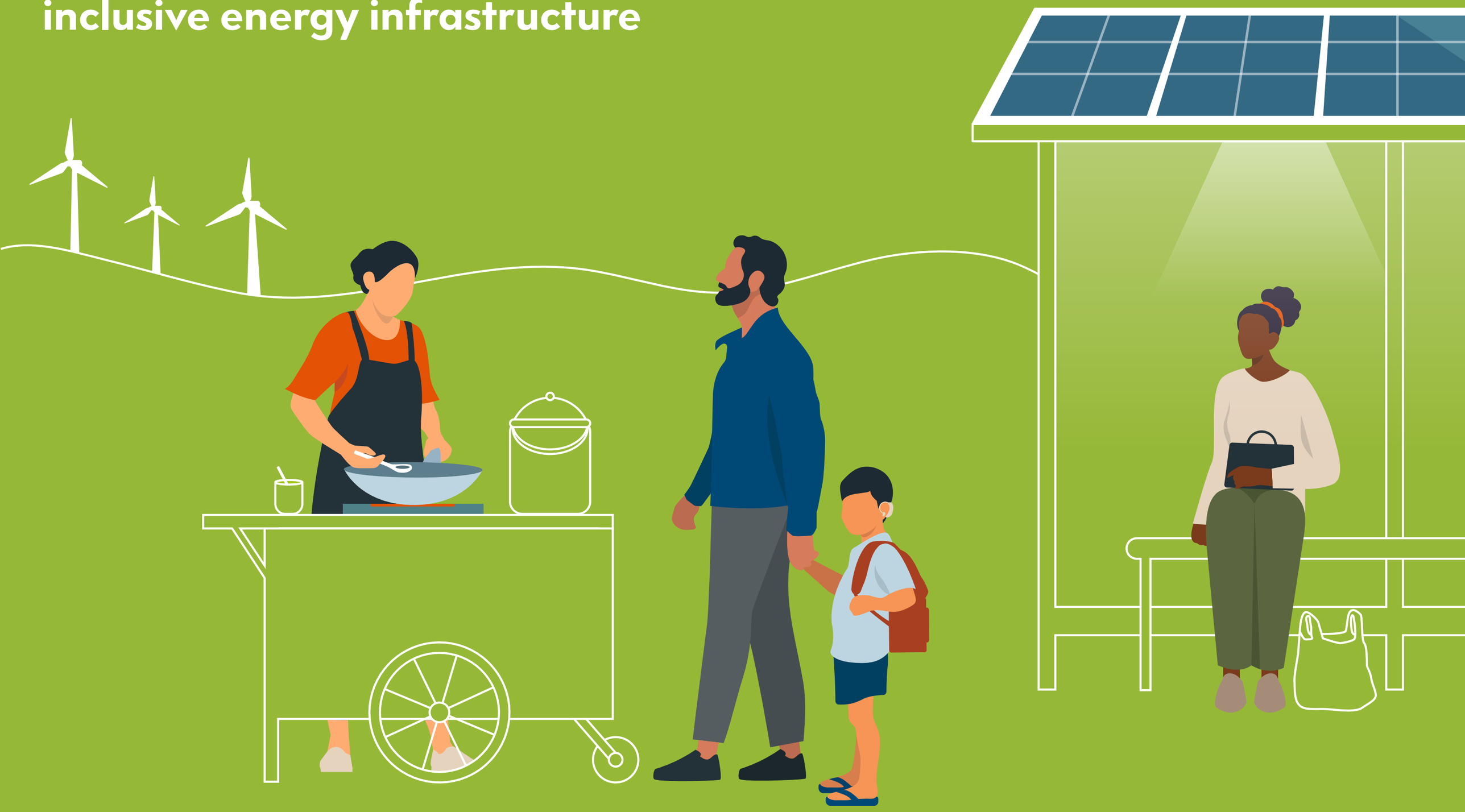
UNOPS

IEA ARUP

Guidelines for developing inclusive energy infrastructure



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About the authors

This publication builds on the experience of three organizations working towards inclusive energy infrastructure development around the world: the United Nations Office for Project Services, the International Energy Agency and Arup.

United Nations Office for Project Services (UNOPS)
www.unops.org

UNOPS provides infrastructure, procurement and project management services to help build the future. UNOPS supports the United Nations in addressing a range of critical humanitarian emergencies, vital development initiatives, and peace and security priorities across more than 80 countries. As an author of this publication, UNOPS champions the provision of quality infrastructure that goes beyond the construction of assets and requires the development of sustainable, resilient and inclusive infrastructure that places the people and planet at the heart of infrastructure decision making.

International Energy Agency (IEA)
www.iea.org

The IEA works with governments and industry to shape a secure and sustainable energy future for all. The IEA is at the heart of global dialogue on energy, providing authoritative analysis, data, policy recommendations, and real-world solutions to help countries provide secure and sustainable energy for all. Taking an all-fuels, all-technology approach, the IEA recommends policies that enhance the reliability, affordability and sustainability of energy. It examines the full spectrum of issues including renewables, oil, gas and coal supply and demand, energy efficiency, clean energy technologies, electricity systems and markets, access to energy, demand-side management, and much more. Since 2015, the IEA has opened its doors to major emerging countries to expand its global impact and deepen cooperation in energy security, data and statistics, energy policy analysis, energy efficiency, and the growing use of clean energy technologies.

Arup
www.arup.com

Arup's mission is encapsulated in our motto: "We Shape a Better World". We are an independent firm of designers, planners, engineers, architects, consultants and technical specialists, working across every aspect of today's built environment. As an author of this publication, Arup calls for inclusive infrastructure as an everyday practice, not just a push-button process. We advocate for bringing diverse needs into projects, and for working as collaborative translators between technical knowledge and lived experience, between a system and its parts, to develop places and experiences that leave no one behind.

How to use this publication

This publication contains four main chapters. It is recommended that the reader start with Chapters 1 and 2. The reader may then choose to read any subsection in Chapter 3, which contains links to the tools in Chapter 4

1. Overview of the publication

Accelerating infrastructure development is key to responding to global challenges, but we must ensure that we leave no one behind.

The world is facing grave challenges that place the 2030 Agenda for Sustainable Development in jeopardy. The Sustainable Development Goals Report 2022 finds that the COVID-19 pandemic has wiped out more than four years of progress in poverty eradication, armed conflicts have caused a record 100 million people to be forcibly displaced, and climate change has induced heatwaves, droughts and floods that affect billions of people.

Infrastructure development must be accelerated to respond to these challenges and address development gaps. Infrastructure is a key enabler of sustainable development, as it influences the achievement of up to 92 per cent of the Sustainable Development Goal (SDG) targets.[1] However, there remains a huge gap in infrastructure development worldwide. Before the COVID-19 pandemic, an estimated $97 trillion of global infrastructure investment was needed from 2016 to 2040 to address the SDGs.[2] It is estimated that $30 billion of annual investment is needed to achieve universal global access to electricity by 2030, of which two thirds is needed in sub-Saharan Africa.[3] Even more is needed to achieve net zero emissions in alignment with the Paris Agreement, with an annual investment of $2.2-2.8 trillion needed in clean energy in emerging markets and developing economies.[4]

Future infrastructure must be developed through inclusive solutions and encompass more social needs. Much attention has been placed on accelerating climate action and sustainability in infrastructure without due focus on the needs of women and marginalized groups, such as children, youth, older persons, persons with disabilities, lesbian, gay, bisexual, transgender, intersex, queer or questioning, and other gender-diverse people (also known as LGBTIQ+ people), persons living in poverty, indigenous peoples, refugees and internally displaced persons, among others.

The COVID-19 pandemic[5] and the climate crisis[6] have highlighted and exacerbated existing vertical and horizontal inequalities in access to infrastructure, making it clear that we must act urgently to not only fill the global infrastructure gap, but also ensure that we mainstream inclusion alongside sustainability and resilience in infrastructure development, in order to build a sustainable future that leaves no one behind.

Approach of the guidelines

These guidelines promote the development of inclusive energy infrastructure through a participatory and integrated approach. This includes three main concepts that underpin the entire publication: leave no one behind (LNOB), meaningful participation, and an integrated approach to quality infrastructure development.

1. Leave no one behind

The LNOB principle is at the heart of the 2030 Agenda and promotes equality, non-discrimination and equity for all peoples, especially highlighted in SDG 5 (Achieve gender equality and empower all women and girls) and SDG 10 (Reduce inequality within and among countries).[7] It places special emphasis on those left furthest behind and the most excluded, such as women and girls, children, youth, older persons, persons with disabilities, persons who are neurodivergent, LGBTIQ+ people, persons living in poverty, indigenous peoples, refugees and internally displaced persons, and any other group facing social exclusion within specific

contexts. Throughout the guidebook, these social groups are referred to collectively by the term 'women and marginalized groups'.

These guidelines recognize that both gender equality and social inclusion are major components of LNOB and that one cannot be achieved without the other. This is reflected throughout the publication through an emphasis on Gender Equality and Social Inclusion (GESI) transformative approaches, which involve an active attempt to examine, question and change systemic barriers and harmful norms and practices that cause intersectional experiences of energy exclusion.

2. Meaningful participation

Supporting the 2030 Agenda requires a whole-of-government, whole-of-society approach that is truly collaborative and participatory.[8] We need to work together to achieve a cross-cutting, bottom-up and sustainable approach to inclusive energy infrastructure development. This publication encourages this firstly through collaborative authorship by international and private sector organizations with diverse perspectives and areas of expertise in energy infrastructure development. The publication also provides guidelines and recommended actions that promote the active participation of women and marginalized groups in energy infrastructure development, beyond consultation. Finally, it promotes collaboration among various actors, such as civil society organizations (CSOs), governments, policymakers, energy regulators, planners, design engineers, energy utilities, project managers, contractors, procurement officers, operators, asset owners and local communities.

3. An integrated approach to quality infrastructure development

Given the costly nature of infrastructure investment, we need to make sure that we develop quality infrastructure, which can be thought of as the right infrastructure done well at the right time. 'The right infrastructure' is sustainable, resilient and inclusive within its context. Many women and marginalized groups rely on natural resources and are often the most vulnerable to climate change impacts. And so, sustainability and resilience considerations must be integrated into the approach to developing inclusive energy infrastructure.

An integrated approach also recognizes that infrastructure works in a system-of-systems. This means that energy infrastructure is enabled by other infrastructure systems such as transport for conveying fuel, water for power generation, and digital communications for managing energy systems, among others. In addition, these systems operate through the interaction of elements in the built, natural and enabling environments. For example, hydroelectric plants (built environment) harness power from falling or fast-flowing water (natural environment) and are designed based on technical standards (enabling environment).

This publication takes an integrated approach by providing guidelines and recommended actions that consider integrated solutions across the entire life cycle of infrastructure development (which includes the planning, delivery and management of infrastructure). These recommendations can be broadly categorized as solutions towards strengthening the enabling environment, prioritizing inclusive solutions, delivering inclusive solutions well, and maximizing the systems performance of existing built assets while linking directly with the natural environment.

Purpose of the publication

The purpose of this publication is to strengthen the capacity of governments, infrastructure practitioners, communities and other actors to implement an inclusive approach to developing energy infrastructure, especially in the Global South.

It aims to provide various actors within energy infrastructure development (including governments, civil society organizations, regulators, infrastructure planners, design engineers, energy utilities, construction project managers, procurement officers, contractors, and small-scale asset owners and operators) with a starting point to:

- Build their understanding of the root causes of horizontal inequalities faced by women and marginalized groups that serve as barriers to inclusive energy access, and recognize the opportunities to develop inclusive energy infrastructure to address these
- Identify inclusive approaches that can be implemented across the life cycle of energy infrastructure development
- Gain insight into actions that can be taken towards implementing inclusive approaches through various tools and resources.

The publication focuses mainly on inclusive energy infrastructure that supports the daily activities of people, especially women and marginalized groups, such as cooking, working, studying and travelling.

As inclusive energy infrastructure systems should be adapted to the local context and issues, this publication does not provide specific technical solutions for energy infrastructure implementation. Instead, it provides recommendations and guidelines on how to establish inclusive approaches to energy infrastructure development that address horizontal inequalities in access to energy, especially for women and marginalized groups.

These guidelines provide informative guidance and have been reviewed by relevant subject matter experts and policy owners, but they do not cover mandatory requirements.

