterfactual:** differential counterfactual benefits will also occur, based on prior access to a generator or a solar home system.

### STEP 3: IDENTIFY OUTCOMES

The outcomes of the benefits of accessing electricity from mini-grids may include:

**Consequential:** farmers and business owners with access to electricity may have improved productivity and increased sales.

**Competition:** farmers and business owners without access to electricity and complementary resources may suffer as a result of competition with those who do have access (for example, cafes without refrigerators may lose business to cafes with refrigerators). Similarly, generator-based electricity suppliers are likely to face competition from the mini-grid supply, while generator retailers are likely to face a reduction in sales.

**Common pool resources:** farmers with access to electricity and pumps may access more water for irrigation or cattle, etc., with the result that, over time, farmers and other water users may find it harder to access water if there is a reduction in the groundwater levels.

**Carbon and climate:** nature may suffer (as the air quality may be affected by carbon dioxide pollution), since the mini-grids are hybrid diesel facilities. Nature may benefit, however, if solar mini-grids are substituted for the existing diesel generators.

### STEP 4: IDENTIFY OPPORTUNITIES

The construction and maintenance of mini-grids, and the resulting supply of ongoing electricity, may bring about the following opportunities:

**Supply:** landowners may supply the land for mini-grid sites; mini-grid maintenance service providers may supply skilled maintenance services; mini-grid construction service providers may supply mini-grid components, construction, etc; mini-grid operators may supply retail and operation services; and diesel suppliers may supply the fuel for the mini-grids.

**Employment:** for local workers, there may be opportunities for employment in basic maintenance and security; for national workers, there may be opportunities for employment in the development programme and solar supply companies.

**Engagement:** for the target group, there may be opportunities to engage in the decisions about the locations of the mini-grids, both in terms of the communities and the locations within the communities.

### STEP 5: ANALYSE INEQUALITIES

	Actor Inequalities	Basis for RESOURCE and SELECTION Inequalities	Nature of ACTION/OUTCOME/ OPPORTUNITY Inequalities
ACTION	Target group inequalities [overall]	Mini-grid electricity	Benefit of access to mini-grid electricity
	Target group inequalities [intra-area]	Access to ongoing mini-grid electricity supply Access to connection to the mini-grid Access to finance for the connection Access to finance for the ongoing supply Proximity to a mini-grid Access to a generator Access to a solar home system	Benefit of access to mini-grid electricity
	Target group inequalities [inter-area]	Proximity to a mini-grid SELECTION [by intervention / electricity suppliers]	Benefit of access to mini-grid electricity
OUTCOME	Farmer inequalities	Access to electricity Access to water pumps Access to permission to pump water SELECTION [by farm produce customers]	Improved productivity and sales Access to more water for irrigation or cattle, etc. Suffering losses from competition from those with access
	Business owner inequalities	Access to complementary resources SELECTION [by business customers]	Improved productivity and sales Suffering losses from competition from those with access
	Water user inequalities	Access to electricity Access to water pumps Access to permission to pump water	Access to less water if there is a reduction in groundwater levels
	Generator-based electricity suppliers	SELECTION [by electricity consumers]	Suffering losses from competition for the mini-grid supply
	Generator retailers	SELECTION [by potential buyers of generators]	Reductions in sales
	OPPORTUNITY	Landowners	Access to land SELECTION [by the intervention land buyer or others who select the site]
Mini-grid maintenance service providers		SELECTION [by intervention or others]	Supplying skilled maintenance services
Mini-grid construction service providers		SELECTION [by intervention or others]	Supplying mini-grid components, construction, etc.
Mini-grid operators		SELECTION [by intervention or others]	Supplying retail and operations services

## Summary of findings

Interventions that are targeted at improving energy access in rural Turkana through the use of mini-grids may reinforce or reduce horizontal inequalities in the following ways.

**Action-based:** where identity groups among the target group benefit differently from the access to electricity. This may be a result of existing resource inequalities or the selection choices accompanying the intervention or that are made by the electricity suppliers.

**Outcome-based:** where certain identity groups among the farmers, business owners, water users, generator electricity suppliers or generator retailers experience different outcomes from the efforts to change access to electricity. These benefits or losses may stem from changes to productivity and sales, changes in access to water, or changes in business competition. They could be a result of existing resource inequalities that affect access or consumer selection choices.

**Opportunity-based:** where certain identity groups among the landowners, mini-grid maintenance service providers, mini-grid construction service providers, mini-grid operators, diesel suppliers, local workers, national workers or target group experience different opportunities stemming from the efforts to change access to electricity. These benefits or losses may involve the supply of land, the supply of services, the supply of inputs (such as components or fuel), employment or engagement in decision-making processes. They may be a result of existing resource inequalities that affect access.

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