> **More about the inclusive infrastructure guidance series**
> This publication is one volume within a series providing guidance on inclusive infrastructure development. Other publications in the series address inclusive transport, water, sanitation and hygiene (WASH) and health infrastructure.
>
> The guidance series follows on from the UNOPS Inclusive Infrastructure for Climate Action report. The report provides a more detailed picture of the systemic barriers that diverse social groups face and the conceptual framework for the inclusive infrastructure principles.
>
> In parallel and as a synthesis of the series, a Gender Equality and Social Inclusion module is being developed within the UNOPS 'sustainABLE' infrastructure tools suite, which can be used to create a checklist of actions to mainstream inclusion in infrastructure projects.

Figure 1. Summary of the publication's overarching concepts & how these are communicated

Purpose of the guidelines

Leave no one behind

+

Meaningful participation

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An integrated approach to quality energy infrastructure development

Strengthen the capacity of governments, energy infrastructure practitioners and other actors to implement an inclusive approach to energy infrastructure development, especially in the Global South

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Components of the guidelines

Introduction to inclusive energy infrastructure
Understand the causes of energy inequalities and recognize opportunities to develop inclusive energy infrastructure.

Guidelines for developing inclusive energy infrastructure
Identify approaches to develop inclusive energy infrastructure.

Reader's Tools
Gain insight into actions to implement inclusive approaches.

Persona stories
Stories by fictional characters that support the reader in considering the intersectional experiences of women and marginalized groups in accessing and using energy.

Guiding questions
Questions and answers that prompt the reader to think about how to address systemic barriers and transform harmful practices in energy infrastructure development.

Focus areas
Short narratives presenting concepts that support integrated solutions to sustainability, resilience and inclusion in energy infrastructure.

Key concepts
Sections that present information to help the reader understand key concepts in inclusive energy infrastructure.

Actions
Recommended actions that the reader can take to develop inclusive energy infrastructure.

Resources
References, case studies and illustrations presenting additional information.

→

Long-term impacts supported by the guidelines

GESI-transformative approaches to infrastructure development that address the root causes of energy inequalities and transform harmful practices

Infrastructure that enables provision of sustainable energy for all (SDG 7), reduces inequalities (SDG 10) and improves gender equality (SDG 5) for social inclusion of women and marginalized groups

Sustainable development that leaves no one behind

The 2030 Agenda for Sustainable Development

2. Introduction to inclusive energy infrastructure

The need for inclusive energy access in the Global South

Energy is an essential service that provides fuel and electricity for daily activities such as cooking, travelling, studying, working, commerce and using appliances and digital technology that make modern life more convenient.

SDG 7 of the 2030 Agenda for Sustainable Development focuses on ensuring access to affordable, reliable, sustainable and modern energy for all. Despite significant progress, there remain large gaps that must be bridged in order to achieve inclusive energy access for all. Although the number of underserved people has decreased drastically over the last 14 years, 675 million people globally still lack access to electricity.[9] At the current rate of progress, electrification will only reach 92 per cent of people by 2030.[10] Nearly one in three people still lack access to clean cooking facilities.[11] There are also considerable disparities between regions and within countries, with sub-Saharan Africa (SSA) faring the worst: three quarters of people without access to electricity and over a third of those without access to clean cooking facilities are in SSA. Meanwhile, 80 per cent of people without access to electricity lived in rural areas in 2020.[12]

Aside from energy access issues surrounding the general lack of energy infrastructure, there are horizontal inequalities in women's and marginalized groups' access to inclusive energy services.

For example:

- Persons with disabilities are more excluded from access to electricity. In some countries, less than 50 per cent of households with persons with disabilities have access to electricity.[13]
- In conflict-affected and fragile settings, access to electricity is unreliable. For example, in Syria in 2021, the majority of households (59 per cent) reported having less than eight hours of electricity access a day. Daily availability of electricity for services such as street lighting, health facilities and education also lasted less than eight hours in half of the surveyed communities.[14]

These energy gaps can result in energy-related exclusion and poverty. A lack of inclusive energy access can lead to exclusion from education and job opportunities, reinforcing cycles of poverty, inequality and deprivation. Energy poverty particularly burdens women, whose unpaid household care tasks often include sourcing fuel for cooking, or manually processing food. In some countries, women and children who do not have access to clean fuel spend an average of 1.4 hours a day collecting fuel, and carrying heavy loads may impact their physical health. They are also at risk of sexual violence when collecting fuel and after dark, especially in the absence of community lighting.[15]

In addition, inefficient and unsustainable energy infrastructure can lead to cascading negative effects, further harming women and marginalized groups. For example, household air pollution linked to cooking over traditional stoves and open fires contributes to around 3.7 million premature deaths per year globally, mainly affecting women and children.[16]

Root causes of inequalities in energy access

While general solutions can be applied to address energy gaps, there is no 'one-size-fits-all' solution to energy-related exclusion, and it is critical to understand the specific barriers within given contexts. This is because exclusion can result from different context-specific, historical and often interrelated factors that have differential impacts on people.

Systemic barriers to energy access

Systemic barriers[17] that cause vertical and horizontal inequalities in women's and marginalized groups' access to energy can include:

1. **Discrimination and social exclusion**, where restrictive sociocultural norms, negative attitudes and locational discrimination can lead to the exclusion of certain social groups from being able to access, purchase or use services for clean and sustainable energy;
2. **Physical barriers and lack of safety**, where accessing energy services is difficult due to physical barriers (e.g., communities located in mountainous, island or otherwise remote locations);
3. **Prohibitive costs and requirements**, where the cost (in terms of money, time and effort) or legal requirements can limit people from being able to afford connections to safe and adequate energy services;
4. **Limited access to information**, where people do not have access to or are unable to understand the format of information available regarding energy services; and
5. **Lack of access to decision making**, where people face power imbalances and lack representation, and thus are unable to make decisions regarding their daily activities (such as fuel collection responsibilities) or how energy infrastructure is developed.

Understanding energy inequality through an intersectional approach

Intersectionality is a concept that recognizes that different aspects of a person's identity (including gender, sex, ethnicity, class, disability and other social factors) can intersect and overlap in both empowering and oppressing ways, depending on the person's surroundings and existing power structures such as patriarchy, ableism, colonialism, aporophobia, homophobia and racism.[18] These power structures can result in systemic barriers to accessing energy that may lead to further exclusion of women and marginalized groups. Systemic barriers often work in combination and may also be related to inequalities in other infrastructure sectors. These barriers also perpetuate and increase inequality. Exposure to shocks and stresses increases socioeconomic vulnerabilities over time, which feeds into cycles of hazard exposure, vulnerability, poverty and exclusion. For example, women and girls in some contexts may be responsible for cooking and fuel collection. Coupled with a lack of paved paths, lighting and energy-efficient stoves, this may take several hours a day, reducing the amount of time available for educational and employment opportunities and their future economic independence.

While developing inclusive energy infrastructure, an intersectional perspective is important because it recognizes that exclusion and vulnerability are not caused by a person's identity, but result from and perpetuate overlapping social inequalities and systemic barriers.[19] Conversely, this means that women and marginalized people can be empowered by addressing systemic barriers, a process that is supported by the development of inclusive energy infrastructure.

Understanding intersectional energy exclusion through stories

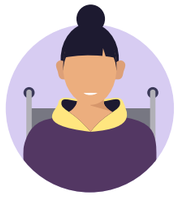
The following subsection shows some examples of intersectional experiences of energy inequalities, presented through the stories of five fictional personas which have been developed from datasets and projects that the authors have worked on, and jointly help to reflect the realities women and marginalized groups face around the world. These personas will provide stories throughout the publication to illustrate how systemic barriers to accessing energy can manifest in relation to the intersectional experiences of diverse groups.

Ram, age 7, school student

“My name is Ram. My ma and I live in a small house where we use coal to cook our meals. The smoke makes me cough but we can’t afford anything else. A man told my mom and other neighbours that we could pay for a gas connection to the plastic pipes they built. Ma told him it was too expensive for us. A few weeks later, a fire spread between the houses that had been connected to the gas. It took a long time for the fire to be put out because the fire trucks couldn’t enter the alleys, and some of my neighbours were hurt badly.”

Young children may be at risk of respiratory diseases caused by smoke from unclean cooking fuels. Lack of reliable and safe electricity can also hinder children’s educational development, as it may affect their ability to study and complete homework. Children living in informal settlements are also at risk of fires caused by unsafe informal electrical or gas connections or the use of candles or open flames in households. Children are also inherently impacted by the vulnerabilities of their parents and caregivers. If a parent loses a job due to fire or illness, the child’s vulnerability increases.

Chantha, age 16, high school student



“I am Chantha. I was born with a physical impairment and use a wheelchair. After school, my friends go to the community centre to do their homework and hang out. The centre has lighting, heating and computers with internet access. However, it is not wheelchair accessible so I have to go home instead. We don't have a computer at home and the electricity isn’t stable.”

Young people’s access to education is influenced by lack of electricity and technology in schools and in homes. In most sub-Saharan African countries, less than 50 per cent of primary schools have electricity.[20] Further, access to electricity can be crucial for persons with disabilities who use electric assistive technology for their daily activities, including hearing aids, screen readers and smart home devices.

Fatima, age 42, farmer

“My name is Fatima. My family and I were forced to leave our village because there were armed groups who attacked people of our faith. There are not enough solar and gas cooking stoves for everyone in our camp, so I walk more than two hours to collect firewood for cooking rations and to sell for extra money. I was almost attacked once, so I do not carry my children with me, but I am very worried about leaving them in the camp by themselves.”

Persons can be internally displaced due to conflicts, and members of minority groups can be particularly vulnerable in such situations. Displacement sites may lack adequate energy infrastructure, and there may be power dynamics within the camps that affect access to clean cooking resources. Women and girls, displaced or not, often bear the responsibility of collecting fuel daily, which may lead to injuries or fatigue, especially for pregnant and older women. Women may further face the difficult decision of leaving their children alone (and exposing them to the risk of abuse or violence) or bringing them along on an unsafe route, where sexual or gender-based violence may occur.[21] They may also face systemic barriers that constrain their access to the benefits of energy infrastructure, such as lack of control over land (on which assets can be installed), purchasing power, access to technology, participation in decision making, education and training, and access to credit.

Jose, age 28, market vendor

"My name is Jose. I run a market stall that sells household items. As a trans person, I often face harassment or even violence while working in the market. I want to expand my business into e-commerce, but I don't have access to a stable electricity connection at home or connection to the internet. This means I can't follow my dream and will have to continue working in an environment where I don't feel safe."

A person living in poverty may not be able to afford expensive costs related to setting up electricity and internet connections at home. In addition, they may face further discrimination due to gender identity, geographical location or other aspects of social identity. They may resort to precarious informal work, which may increase energy poverty due to inadequate income or even heighten the risk of illness and violence caused by risky work.

Peter, age 67, indigenous elder

"I am Peter. I used to live near a creek leading to the sea. A company wanted to make biofuel, so they razed our ancestral lands and planted crops there. It is affecting the health of the soil and water, and the quality of our crops. My son insisted that I move to the city with him because he is worried about my health. I feel like I have lost my home."

Indigenous people face challenges when they are not properly consulted about new energy infrastructure projects. This can negatively impact their ways of living, as well as the integrity of the natural environment, which they have a strong relationship with. Older persons can further have chronic health conditions and can be sensitive to pollution caused by fossil fuel-powered cars, the use of unclean cooking fuels or the by-products of energy production, such as polluted run-off from fertilizers and pesticides.

Read more

- Learn more about the diverse experiences of women and marginalized groups in accessing infrastructure:
  - Inclusive infrastructure for climate action, UNOPS, 2022.
  - Infrastructure for gender equality and the empowerment of women, UNOPS, 2020.
- Learn more about understanding and applying the concept of intersectionality: Intersectionality Resource Guide and Toolkit: An Intersectional Approach to Leave No One Behind, United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), 2021.
- Learn more about inclusive energy access in humanitarian contexts: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020.
  - Learn about different energy models: p. 11
  - Learn about energy access tiers: pp. 13-14

Characterizing inclusive energy infrastructure

Inclusive energy infrastructure leaves no one behind.
This publication defines 'inclusive energy infrastructure' as energy infrastructure and systems that provide all people (regardless of their personal circumstances or identity) with safe, affordable, reliable and equitable access to sustainable and modern energy, with the aim of eliminating energy poverty and injustice and supporting the achievement of SDGs 5, 7 and 10 towards gender equality, social inclusion and sustainable development overall.

Inclusive energy infrastructure requires meaningful participation.
Aside from ensuring universal energy access for all people, inclusive energy ensures that women and marginalized groups are empowered within the governance and development of energy infrastructure. It is important to recognize that there are gaps and inequalities related to the design, access and use of energy infrastructure, and that women and marginalized groups, particularly those who experience multiple and intersecting forms of discrimination, are the least able to benefit from these services. In that sense, meaningful participation and consultation processes are necessary to ensure that inclusive energy infrastructure takes into account everyone's diverse needs and addresses systemic barriers to energy faced by women and marginalized groups.

Inclusive energy infrastructure can be achieved through an integrated approach to quality infrastructure development.
Inclusive energy infrastructure requires a concerted effort among energy actors to ensure that effective, context-appropriate energy solutions are able to address diverse needs and respond to future needs and challenges. It should also be developed with a holistic view of energy's relationship to the entire infrastructure system-of-systems in providing inclusive outcomes for women and marginalized groups. For example, inclusive energy infrastructure can provide opportunities for increased incomes and improved socioeconomic resilience when combined with productive uses, such as powering machines that make agriculture and manufacturing activities easier and more efficient. It can also help improve safety and reduce the risk of crime and sexual violence through quality lighting in streets, community toilets and public spaces, as well as support health outcomes by powering equipment for water, sanitation and hygiene (WASH) systems and medical facilities. It can support digital systems in facilitating communication, jobs, education and governance. It can also reduce negative health and environmental impacts from air pollution linked to the use of unclean fuel sources for cooking, transport and other activities.

Putting these together, inclusive energy infrastructure and its transformative outcomes can be characterized by five guiding principles: equitable, accessible, affordable, do-no-harm and empowering.[22] More information can be found on the next page.

Read more

- Learn more about how the inclusive infrastructure principles address the systemic barriers women and marginalized groups face: Inclusive infrastructure for climate action, UNOPS, 2022.
- Examples of how inclusive energy infrastructure can work with other infrastructure systems to support inclusive outcomes:
  - The digital matatu project: Using cell phones to create an open source data for Nairobi's semi-formal bus system
  - A transition to clean cooking solutions can improve food security by reducing land degradation from the harvesting of fuel wood, increasing the amount of time and money available to grow alternative, nutrient-rich foods such as beans and potatoes.

Inclusive energy infrastructure principles and transformative outcomes

Inclusive energy infrastructure principles, which address diverse needs and systemic barriers			Transformative outcomes of inclusive energy infrastructure towards achieving gender equality and social inclusion
Equitable	provides fair and just access to energy services that can address the diverse energy needs of women and marginalized groups		• Diverse needs for energy are researched, recognized and addressed • Equitable access to energy services for household and productive uses for all people • Resources are equitably distributed for energy equality, including in energy supporting the equitable provision of transport, WASH and digital communication
Accessible	provides user-centric solutions for diverse users to have access to energy services in an easy, safe and dignified manner, without risk of accident or violence		• Easy, safe and dignified access to energy services for diverse users • Reduced risk of accidents, harm, crime and gender-based violence in the generation, transmission and use of energy in households, enterprises and public spaces • User-centric energy services that address diverse physical needs across all infrastructure systems, including in the use of assistive devices
Affordable	increases opportunities for people of different economic means to access good quality, sustainable and resilient energy services		• Reduced financial and administrative barriers to energy service connections for households and micro, small and medium-sized enterprises • Tariff structures that enable affordable access to energy for people living in poverty • Improved value for money of energy infrastructure for financial sustainability
Do-no-harm	reduces the exposure of people and the environment to negative social, economic or physical impacts resulting from energy infrastructure development		• Nature, lives and livelihoods are protected while developing energy infrastructure and in the use of energy across other infrastructure systems, especially in the energy transition • Fulfilment of human rights to an adequate standard of living
Empowering	increases a person's ability to successfully exercise agency, make informed decisions and act on issues in their community through improved energy services		• Reduced social risk and deprivation stemming from energy inequality • Participation across all segments in communities is fostered • Informed decision making of users, including through increased understanding of the benefits of investing in and using clean energy • The right to continuously engage in, agree to, refuse, propose and give feedback on infrastructure projects across the whole project life cycle is enabled • The means to raise concerns, give feedback and receive information and customer service from energy utilities are available to all types of consumers

Systemic barriers addressed: Discrimination and social exclusion; Physical barriers and lack of safety; Prohibitive costs and requirements; Limited access to information; Lack of access to decision-making

3. Guidelines for developing inclusive energy infrastructure

Challenges to implementing inclusive energy infrastructure

The lack of inclusive energy access, especially in the Global South, can be attributed to multifaceted and interrelated challenges in the development of energy infrastructure. These include, but are not limited to:

- **Insufficient capacity** (including institutional, technical, financial and knowledge) to plan, deliver and manage inclusive energy infrastructure that:
  - can satisfy short-, medium- and long-term energy needs of all peoples, especially women and marginalized groups
  - does no harm to the environment and local communities
  - is resilient in the face of challenges such as climate change, conflicts, pandemics and disasters
  - can navigate complex urbanization challenges such as informality
  - is based on inclusive evidence to prevent mismatches and determine appropriate solutions for design, implementation and technology in alignment with local customs and practices
- **Weak enabling environment,** which includes a lack of (or limited ability to enforce) policies, legislation, regulation and formal processes that enable integrated and multi-sectoral approaches to sustainable, resilient and inclusive energy services
- **Insufficient awareness of and political commitment to gender equality and social inclusion,** which can lead to a lack of meaningful consultation and representation of women and marginalized groups in energy data collection, research, planning, delivery and management
- **Cultural and behavioural challenges**, such as preferences for traditional methods of cooking and preparing food, which may reinforce negative gendered norms surrounding fuel collection
- **Insufficient accountability and transparency** in energy investment decisions and procurement processes, which may lead to spatial inequalities regarding where investments are made

Approaches to developing inclusive energy infrastructure across the infrastructure life cycle

Addressing energy exclusion faced by women and marginalized groups requires that we incorporate the concepts of leaving no one behind (through intersectional and GESI-transformative approaches) and meaningful participation within an integrated approach to quality energy infrastructure development. In addition, addressing the implementation challenges energy infrastructure practitioners face in the Global South entails taking a holistic approach across the life cycle of inclusive energy infrastructure development. These guidelines highlight four approaches that incorporate inclusive principles and address implementation challenges:

1. Strengthening the enabling environment,
2. Prioritizing inclusive solutions,
3. Delivering inclusive solutions well, and
4. Maximizing existing systems performance.

Examples of how this can be done are shown on the next page. The rest of this chapter presents further information on how to translate these approaches into actions across the entire life cycle of energy infrastructure development, focusing on selected stakeholders that play important roles in implementing inclusive actions that are critical at specific stages. For more detailed information about the recommended actions for different actors, see Chapter 4.

Figure 2. Inclusive approaches across the infrastructure life cycle

Approaches	1. Strengthen the enabling environment	2. Prioritize inclusive solutions	3. Deliver inclusive solutions well	4. Maximize existing systems performance
Life cycle stage	**Regulatory ecosystem across the entire life cycle**	**Planning**	**Delivery** (design, procurement and construction)	**Management** (operations, maintenance and end of life)
Main actors addressed in this publication	Actors in energy policy, strategy, advocacy and capacity building - Civil society organizations - Governments (including policymakers) - Energy regulators	Actors planning, designing and investing in energy infrastructure systems and assets - Governments and energy regulators - Planners and design engineers - Energy utilities	Actors in project delivery and construction of energy infrastructure assets - Project managers and teams - Design engineers - Procurement officers - Contractors	Actors in energy service delivery and operation and maintenance of energy infrastructure assets - Energy utilities - Energy regulators - Small-scale asset owners and operators (including prosumers)
Example actions for an integrated approach to quality infrastructure development	• Create and enforce policy, legislation and regulations that enable an integrated approach to inclusive energy • Build the capacity of different stakeholders in developing inclusive energy services, including technical skills, human capital and financial capacity	• Leverage cross-sectoral approaches to tackling energy issues • Conduct feasibility studies that assess cross-sectoral impacts, to prioritize energy projects that provide maximum benefit and pose minimal risk to people and the environment	• Use codes, standards and guidelines to integrate transparency, accountability, as well as social and environmental protection throughout energy projects	• Ensure that there is adequate long-term capacity to maintain and operate inclusive energy services • Improve the sustainability, resilience and inclusiveness of existing energy assets and services
Example actions to leave no one behind	• Strengthen national energy monitoring systems for collection of disaggregated data (on age, gender, disability, location, etc.), conduct participatory consultations to identify the energy needs of women and marginalized groups, and advocate for policies that address these needs • Create policies for affordable initial connections and tariffs	• Assess the risk of and propose solutions to minimize negative environmental impacts • Identify opportunities for productive use of electricity and address associated barriers	• Use people-centric data to design solutions that reduce energy exclusion for women and marginalized groups and protect natural and indigenous heritage • Prevent sexual abuse, exploitation, child labour and unfair labour practices in construction	• Collect and promptly address feedback and complaints from users of energy services, especially women and marginalized groups • Provide accessible customer service, particularly for payments
Example actions for meaningful participation	• Ensure that women and marginalized groups are well represented across the different teams, organizations and stakeholder groups involved across the entire life cycle	• Provide inclusive solutions and reasonable accommodation to encourage the participation of women and marginalized groups in the development of energy infrastructure	• Make use of local materials, suppliers and workers in order to minimize emissions and distribute the economic benefits of infrastructure investment	• Establish programmes and policies that prioritize green energy sources and promote the responsible use of energy

3.1 Strengthening the enabling environment

Strengthening the enabling environment includes creating and enforcing policies, regulations and legal frameworks that support inclusive energy access across the entire infrastructure system, as well as building the technical, institutional and financial capacity of key actors and stakeholders to implement inclusive practices across the life cycle of infrastructure development. This is an overarching activity across the infrastructure life cycle that sets the stage for effective collaboration among different stakeholders and actors. This section will be cross-referenced across other life cycle stages as necessary.

Opportunities to address energy inequalities faced by women and marginalized groups

Fatima, age 42, farmer

"Every morning, I walk several hours with other women to collect wood to cook our daily meals. One day, my husband told me that some government employees did a survey with the men in our camp about electricity and cooking fuel. They should have talked to us women as well."

Women play a multitude of roles in the energy sector, as consumers, suppliers and decision makers. However, they remain underrepresented in energy governance and employment,[23] and the energy value chain is still functioning in a gender-blind way.[24] A review in 2017 found that only a third of 192 national energy frameworks integrated gender considerations to some extent. When mentioned, women are generally described as beneficiaries or stakeholders, and only two policies identified them as agents of change.[25]

One way to address this is to ensure that women and marginalized groups are actively engaged and consulted in the design, implementation, monitoring and evaluation of energy policy and decision-making processes, and to ensure they have equal opportunity to be employed in the energy value chain. This is also supported by other actions to reduce systemic barriers that women and marginalized groups face in affording reliable energy services for household and productive uses.

Reader's tools

- Case study on inclusive energy policy and programmes
- Recommendations to improve gender equality in energy policy: Gender in the transition to sustainable energy for all: From evidence to inclusive policies, ENERGIA, 2019

Actions for civil society organizations

1. Amplify the voices of the most marginalized groups in research, policymaking and energy infrastructure development processes
2. Advocate for inclusion across the life cycle of energy infrastructure development
3. Advocate for inclusive energy service delivery and ensure customers are informed of their rights and entitlements

Reader's tools

Detailed checklists and resources

Actions for governments and regulators

1. Establish policies, regulations and legal frameworks to support an integrated, cross-sectoral and participatory approach to addressing systemic barriers and energy-related exclusion
2. Assess, develop and reform policy, regulatory and legal frameworks towards enabling inclusive energy access
3. Assess the readiness of the country to develop and deploy inclusive and renewable energy, and identify actions to address gaps
4. Develop policy frameworks to improve participation, transparency and accountability in energy infrastructure development
5. Create and enforce regulations for inclusion requirements throughout the entire energy project life cycle
6. Assess and strengthen personnel capacity for inclusive energy infrastructure development and planning
7. Build awareness of and sensitivity to gender equality and social inclusion in energy infrastructure

Reader's tools
Detailed checklists and resources

Supporting actions
Use disaggregated data to identify gaps in energy policy

3.2 Prioritizing inclusive solutions

In this section, we explore how to prioritize inclusive solutions in order to plan inclusive energy infrastructure systems that improve access to sustainable energy across different communities in both rural and urban areas, as well as across the diverse social groups within these communities. It is important to consider how the different parts of the energy value chain affect the reliability, affordability and sustainability of the energy used and available to diverse communities. It is also important to understand which energy models (centralized, decentralized or off-grid) are most appropriate for addressing short- and long-term energy access.

There are three stages discussed in this section, namely:

1. Energy infrastructure planning
2. Prioritization, preparation and investment
3. Project delivery planning and mobilization

Within each stage, we explore:

- The importance of inclusive approaches in each stage and across energy infrastructure systems
- Examples of energy inequalities faced by women and marginalized groups, and opportunities to address these while planning energy infrastructure systems
- Actions the reader can take to implement inclusive approaches in planning energy infrastructure systems, as well as links to tools, resources and more detailed information to support these actions

What questions can we ask ourselves to help prioritize inclusive solutions when planning energy infrastructure systems?

- **Equitable**: Energy infrastructure should create equitable access to sustainable energy, including for communities in remote areas and informal settlements. Which communities need improved energy access in the geographical area we are planning for? What are the current barriers they face?
- **Accessible**: All people should have easy, safe and dignified access to energy services. Have we explored diverse energy production and distribution options that are clean, affordable, reliable and sustainable, and that advance the goal of universal electricity access?
- **Affordable**: Energy services should be affordable for all users to have reasonable access to clean energy. For electrification projects, is the cost of the initial connection affordable or can it be financed?
- **Do-no-harm**: Negative impacts on nature and people from energy infrastructure development should be mitigated. In which parts of the energy infrastructure system can we prioritize solutions to reduce pollution and avoid negative impacts on sociocultural values associated with land and landscapes, especially for indigenous populations?
- **Empowering**: Given their important cultural roles in household energy management, women and marginalized groups should be able to meaningfully participate in decision-making processes determining how energy systems are planned and prioritized. How inclusive are the participatory planning processes that we have in place?

Reader's tools

- Illustrated concepts for planning inclusive energy infrastructure systems
- Focus area on leveraging the social benefits of energy efficiency
- Focus area on distributed or decentralized energy resources
- Case study on community-based energy models
- Case study on participatory energy planning and design

Energy infrastructure planning

During energy infrastructure planning, it is important to consider the current and future gaps in women's and marginalized groups' energy access in order to embed inclusive goals within strategic energy priorities. Defined goals give a clear mandate to government entities to implement initiatives towards developing inclusive energy infrastructure. The inclusive goals set out in energy policies and plans can then be translated into pipelines of inclusive energy infrastructure projects.

Opportunities to address energy inequalities faced by women and marginalized groups

Ram, age 7, school student

"The electrical wires in the main street next to our neighbourhood look like spaghetti. Someone told me that the electric company's trucks couldn't enter the area since it's just alleyways, so some houses like mine don't have a connection."

People who live in informal settlements or densely populated areas may not be able to access a formal connection to the electricity grid, as it may be difficult to safely establish the necessary physical infrastructure, or because the connection procedures may be too complicated or expensive. This can lead to the use of informal or illegal connections, which may not only be hazardous as they are not installed according to safety codes, but are also often more expensive for users. Illegal connections are often maintained by 'meter-lords' who charge higher-than-permitted consumption fees and may prey upon women or other vulnerable subscribers.

It is necessary to recognize complex social issues such as 'informality' in energy infrastructure development. During planning, it is important to consider cross-sectoral approaches to addressing energy exclusion, such as equitable spatial planning, affordable and adequate housing stock, improved digital communications to leverage smart metering and prepaid technologies, and livelihood and economic programmes for financial inclusion.

Actions for governments

1. Establish the right conditions so that women and marginalized groups can meaningfully participate in the planning process and influence decisions
2. Leverage cross-sectoral and cross-functional strategies to ensure integrated approaches to tackling energy exclusion issues
3. Promote transparent and inclusive electrification planning to accelerate access

Reader's tools
Detailed checklists and resources

Actions for infrastructure planners and energy utilities

1. Work with residents and local non-governmental organizations (NGOs) to identify and address existing energy inequalities
2. Use disaggregated data, participatory consultations and context assessments to identify diverse energy needs
3. Develop and evaluate energy planning options based on sustainable, resilient and inclusive outcomes

Reader's tools
Detailed checklists and resources

Supporting actions to strengthen the enabling environment
- Advocacy and representation by civil society organizations
- Capacity building by governments

Prioritization, preparation and investment

Infrastructure requires significant investment and has a long operational lifespan, so it is essential to prioritize energy infrastructure projects that can enable the provision of the most inclusive and equitable energy services for all people over the long term.

Project preparation is a key activity in ensuring that planned energy projects are bankable and ready for investment. During this stage, it is important that energy projects and their intended outcomes are conceptualized according to inclusive principles. This will set the stage to secure adequate financing, resources and capacity to incorporate inclusive approaches in the design, construction, operations and maintenance of energy assets.

Opportunities to address energy inequalities faced by women and marginalized groups

Peter, age 67, indigenous elder

“A few years ago I heard that the government wanted to look for oil in the ocean. My tribe was not happy, as this was near our traditional hunting grounds. We did not want the water and sea animals to get poisoned by this project.”

We must enshrine the principle of do-no-harm when prioritizing and preparing energy projects, and critically evaluate whether proposed projects present any risks with extreme long-term consequences such as ecosystem degradation or forced displacement. Projects that may have direct or indirect unmitigable negative impacts on local communities or the environment must be rejected.

Aside from conducting environmental and social feasibility studies, consulting the affected communities, especially indigenous people, can help determine if a project proposal should be rejected due to unmitigable negative impacts.

Actions for planners and design engineers

1. Conduct assessments to narrow down inclusive energy projects for prioritization, and exclude projects with unmitigable negative impacts. Explore the history of energy projects in the area and the reasons they succeeded or failed
2. Assess the intersectional energy needs of stakeholders and beneficiaries to ensure that the project improves energy access for marginalized groups
3. Design the project concept and theory of change to achieve inclusive outcomes for energy consumers, employees and affected communities
4. Analyze and evaluate project feasibility according to environmental, social, cultural and economic impacts and co-benefits

Reader’s tools
Detailed checklists and resources

Actions for energy utilities

1. Engage participatory consultation experts to conduct continuous participatory consultations and co-creation processes with local communities and civil society organizations to inform project definition, resolve land conflicts and address context-specific energy needs
2. Incorporate inclusion targets and objectives in the project brief

Reader's tools
Detailed checklists and resources

Actions for governments

1. Develop and prioritize energy projects with inclusive outcomes, aligning with the strategic priorities for sustainability, resilience and inclusion
2. Develop an investment plan that considers the long-term costs of inclusive projects
3. Identify financiers who support inclusive projects and determine their requirements for effective and competitive project preparation

Reader's tools
Detailed checklists and resources

Supporting actions to strengthen the enabling environment
- Advocacy and representation by civil society organizations
- Create and enforce regulations for inclusive requirements for project prioritization and selection processes by governments
- Capacity building by governments

Project delivery planning and mobilization

Once investment has been secured for energy projects, it is important to plan and mobilize the necessary resources, technical expertise and human capital for effective project implementation.

Opportunities to address energy inequalities faced by women and marginalized groups

Jose, age 28, market vendor

"Some people came to our neighbourhood and said they wanted to build solar panels for some houses, but we have to fill up some forms if we want to participate. I didn't sign up because sometimes people see my name and question if I am a man or woman, and it makes me uncomfortable to answer as I don't want to be harassed."

When planning projects, it is important to plan for GESI-responsive activities and to train staff to be sensitive to gender, disability, culture and other aspects of social identity. This is to avoid unintentionally excluding people from benefitting from the project, as they may be cautious about participating due to previous experiences of harassment or discrimination.

A GESI specialist can guide project teams to ensure that all project activities are sensitive to social and cultural practices in order to ensure that intended beneficiaries feel empowered and safe in participating. An example of GESI activities can include community sessions with food sharing (which can help build relationships and trust), where the project team can discuss the proposed interventions and opportunities for community involvement. The sessions should be held at different times of the day and with targeted messaging for different people, especially women and marginalized groups.

Actions for project managers and teams

1. Mobilize capacity to create and deliver on inclusive targets, including hiring GESI specialists and providing skills and capacity building for teams and private sector stakeholders
2. Ensure that project budgets can support inclusive, lasting implementation through adequate allocation and ring-fencing of resources for inclusive activities
3. Develop a GESI Action Plan with realistic targets, activities, indicators and appropriately allocated resources

Reader's tools
Detailed checklists and resources

Actions for procurement officers

1. Conduct project strategic procurement planning to ensure the capacity to implement sustainable and inclusive procurement processes
2. Implement measures to ensure integrity, accountability and transparency in the procurement processes, especially for public energy infrastructure projects

Reader's tools
Detailed checklists and resources

Supporting actions to strengthen the enabling environment
- Capacity building by governments on inclusive procurement and project management
- Inclusive workforce management and diverse hiring

3.3 Delivering inclusive solutions well

In this section, we explore how energy projects can be delivered (including design, procurement and construction) in a way that ensures infrastructure projects equitably distribute the benefits of energy investments to different stakeholders and do no harm to people and the environment. It is important to consider how the delivery process in itself can be inclusive and provide inclusive outcomes for women and marginalized groups, beyond the actual energy asset being delivered. This includes promoting decent work conditions for a diverse workforce, supporting local businesses and workers, and minimizing accidents and negative environmental impacts from construction processes.

This section covers three stages, namely:

1. Design
2. Procurement
3. Construction

Within each stage, we discuss:

- The importance of inclusive approaches in each stage and across the delivery of projects
- Examples of inequalities faced by women and marginalized groups, and opportunities to address these while delivering energy projects
- Actions the reader can take to implement inclusive approaches in delivering energy projects, as well as links to tools, resources and more detailed information to support these actions

What questions can we ask ourselves to help deliver inclusive solutions well in energy projects?

- **Equitable:** Local communities, especially women and marginalized groups, should have equitable opportunities to benefit from infrastructure project delivery. Are there sufficient provisions for diversity and inclusion in the labour hiring and procurement processes?
- **Accessible:** Accessibility and safety standards should be enforced in the design and construction of assets. Do the design and construction management produce safe and accessible environments for women and marginalized groups in and around the project site?
- **Affordable:** Construction processes should be efficient and high quality to ensure the value for money, durability and affordability of the asset over its lifetime. Do the selected design, materials and construction methods optimize the value for money of the project in tandem with inclusive targets? Are there appropriate safety mechanisms to eliminate risk of electrocution during and after construction?
- **Do-no-harm:** The implementation of the energy project should mitigate any harm to the local community and environment. What environmental and social safeguards can be put in place to minimize negative impacts?
- **Empowering:** The knowledge, expertise and perspectives of local communities and marginalized groups should be integrated into infrastructure delivery. Based on participatory consultations with the local community, what local knowledge and expertise can be applied?

Reader's tools

- Illustrated concepts for delivering inclusive energy projects
- Focus area on applying a GESI-transformative lens to the just transition of energy infrastructure
- Case study on inclusive energy project delivery in conflict-affected areas

Design

The design process involves identifying the diverse energy needs of the target community and addressing these through inclusive, gender-responsive and universal design. It is crucial to optimize the design to ensure value for money and to enhance the durability and efficiency of the energy asset or service. This includes making informed decisions when planning the layout as well as when selecting equipment, systems, construction materials and the corresponding construction methods.

Opportunities to address energy inequalities faced by women and marginalized groups

Fatima, age 42, farmer

“I found a temporary job in the nearby village. It already gets dark by the time I walk home. Sometimes, I can spot some groups of men sitting nearby, but the street lights are only bright on the path where I walk. I feel like I am under a spotlight and I don’t feel safe.”

While providing street lights can help improve the sense of safety in public areas, only considering the quantity or brightness of the lights can lead to high contrast between bright and dark areas. The dark areas become no-go zones that decrease the feeling of safety. It is important to consider the quality of light and how it interacts with the surrounding environment, including the impact of light pollution on habitats and wildlife safety.

One way to improve the design of public lighting is to conduct a Lighting Vulnerability Assessment (LVA) alongside community engagement programmes. An LVA can help assess how people perceive public safety at nighttime and identify practical design solutions.

Actions for project managers and teams

1. Review and validate concept designs with the end users, especially women and marginalized groups, to ensure that they fulfil diverse energy needs
2. Ensure that participatory consultations are conducted in an inclusive and accessible manner

Reader’s tools
Detailed checklists and resources

Actions for design engineers

1. Incorporate the results of participatory and co-creation processes in the design
2. Integrate design approaches that promote inclusion (such as universal design) together with efforts to achieve sustainability and resilience
3. Optimize the design to maximize positive impacts, minimize negative impacts, and reduce future operational and maintenance costs
4. Maintain flexibility in the design to accommodate current and future needs
5. Consider the use of performance- or outcome-based specifications with inclusive provisions

Reader’s tools
Detailed checklists and resources

Supporting actions to strengthen the enabling environment
- Advocacy and representation by civil society organizations
- Enforce legal requirements for inclusive design by governments

Procurement

Inclusive procurement of works, goods and services for the detailed design and construction of an energy infrastructure project can ensure that the members of the local community, especially women and marginalized groups, can share in the economic benefits resulting from the infrastructure investment.

Opportunities to address inequalities faced by women and marginalized groups

Chantha, age 16, high school student

"Some older friends learned how to make lamps that run on salt water, and they made an agreement with an organization to receive a grant to build 1,000 lamps for a nearby floating village. They invited me and other friends to build 50 units each after school. I wanted to join but I have a lot of chores at home that take up all my time."

Women-owned businesses (WOBs) account for only 1 per cent of public procurement.[26] They often face similar challenges to small-scale businesses in participating in procurement processes, such as lack of capacity and time to bid for large tenders, overly complex tender procedures, and so on. There can also be a gender component in some contexts, for example, where women face difficulties obtaining financial grants from banks (also linked to systemic barriers to education, ownership rights, and so on), or where women and girls are expected to devote most of their time to care responsibilities.

Gender-responsive procurement measures include improving or establishing country-level policies that support WOBs, designing tenders and bid requirements to be proportionate and inclusive, as well as supporting WOBs to build their capacities and gain better access to information regarding procurement processes.

Actions for procurement officers

1. Ensure that underrepresented qualified suppliers can participate in the bidding process
2. Integrate inclusion requirements when formulating bid requirements, contract clauses and key performance indicators, such as requiring suppliers to have policies for equal pay for equal work, non-discrimination, protection from sexual exploitation, abuse and harassment, and prohibition of child labour and forced labour, among others
3. Enhance the transparency of the procurement process to maximize infrastructure investments for the benefit of the end users

Reader's tools
Detailed checklists and resources

Construction

During construction, it is critical that inclusive features are built according to specifications to ensure that they function as designed. There are also opportunities to engage local community members in the construction process. This not only provides economic benefits to the community, but also creates a sense of ownership of the infrastructure asset.

Opportunities to address inequalities faced by women and marginalized groups

Peter, age 67, indigenous elder

"Oil has always been expensive on the island. The local electric company wanted to build a wind farm near our village, saying it will help make energy cheaper. Many workers came from different places. Some of them were not respectful of our land, trampling over our crops. Others harassed our girls, offering them money to go with them. It is not the right way to do things, even if they have good intentions about the end result."

Indigenous peoples have long been stewards of the earth's natural resources. However, their lands and ways of life have been placed at risk by large capital investment projects such as the development of hydroelectric dams, leading to displacement, deforestation and denial of indigenous rights.

The do-no-harm principle must always be followed in the construction of energy projects, especially to ensure a just transition to clean energy. Human rights due diligence (HRDD), free, prior and informed consent (FPIC) and effective community participation are critical to mitigate any negative impacts not just from the energy infrastructure asset being built, but from the process of construction.

Actions for project managers and teams

1. Improve the capacity of project teams, contractors and labourers to implement inclusive construction practices, foster an inclusive workplace, and respect local cultural practices
2. Monitor, evaluate and learn from inclusion efforts
3. Implement the GESI Action Plan and safeguards against negative social and environmental impacts of construction
4. Engage stakeholders in transparent and participatory project implementation

Reader's tools
Detailed checklists and resources

Actions for contractors

1. Engage in inclusive work practices and workforce management, which promote diversity and inclusion in hiring practices
2. Engage in inclusive construction management, which ensures decent work conditions and enforces health, safety, security and environment (HSSE) standards
3. Maintain safe and inclusive construction sites

Reader's tools
Detailed checklists and resources

Supporting actions to strengthen the enabling environment
Enforce legal requirements for inclusive construction by governments

3.4 Maximizing existing systems performance

In this section, we explore how to manage energy assets and services in order to maximize their performance and ensure reliable, safe, affordable and accessible energy for all users over the operational lifetime of the infrastructure system. It is important to consider how the management of energy assets affects the functionality of accessible features and the long-term affordability of energy services.

This section discusses two stages, namely:

1. Operations and Maintenance (O&M)
2. Renovating, Retrofitting, Repurposing, Decommissioning

Within each stage, we explore:

- The importance of inclusive approaches in each stage and across the management of energy assets and services
- Examples of energy inequalities faced by women and marginalized groups, and opportunities to address these while managing energy assets and services
- Actions the reader can take to implement inclusive approaches in managing energy assets and services, as well as links to tools, resources and more detailed information to support these actions

What questions can we ask ourselves to maximize systems performance when managing energy assets and services?

- **Equitable:** Energy assets and services should continue to meet the diverse needs of consumers over the operational lifetime of the energy asset or network. Are there any social groups in the local community that face existing limitations or could face new ones in using or accessing the energy asset or service?
- **Accessible:** Users and staff should have easy, safe and dignified access to energy services over the operational lifetime of the assets. Are regular safety and accessibility audits being conducted by trusted parties, and are the results addressed? Do users have a safe and easy mechanism to register complaints or disruptions in service?
- **Affordable:** The energy service should continue to be affordable for women and marginalized groups over its operational lifetime. What measures can be taken to reduce the costs being passed to consumers?
- **Do-no-harm:** The management of the energy service should mitigate harm to users, the local community and the environment. What measures can be taken to minimize pollution and emissions, reduce accidents, and improve well-being near the energy asset? Does the service provider continually work to address losses?
- **Empowering:** Consumers, especially women and marginalized groups, should be empowered to make full use of energy services. Is the procedure for obtaining, maintaining and monitoring an energy connection or asset inclusive and well understood by target beneficiaries? Do users understand their electricity bills and how they can proactively regulate their consumption?

Reader's tools

- Illustrated concepts for managing inclusive energy assets and services
- Case study on building capacity for inclusive asset management

Operations & Maintenance (O&M)

Energy assets and services should be well maintained to continuously provide affordable, quality and safe energy to all users. It is crucial to establish asset management processes and long-term investment plans with clear roles and responsibilities to ensure that energy assets are being operated and maintained properly across their lifespans.

Opportunities to address energy inequalities faced by women and marginalized groups

Chantha, age 16, high school student

"An organization donated some solar panels to our village, and my family was one of the beneficiaries. I was excited because this meant I could use my electric wheelchair even if a typhoon caused power interruptions. However, the inverter broke after a year and my family doesn't know how to repair it, and my father is worried that the replacement is too expensive."

Regular maintenance is important to ensure that energy infrastructure assets can continue to be effective in their operational lifespan. This can be challenging for small-scale asset owners who may lack the technical or financial capacity to maintain or repair their assets over time.

Service and asset maintenance needs to be carefully considered during project design. A long-term asset management plan and capacity building are important parts of ensuring effective implementation, especially for decentralized systems. Moreover, projects using decentralized solutions should include a guarantee period and a short- to medium-term maintenance plan until local capacity is sufficiently developed.

Actions for energy utilities

1. Build GESI awareness to foster inclusive environments in the energy sector
2. Operate and maintain energy assets and services to provide safe, reliable and affordable energy for all users
3. Collect information about energy asset condition and performance to identify areas for routine and specialized maintenance activities to improve inclusive outcomes
4. Maintain user affordability through proper financial management and by prioritizing budgets for the maintenance of inclusive features
5. Establish inclusive monitoring and feedback mechanisms
6. Develop inclusive emergency response plans

Reader's tools

Detailed checklists and resources

Actions for small-scale asset owners and operators

1. Collect information about energy asset condition and performance to identify areas for routine and specialized maintenance activities
2. Establish and implement an appropriate asset management action plan for the asset's design, service life, components and materials

Reader's tools

Detailed checklists and resources

Supporting actions to strengthen the enabling environment

- Develop a long-term investment plan for the operations and maintenance of energy assets
- Ensure that a guarantee period and service contract are built into the project during project delivery planning

Renovating, Retrofitting, Repurposing, Decommissioning

Infrastructure assets have long lifespans, which can be extended by renovating, repurposing and retrofitting. Decommissioning is completed at the end of the energy asset's useful lifespan by dismantling the asset, reusing or recycling the materials and vacating the land. These processes must be done through an inclusive approach in order to ensure that inclusive energy services are still supported through other means and to minimize any harm to the local community and environment.

Opportunities to address inequalities faced by women and marginalized groups

Ram, age 7, school student

"My school changed all the lightbulbs in our classrooms. They said the old lightbulbs were dangerous and also expensive. The next day I saw a truck dump all the old bulbs in our neighbourhood for the scavengers to sort. But the glass was all broken."

While renovating, retrofitting, repurposing and decommissioning energy fixtures and equipment, it is important to consider how the waste will be managed and recycled. This is particularly important in informal waste economies, as some energy-related waste such as bulbs and batteries may contain harmful substances.

Actions for energy utilities and small-scale asset owners

1. Collect information about energy asset condition and performance to identify issues and opportunities for renovating, retrofitting, repurposing or decommissioning
2. Consider how to improve inclusion, sustainability and resilience aspects while retrofitting or renovating energy infrastructure
3. Proactively seek funding to retrofit existing assets

Reader's tools
Detailed checklists and resources

Actions for project managers and teams

1. Repurpose old energy infrastructure assets into more appropriate types of energy, social or civic infrastructure that better serves communities
2. Support inclusive decommissioning activities, including safe and inclusive waste management

Reader's tools
Detailed checklists and resources

4. Reader's tools

This chapter provides tools that aim to support the reader in gaining insight into actions, concepts and ideas towards implementing inclusive approaches in energy infrastructure development. These reader's tools include:

1. **Illustrated concepts:** illustrations that show examples of ideas for planning energy infrastructure systems, designing energy projects and managing energy assets to support equitable, accessible, affordable, do-no-harm and empowering energy outcomes for women and marginalized groups.
2. **Focus areas:** narratives written by the co-authors that present concepts supporting integrated solutions to sustainability, resilience and inclusion in energy infrastructure development.
3. **Case studies:** information about ongoing or completed energy projects that highlight how inclusive approaches can be implemented within infrastructure development.
4. **Action checklists and resources:** checklists that present more detailed information about the recommended actions in Chapter 3, as well as links to resources that provide specific guidance on how to implement these.
5. **Abbreviations:** list of abbreviations used in the publication.
6. **Glossary:** list of key terms used in the document and their definitions.
7. **References:** list of sources referenced in the publication.

The action checklists and resources are organized by stakeholder role for ease of navigation. It should be noted that a stakeholder may play multiple roles and can therefore use several of the checklists, depending on the information they are seeking. The stakeholders included in this publication are:

1. **Civil society organizations:** non-profit or non-governmental organizations that support, represent and advocate for women, marginalized groups and local communities affected by energy infrastructure. This can include community-based organizations, women's organizations, disability advocacy organizations, and academic or research institutions, among others.
2. **Governments and regulators:** government agencies or entities that are involved in the planning, delivery and/or management of energy infrastructure. This can include infrastructure ministries, energy regulators, and local and regional governments, among others. The checklist for governments focuses mainly on the role of government in policymaking, capacity building, investment, and infrastructure planning and development on a national, regional or city/village scale, as well as energy regulation. For other roles conducted by government entities, refer to the other checklists.
3. **Energy utility:** companies responsible for the production, transmission and distribution of energy.
4. **Planners and design engineers:** individuals, teams or firms responsible for planning and designing energy systems or projects.
5. **Project managers and teams:** individuals, teams, companies or organizations responsible for the project management of energy projects or programmes.
6. **Procurement officers:** individuals or organizations responsible for the procurement of works, supplies, goods and services related to energy projects. This includes procurement of the services of planners, designers, project managers, contractors and other consultants.
7. **Contractors:** individuals or organizations responsible for the construction and implementation of energy projects.
8. **Small-scale asset owners and operators (including prosumers):** individuals or organizations who have legal ownership of an energy asset and are responsible for its overall operation.

Illustrated concepts

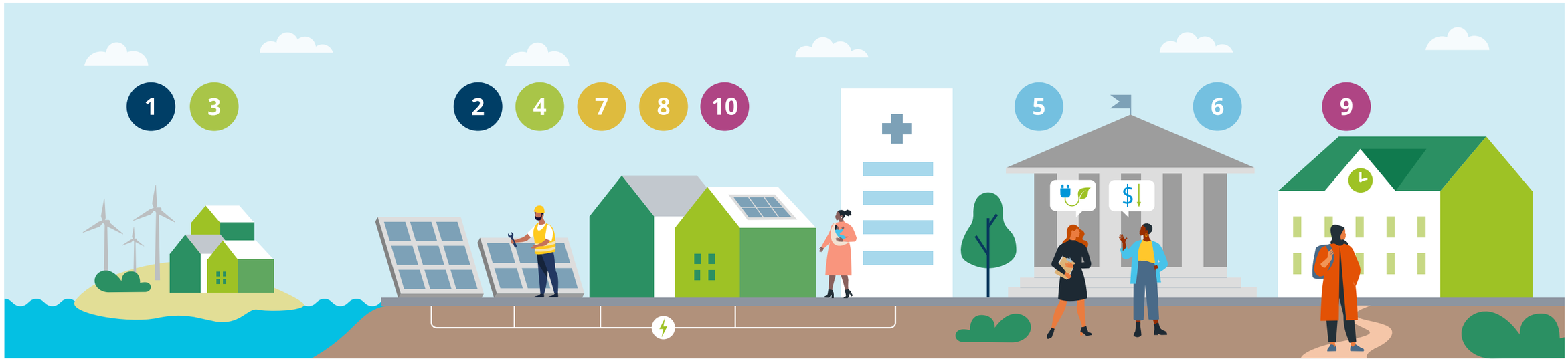


Figure 3: Illustrated concepts for planning inclusive energy infrastructure systems

Equitable	Accessible	Affordable	Do-no-harm	Empowering
1. Decentralized and off-grid energy systems can help improve equitable energy access in rural and remote areas.	3. Off-grid and micro-grid energy solutions can expand energy access in areas and homes that are not connected to the main grid, including in contexts such as small island developing states.	5. Improving energy efficiency policies across all infrastructure sectors can help reduce energy costs.	7. Increasing the share of sustainable and clean energy sources can help mitigate climate change impacts, which disproportionately affect women and marginalized groups.	9. Improving household access to energy can reduce the time women and children spend doing mundane tasks such as gathering fuel from remote sources, giving them more time to pursue other activities, such as work or education.
2. Energy efficiency and decentralized renewable energy can ensure the reliability of vital public services, such as healthcare facilities or schools, in underserved areas.	4. Cooperative energy models can make renewable, reliable and affordable energy more accessible to different community members.	6. Reducing legal barriers and high costs of establishing energy connections for households in informal settlements and displacement sites can help improve quality of life, support livelihoods and target poverty gaps.	8. Moving towards decentralized energy sources and energy efficiency can promote community resilience in the face of shocks and stresses, such as economic downturns or extreme weather events.	10. Creating green jobs in renewable energy and conducting capacity building can help ensure no one is left behind in the energy transition.

← Return to Prioritizing inclusive solutions

Figure 4. Illustrated concepts for delivering inclusive energy projects

Equitable	Accessible	Affordable	Do-no-harm	Empowering
1. Solar minigrids can help provide a reliable source of energy for communities in rural or conflict-affected areas.	3. Solar- or wind-powered and LED street lighting can improve safety and security in remote areas.	5. Procurement from local suppliers can help reduce capital and maintenance costs for beneficiaries.	7. Clean cooking technology such as solar cookers can help minimize illnesses and negative environmental impacts caused by the smoke from burning fuel.	9. Cooperative energy models can increase local resilience while supporting long-term socioeconomic development.
2. Involving local actors with strong social networks in public consultation processes for energy infrastructure projects can ensure all communities have an opportunity to voice their needs.	4. Digital tools, such as text messages or cellular banking, can help support communication and the delivery of energy services in remote or rural households.	6. Low-cost light tubes or salt water lamps can be affordable lighting options in displacement sites or coastal communities until adequate energy infrastructure is provided.	8. Improving energy efficiency in buildings can create healthy indoor living environments and significantly decrease the occurrences of respiratory and cardiovascular illnesses, as well as allergies.	10. Educational and public awareness programmes can empower people to adopt beneficial energy consumption practices.

← Return to Delivering inclusive solutions well

Figure 5. Illustrated concepts for managing inclusive energy assets and services

Equitable	Accessible	Affordable	Do-no-harm	Empowering
1. Ensuring grid flexibility through renewable energy sources and small-scale battery storage can help improve reliability, supporting local economies in vulnerable areas.	3. Smart assistive devices, such as sensor-activated light switches, can make it easier for persons with disabilities to live independently.	5. Switching to energy-efficient devices can reduce energy costs for consumers.	7. Ethical disposal of waste products from decommissioned energy assets minimizes negative health and environmental impacts.	9. Capacity building for users on maintaining decentralized energy solutions can foster self-sufficiency and enable more job opportunities
2. Targeted energy-related skills development programmes for women and marginalized communities can ensure equitable access to employment opportunities.	4. Solar energy kits can empower students in areas with unreliable energy access to enhance their study hours.	6. District heating produced through waste heat recovery from data centres or industrial production can provide more affordable energy costs while increasing energy efficiency and reducing carbon emissions.	8. Engaging in water conservation and reclamation to make energy infrastructure projects water positive can reduce water stress for local communities.	10. Smart meters can empower consumers to control and reduce their energy use.

← Return to Maximizing systems performance

FOCUS AREA: Leveraging the social benefits of energy efficiency

By IEA

Energy efficiency is the "first fuel" of the energy transition as it offers the most impactful solution for the world to meet its energy and climate goals. It provides multiple social benefits beyond reduced energy consumption and carbon emission reduction that makes it the backbone of accelerating inclusive energy infrastructure development that leaves no one behind.

Addressing the energy access gap

In 2022, 775 million people lacked access to electricity. Energy efficiency is vital to improving energy access globally, especially in the Global South, where there is increasing energy demand. In resource-limited regions or places without grid access, energy-efficient technologies such as super-efficient appliances or efficient cookstoves can maximize the energy services delivered to a larger portion of the population.

Efficient cookstoves have a positive role to play for the health of the 2.3 billion people who do not have access to clean cooking facilities. This is especially true for women and children, who are more severely affected because a higher share of their time is spent near cooking fumes compared with men.

Energy efficiency can also play a significant role in the delivery of vital public services in areas with limited or unreliable access to electricity. In healthcare facilities or schools, energy efficiency measures, such as replacing existing lamps with more efficient LEDs, could ensure reduced pressure on the existing grid, improving reliability and reducing costs.

Alleviating energy poverty

In addition to people who do not have access to electricity, 160 million households have been pushed into energy poverty since 2019. Energy efficiency can address both the availability and affordability of energy.

Energy-efficient homes and appliances, from refrigerators to heating systems, can significantly lower monthly energy bills. This can especially benefit low-income households and vulnerable groups, alleviating energy poverty and enabling higher disposable income.

Energy efficiency can enable lower energy prices by reducing the need to add expensive new power generation or transmission capacity and by reducing pressure on energy resources. Decreased demand for energy services across several markets can prompt a reduction in energy prices.

Promoting physical and mental well-being

Improving energy efficiency can promote both physical and mental well-being, especially for at-risk populations. By creating healthy indoor living environments with appropriate air temperature, humidity, noise, and air quality, energy efficiency measures can significantly decrease the occurrences of respiratory and cardiovascular illnesses, as well as allergies. Recent studies indicate that chronic thermal discomfort and fuel poverty contribute to poor mental health, including anxiety, stress and depression. Thus, energy-efficient initiatives that address fuel poverty can also bolster mental health.

Creating economic opportunities

Energy efficiency improvements can have positive macroeconomic impacts and boost economic activity. Retrofitting buildings, manufacturing new-generation appliances and conducting audits are all activities that can generate jobs, providing livelihoods in both urban and rural settings.

Transitioning to a more energy efficient world also entails a need for additional training and skills development to build the workforce of tomorrow. This creates opportunities for new educational and vocational training programmes, which can in turn broaden possibilities for personal growth and economic empowerment.

Enhancing resilient communities

Energy efficiency has a role to play in promoting community resilience in the face of challenges, such as economic downturns or natural disasters. For instance, households in well insulated homes are better prepared to withstand extreme heat or cold, especially during grid failures.

By placing efficiency at the heart of their energy systems, communities optimize energy use and reduce their dependence on unreliable or expensive energy sources. Efficiency measures also often go hand in hand with a move towards decentralized and diverse energy sources. This in turn reduces vulnerabilities associated with reliance on a single energy source, meaning less strain on grids and fewer disruptions, which is especially important in the face of increasingly severe weather phenomena.

← Return to Prioritizing inclusive solutions

FOCUS AREA:
Distributed or decentralized energy resources

By Arup

Distributed or decentralized energy resources (DERs) are small-scale energy installations that accelerate access and create opportunities for productive use of electricity. Usually situated near sites of electricity use and behind the consumer meter, DERs can take different forms, including micro-scale systems (0-10 W), home systems (10-100 W) and mini-grids (100 W-10 MW). Sources of sustainable energy and storage for these systems include solar photovoltaic, small-scale hydro, wind turbines, geothermal and battery storage.

These energy solutions are suited to different types of users and contexts, from consumers to commercial operators to aggregators. For example, micro-scale solar solutions, such as pico-solar systems, can power a handful of devices and meet modest energy needs, while solar home systems are standalone systems suited to a residence or micro-commercial unit. When such systems are combined or paired with storage solutions, they provide either low-tier access for customers not connected to the grid or redundancy for those with an unreliable and/or expensive grid connection.

Mini-grids, or distributed systems for a localized group of users, are particularly suited to communities that may be isolated from a central grid supply in unserved or underserved areas. Mini-grids are a more dynamic decentralized network and can be interconnected to operate almost autonomously while having the ability to interact with a broader (centralized) network. This interaction enhances the security of supply and helps users (or prosumers) generate, use or trade excess electricity, once system stability and safety concerns are met.

While mini-grids can be more expensive than a connection to the central grid, they can be deployed more rapidly than extending the central grid and can provide a more reliable service. In addition, mini-grids can provide substantial savings compared to the use of oil lamps or diesel generation. Further benefits of mini-grids include the ability to adapt, grow and change based on a community's needs, creating an optimal configuration to increase functionality and affordability.

Decentralized energy resources also have positive environmental, social and economic impacts. These include:

- Facilitating the switch to clean fuels, thereby reducing hydrocarbon consumption, creating revenue and avoiding/reducing black carbon/ greenhouse gas emissions.
- Increasing the household income of those with a grid connection by creating opportunities to sell excess electricity produced to the grid.
- Building local supply chains for new technologies and generating new employment opportunities for prosumers and aggregators.
- Increasing agricultural yields resulting from increased efficiencies (i.e. use of solar water pumps for irrigating crops).
- Increasing safety and reducing hydrocarbon system accidents due to the displacement of fossil fuels.
- Reducing deaths and morbidity from indoor air pollution caused by fossil burning stoves.

There are challenges to scaling the roll-out of decentralized energy solutions in the Global South. Countries need to have appropriate enabling environments that incentivize technologies and facilitate distributed energy resource deployment, especially the upfront costs and maintenance requirements. Traditional funding models in many countries prioritize large-scale utilities, which often fail to provide a quality universal service.

To achieve profitability for the prosumer and/or aggregator in low-income populations, which are highly sensitive to adverse situations, the reimagination of distributed energy business models in some countries may be required. Examples of such models include 'solar as a service' and 'lease to own'.[27]

Overall, DERs provide alternative solutions to enable energy access for vulnerable communities in remote and rural areas, and also unlock new opportunities to improve health, livelihoods and environmental quality.

Project case study

To help improve the efficiency and scalability of these solutions, Arup worked in Nigeria and Kenya in 2017 for Powerhive, a mini-grid technology and project developer, to design projects that will bring secure and sustainable mini-grids to remote villages that might otherwise not have access to electricity. In the context of rural electrification, the mini-grids consisted of two main parts: a centralized energy plant and the distribution network. The energy plant is where the energy is generated, stored and managed, and the distribution network distributes the energy to customers (via the customer's meter). Arup developed methodologies to assess the energy requirements of communities in remote areas with the aim of improving the optimization of the mini-grids and making the technology more accessible.

In Nigeria, it was estimated that more than 300 households, 30 small-to-medium enterprises (SMEs) and various schools and health clinics would use power from the microgrid developed for a rural community outside Lagos. Arup modelled the energy demands that could be made of the microgrid, accounting for the diversity of operation of various electrical loads, weekly and seasonal variations, and projected energy growth rates. An optimization study was then carried out to determine the energy strategy optimized for life cycle costs. The resulting information enabled Powerhive to prioritize the financial variables to determine the optimized design for the microgrid. It is an approach that can now be applied to develop similar solutions for other villages. When it came to considering the distribution network for the village, Arup optimized it so that medium voltage (MV) was not needed, thereby avoiding the need for expensive transformers at the energy plant and points throughout the network. This kept capital costs to a minimum.

To help make the energy generated from the mini-grid accessible, customers use their cell phones to buy electricity credits in advance using Powerhive's credit system, as part of a pay-as-you-go model. Smart meters allow the operator to prioritize loads and use various pricing schemes, including real-time pricing. As energy theft was also a challenge, the Powerhive system was protected with several power theft detection algorithms.

Read more

- Policies and regulations for renewable energy mini-grids, International Renewable Energy Agency (IRENA), 2018.
- Off-grid Renewable Energy Solutions, IRENA, 2018.
- Accelerating renewable mini-grid deployment: A study on the Philippines, IRENA, 2017.
- Renewable Energy in Hybrid Mini-Grids and Isolated Grids: Economic Benefits and Business Cases, IRENA, 2015.
- Distributed energy resources for net zero: An asset or a hassle to the electricity grid?, International Energy Agency, 2021.

← Return to Prioritizing inclusive solutions

FOCUS AREA:

Applying a GESI-transformative lens to the just transition of energy infrastructure

By UNOPS

In light of the climate crisis, it is critical that we accelerate the transition to a low-carbon society, and energy infrastructure is a key component in this. In the process of doing so, we need to ensure that the energy transition is just and leaves no one behind. In addition to preventing more harm to people and the planet, we should recognize that the energy transition is a major opportunity to promote gender equality and social inclusion.

We can take advantage of the energy transition to also transform harmful norms and practices that disproportionately impact women and marginalized groups. These include:

- Gendered norms, which place the burden of household care responsibilities on women and girls (including fuel collection and cooking, which results in many women and girls spending several hours a day walking to find fuel, placing them at risk of sexual violence and reducing their available time to pursue their interests or opportunities)
- Financial, legal and skills-related barriers to access, own, operate and maintain low-carbon energy sources and related technologies (cookstoves, lighting, vehicles, heating and cooling) that can lead to low-income households, informal workers and small businesses being unable to keep up with required energy transition policies (such as informal transport operators being unable to afford the costs of required shifts to electric vehicles)
- Unsustainable supply chains, which not only require large amounts of energy (such as the fast fashion industry) but may also include unethical work practices, improper waste management and excessive material extraction (disproportionately impacting people living in poverty)
- Lack of social dialogue, knowledge sharing and participatory consultation with communities and marginalized groups affected by the energy transition, especially indigenous groups, women and workers
- Infrastructure inequalities that affect not only people's direct and indirect energy choices, but also their access to opportunities and quality of life (such as the lack of safe, reliable and affordable public transport, and walking and cycling infrastructure leading to a preference for fossil fuel-powered personal vehicles)

Applying a GESI-transformative lens to the energy transition involves recognizing that for any intervention being implemented, there are risks of taking GESI-blind actions that perpetuate or even deepen the existing inequalities faced by women and marginalized groups. At a minimum, we should be **sensitive** to these inequalities and avoid any project activities that can perpetuate them. If possible, we should be **responsive** and take steps to address the diverse needs of women and marginalized groups so that the project helps improve the equality of outcomes. Ideally, the project will contribute to bottom-up, **transformative** actions to eliminate harmful norms, stereotypes and practices that are the root causes of inequalities, and recognize the role of women and marginalized groups as agents of change, stewards of the environment and household energy decision makers. Examples of each approach can be found on the next page.

Based on the Gender Integration Continuum developed by the United States Agency for International Development's Interagency Gender Working Group, a GESI Integration Continuum framework shows that projects may unintentionally exploit women and marginalized groups if systemic barriers are not properly considered and addressed. This concept has been adapted into gender mainstreaming standards across the United Nations, including the Gender Results Effectiveness Scale of the United Nations Development Programme (UNDP), and the Guidance on Gender Integration in Evaluation of the United Nations Children's Fund (UNICEF). Developing inclusive energy infrastructure that leaves no one behind requires an active attempt to examine, question and change the systemic barriers and harmful norms and practices surrounding energy infrastructure.

Figure 6. A journey towards gender equality and social inclusion

GESI-blind approaches:
Ignore and perpetuate inequalities

Example: Only the community leaders were consulted for a solar mini-grid project. As a result, only the established families living on the main street benefitted from the new energy source, thus perpetuating energy inequality in the community.

GESI-sensitive approaches
Recognise but do not fully address inequalities

Example: Community members were consulted for the solar mini-grid project. As the lower-income families couldn't afford to maintain the connection to their homes, the community instead decided to power street lights along a common fuel and water collection route. While this acknowledged women's needs for safety, it didn't address energy inequality.

GESI-responsive approaches
Take steps to address diverse needs towards equal outcomes

Example: In addition to the GESI-sensitive approaches, the project team secured financial support to subsidize mini-grid connections for the lower-income families. Now all families are able to have the same amount of energy every day. This partially reduced the work of women and children in collecting fuel and water, but didn't address the needs of some families with greater needs.

GOAL: Gender equality and social inclusion

GESI-transformative approaches
Address root causes of inequalities and transform harmful practices

Example: In addition to the GESI-responsive approaches, additional support was provided to women-owned businesses to sell solar cookers and maintain mini-grids. This helped families afford full power and clean cooking access, including families with persons with disabilities or health issues who need more energy for assistive or health devices. This transformed the social norms requiring women and children to walk long distances to gather water and fuel, by recognizing their role as agents of change.

← Return to Delivering inclusive solutions well

Social Inclusion Energy Fund (Fondo de Inclusión Social Energético)

Case study on inclusive energy policy and programmes

Location
Peru

Duration
2012-Present

Partners
Government of Peru

Life cycle stage
Planning, Delivery

Target groups
Low-income households, energy-poor households, rural households

Background & objectives

The Social Inclusion Energy Fund (FISE) was created by the Peruvian government in 2012 with a goal to enhance clean energy access and energy affordability for low-income households, particularly those living in rural areas, by upscaling the deployment of renewable energies, liquid petroleum gas (LPG) and natural gas.

Through a number of programmes implemented by the fund, FISE targets vulnerable groups to reduce energy poverty while generating economic opportunities, stimulating productive growth and improving the quality of life, health and education of the Peruvian population as a whole.

Since its creation in 2012, FISE has evolved to align with national strategies including the *Politica Energetica del Peru 2010-2040* and is considered as part of the implementation toolkit of the government plan for *Universal Energy Access 2013-2022.*

The Fund's programmes are the result of public-private partnerships, and over half of its funding is provided by private sector actors who produce and import liquid hydrocarbons.

Project outputs

- **Programmes:** FISE's initial programme aimed to provide cleaner energy, in the form of discounted vouchers for LPG in domestic gas tanks, to vulnerable segments of the Peruvian population *(Vale de Descuento GLP)*. The programmes sponsored by the Fund have since multiplied and diversified to support the deployment of off-grid solar energy in rural communities *(Programa Masivo Fotovoltaico)*, enable fuel switching to natural gas for light-duty vehicles *(BonoGas Vehicular)*, lower cost barriers to natural gas installation and/or network connection *(BonoGas Residencial)*, subsidize electricity tariffs for rural households *(Mecanismo de Compensacion de la Tarifa Eléctrica Residencial)*, and financially support households subscribing to natural gas suppliers for their energy contract *(Reconocimiento del Mecanismo de Promoción)*.
- **Publications:**
  - Biannual reports are published by the government to evaluate the progress and milestones of the programmes sponsored by the Fund.
  - Semestrial updates on activities from the programmes are also provided regularly on the official website of the Fund.
  - External evaluations have also been published.

Inclusive actions

- **Health:** According to 2018 estimates, around 80 per cent of Peru's rural populations rely on solid fuels to power their homes, which is responsible for a number of negative health issues. FISE's *Vale de Descuento* programme is an effort to expand the access of rural and low-income populations to clean cooking fuels to curb those negative health impacts. To ensure the inclusion of targeted beneficiaries, the programme is made accessible to households who consumed less than or equal to 42 Kilowatt-hours in the last year and had a household annual income below SOL 19,900 (approximately $5,300 per year).
- **Affordability:** To ensure that cleaner energy alternatives are affordable and therefore accessible for vulnerable groups, the majority of FISE's programmes mobilize resources to provide financial incentives and support schemes for consumers. For instance, the *Reconocimiento del Mecanismo de Promoción* programme provided a

grant equivalent to $322 to users who subscribed to a contract with a natural gas supplier between June 2014 and June 2016 to encourage everyone to transition towards clean energy. Some programmes specifically target the most vulnerable groups, such as the *Mecanismo de Compensacion de la Tarifa Eléctrica Residencial* programme, which operates as a subsidy enabling rural households to pay a unique electricity tariff.

- **Access:** FISE's programme of large-scale photovoltaic deployment has specifically targeted the enhancement of energy access for communities and public service infrastructure that are not connected to the grid. By deploying photovoltaic panels to power households, schools and health centres, the programme is estimated to have supported 107,000 rural residents.
- **Inclusive outreach:** To ensure that the Fund's programme would reach targeted beneficiaries, strategic communication channels and tactics were engaged. To communicate with them, text messages and 'fast communication' channels, digital vouchers and cellular banking were used, which helped reach out to individual users and reduce delays and administrative costs associated with transactions.
- **Local participation:** Programme subscribers of FISE's LPG subsidy were directly approached by local agents of the programme, who successfully engaged with subscribers to support the needs of their communities, built trusting relationships and used their social networks to share information.
- **COVID-19 Impacts:** Taking into account the impact of COVID-19 restrictions on increased home energy consumption, a doubling of the LPG subsidy was made available for households who subscribed to a contract with a natural gas supplier – which represented an investment of approximately SOL 519.27 million (approximately $139 million).

Positive outcomes and impacts

By 2019, it was estimated that:

- Electricity subsidies targeted at vulnerable households had already benefited 2.9 million households.
- 177,609 solar panels were installed in homes and health and education buildings in vulnerable communities since the start of the programme.

By 2020-2021, the following milestones targeted at vulnerable and low-income households were achieved:

- The programme *Vale de Descuento GPL* benefitted 800 million households monthly.
- The *BonoGas Residencial* programme, which targets small to mid-sized sector dwellings to enhance their access to natural gas, registered 86,234 installations in 2020-2021.
- The *BonoGas Vehicular* programme, which aims to convert light-duty vehicles to natural gas, achieved the conversion of 3,033 vehicles.
- The *Programa Masivo Fotovoltaico* programme put 21,554 solar panels into commercial operation, benefitting 21,494 households and 60 schools in rural areas.

The *Mecanismo de Compensacion de la Tarifa Electrica Residencial* programme spent SOL 180 million (approximately $48 million) to support 2.5 million to 3 million households on a national level.

Read more

- Social Inclusion Energy Fund
- Reports and updates on the Fund programmes

← Return to Strengthening the enabling environment

Revolusolar energy community

Case study on community-based energy models

Location
Brazil

Partners
Revolusolar, Circo Crescer & Viver

Life cycle stage
Planning, Delivery

Duration
2016-Present

Target groups
Low-income households, energy-poor households, indigenous communities

Background & objectives

Revolusolar is a pioneering inclusive energy infrastructure effort in Brazil, combining sustainable energy solutions with social empowerment. This Brazilian non-profit organization, founded in 2015, has fostered local energy communities and cooperative energy models in favelas, through the installation of solar panels and by training residents as electricians or entrepreneurs.

Its mission is to empower low-income communities via sustainable energy solutions, addressing the traditional exclusion these communities experience when it comes to essential services. The project not only addresses the immediate energy needs of low-income communities but also fosters long-term socioeconomic development through education, professional training and policy advocacy.

The initiative was made possible by new regulatory frameworks in Brazil, allowing for decentralized energy models in 2012 and cooperative models in 2015, which have facilitated the development of small-scale solar generation and associated energy communities.

Project outputs

- Revolusolar initially established the first solar energy communities in Brazilian favelas, which has demonstrated the positive social impacts of distributed energy resources.
- The initial model has been expanded to indigenous communities in the Amazon to enhance the energy autonomy of these communities.
- Members of the targeted communities have been trained in the building, operation and maintenance of solar facilities.
- The installation of these decentralized solar photovoltaic systems has helped reduce energy bills and responded to local energy demand.
- The programme has collaborated with social organizations like Circo Crescer & Viver, a local circus, for broader social and educational impacts.

Inclusive actions

- **Professional Training Programme:** The initiative has equipped favela residents with new valuable skills for the electricity and solar industries, addressing self-employment and underemployment.
- **Gender inclusivity:** 80 per cent of the local favela residents trained in solar energy have been women so far.
- **Education and Culture Programme:** The initiative has raised environmental awareness among children and teenagers, empowering them to engage in the clean energy transition.
- **Community engagement and participatory methods** have been at the heart of the project, involving beneficiaries in project design and relying on community institutions to ensure the long-term success of the project.
- **Community leadership** for energy system management and maintenance has been fostered by the initiative, strengthening the community's autonomy.

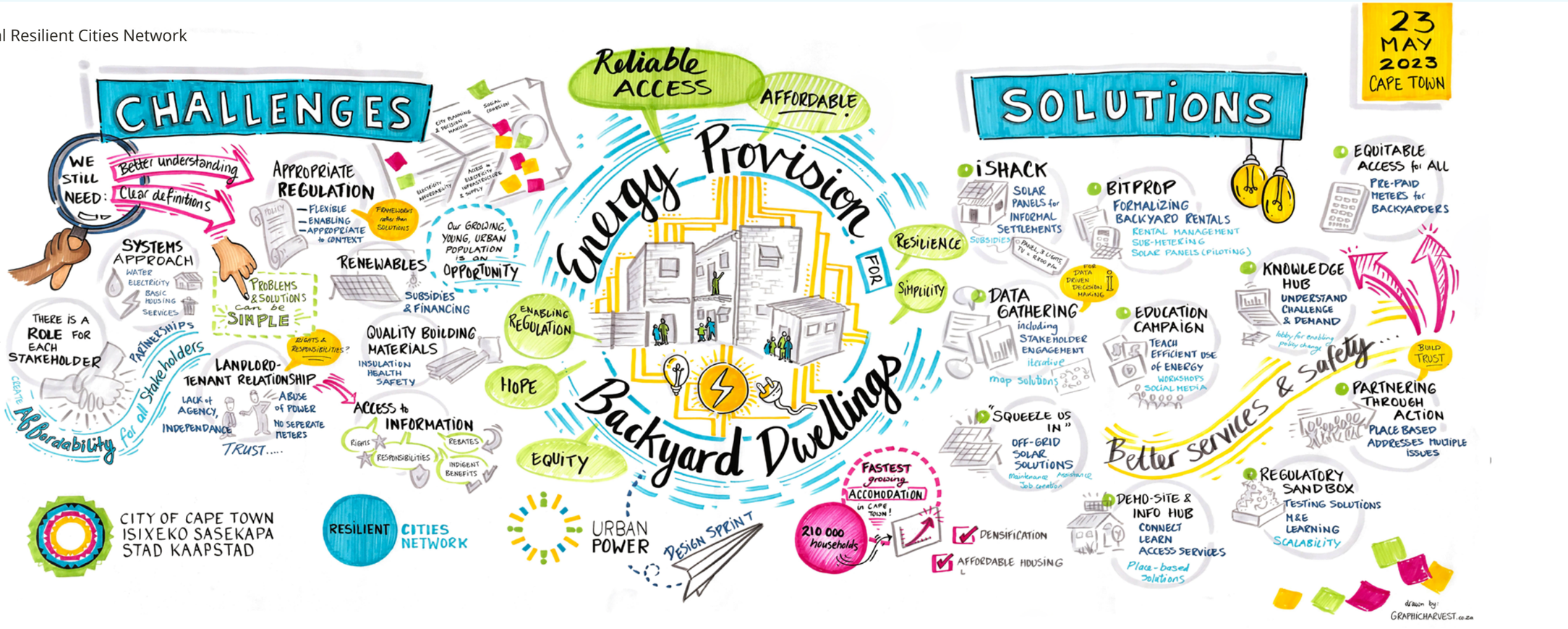
Positive outcomes and impacts

- **Economic and social empowerment:** the project has helped reduce energy poverty and promoted economic stability for a number of marginalized communities in Brazil's favelas.
- **Affordability:** the project has led to significant annual savings for families due to reduced energy bills.
- **Job creation:** Revolusolar has led to professional training and employment opportunities for local residents in solar installation and maintenance.
- **Policy advocacy:** based on lessons learned so far, Revolusolar is advocating for the national scalability of the project to maximize its positive social impacts, advocating for better national data to identify vulnerable regions where the project could best be replicated, and assisting government authorities in the design of public policies to integrate distributed solar energy into housing systems.

← Return to Prioritizing inclusive solutions

Urban Power Design Sprints: Improving electricity access for vulnerable 'backyarder' communities

Case study on participatory energy planning and design processes



Location
Cape Town, South Africa

Duration
2021-2024

Partners
Resilient Cities Network (R-Cities), the Sustainable Energy Markets Department from The City of Cape Town's Energy Directorate, Arup, Green Cape, Sustainable Energy Africa, The Global Energy Alliance for People and Planet (GEAPP)

Life cycle stage
Planning

Target groups
Persons living in backyard dwellings

Background & objectives

The R-Cities Urban Power programme helps cities to identify gaps in their energy systems, develop energy resilience solutions and mobilize funding for implementation. The specific goals of the programme are:

- Develop assessment and project development tools to support Cape Town, and other cities in Africa and Latin America and the Caribbean, in identifying the vulnerabilities in their energy systems;
- Identify and design renewable energy solutions appropriate to the local context;
- Support cities in overcoming barriers to the implementation of low-carbon energy solutions, including financial constraints, lack of technical capacity or insufficient resources;
- Bring together key actors in the energy sector, including vulnerable communities (e.g., backyarders), decision makers, industry actors, financial institutions and private sector investors;
- Work to increase energy-related investment and help cities translate these investments into long-term socioeconomic gains; and
- Develop materials to guide cities to incorporate an equity perspective in their energy transition projects.

In Cape Town, the programme aims to support the city government to design and plan projects that deliver affordable and clean energy solutions to accelerate energy access for low-income and energy-poor backyarders living on non-municipal owned or private land. A backyarder is a person or a household occupying a backyard residential unit under some type of rental agreement with the main homeowner. Backyarders who live in informal dwellings on private parcels of land struggle with accessing a safe and legal connection to the city's electricity grid, which significantly impacts their livelihoods and well-being.

To tackle this energy access challenge of backyarders, Urban Power brought together representatives from impacted communities, city officials, private institutions and energy experts to innovate around strategies for securing affordable and clean energy solutions for backyarders. The chosen approach was a 'design sprint', a collaborative design thinking workshop that was undertaken to enable the City of Cape Town to co-create solutions with industry experts and representatives from impacted communities.

As part the overall programme, R-Cities collaborated with the city to:

- Gather and analyze data on the existing state of Cape Town's energy system to identify gaps and opportunities for enhancing the resilience of vulnerable communities, including backyarders; and
- Bring identified/proposed solutions from the design sprint to a pre-feasibility stage to accelerate their implementation.

Project outputs

A series of reports including:

- A profile and gap analysis of the resilience of Cape Town's energy system
- A root cause analysis of the energy access challenges faced by backyarders
- A summary of the design sprint discussion and findings
- A pre-feasibility study of an identified solution

Inclusive actions

- **Fostering an inclusive space to facilitate co-creation:** South Africa has a rich tapestry of cultures, languages and races. Recognizing this diversity and history was essential when designing and conducting the design sprint. The design sprint aimed to create an inclusive space where all voices are heard, and backyarders felt empowered and supported to share their knowledge and experience. This approach facilitated the co-creation of solutions.
- **Learning from lived experiences:** Session creators gave space in the agenda for both formal and informal information and experience sharing from backyarders and backyarder representative organizations. During the introductory session, time was given to backyarders and backyarder representatives to give presentations that set the scene on backyarders and energy access.
- **Removing barriers to participation:** A cash reimbursement (equivalent to taxi travel costs) was issued to backyarder participants who travelled to the workshop. The reimbursement was offered to anyone who self-identified as needing it. Lunch was provided to all participants and leftover food was offered at the end of the day.

Positive outcomes and impacts

During the solution creation activity, backyarder organizations presented pilot projects and existing solutions for energy access. While the session was designed as a formal presentation, when delivered, many backyarders in the room who had participated in the pilots felt empowered to share their experiences. This demonstrates how, by actively designing opportunities to hear from traditionally marginalized groups, it is possible to achieve a shift in power dynamics and hear reflections from participants who usually do not have a voice in these settings.

Read more

- Cape Town Urban Power Profile: Power System, Energy Poverty Alleviation and Urban Resilience, Resilient Cities Network, 2023.
- R-Cities Urban Power programme

← Return to Prioritizing inclusive solutions

Solar Schools Project

Case study on inclusive energy project delivery in conflict-affected areas

Location
Khyber Pakhtunkhwa province, Pakistan

Duration
2018-2022

Partners
UNOPS, United Kingdom Foreign, Commonwealth and Development Office, Saudi Fund for Development, Khyber Pakhtunkhwa Elementary and Secondary Education Department

Life cycle stage
Planning, Delivery

Target groups
Children in remote areas, girls, conflicted-affected communities

Background & objectives

Children in the Khyber Pakhtunkhwa province in Pakistan faced many challenges in accessing quality education, including a history of attacks on schools and insecurity in the region. A third of schools lacked basic facilities, including access to electricity, WASH facilities, boundary walls and school buildings. During the summer months, the lack of adequate ventilation, such as electric fans, led to children being at risk of nosebleeds, fainting and even strokes. The costs associated with these health risks often led to parents withdrawing their children from schools, especially girls.

The lack of electricity in the province's primary school infrastructure was identified in 2016 by UNOPS as a major hindrance to the quality education of children, and UNOPS started working with the Khyber Pakhtunkhwa Elementary and Secondary Education Department to identify seven districts of the province as being the most underserved.

With funding from the Saudi Fund for Development and the United Kingdom Department for International Development, the project aimed to improve access to education in Khyber Pakhtunkhwa by providing electricity to schools through solar energy systems to power fans, lights and sockets in order to provide a comfortable, safe and healthy learning environment for children.

Project outputs

- Procurement, delivery and installation of solar energy systems at 1,240 primary and middle schools in seven of the province's most underserved districts – Bannu, Dera Ismail Khan, Hangu, Karak, Kohat, Lakki Marwat, and Tank
- Parent Teacher Council members and school staff educated on operations and maintenance of the solar energy systems

Inclusive actions

- **Assessment of the most underserved schools:** 2,738 schools were assessed, identifying the schools that were off-grid and those that were connected to the grid but faced severe power outages.
- **Ensuring women's participation:** In light of cultural sensitivities and the security environment, the project ensured that women participated in the project at decision-making level and were represented at all levels of project staffing, i.e. support, technical and managerial level.
- **Maintaining health, safety, social and environmental (HSSE) safeguards:** The project team created and executed plans to manage HSSE risks, including ensuring that site supervisors were familiar with and made efforts to respect cultural and religious norms while executing the project, protecting children and the local workforce from abuse, exploitation and harassment, minimizing cutting of any trees on site, and managing waste properly.
- **Capacity building towards community operations & maintenance for long-term sustainability:** Over 4,000 members of parent-teacher councils were trained on how to operate and maintain the solar energy systems.

Positive outcomes and impacts

- The project benefits around 135,000 schoolchildren and 3,800 teachers across Pakistan's Khyber Pakhtunkhwa province, including those in the most remote areas.
- In 2021, attendance at the selected schools improved, with enrolment rates up by an average of five per cent.

Read more

About the project

← Return to Delivering inclusive solutions well

Supporting the rehabilitation of the Santiago Antúnez de Mayolo and Restitución hydroelectric plants

Case study on building capacity for inclusive asset management

Location
Peru

Partners
Empresa de Electricidad del Peru (Electroperú), UNOPS

Life cycle stage
Planning

Duration
2020-2023

Target groups
Women and girls, workers

Background & objectives

The Mantaro Hydroelectric complex is Peru's largest generating asset, supplying over 18 per cent of the demand for the National Interconnected System and 15 per cent of the country's power.[28] It comprises two hydroelectric plants (Restitución and Santiago Antúnez de Mayolo) and the Tablachaca Dam, and it is operated by state-owned generator Electroperú.

The project aims to rehabilitate equipment in the plants in order to extend the useful life of the Mantaro complex by another 40 years.[29] UNOPS provided assistance to Electroperú in the procurement process and capacity building

Project outputs

- Procurement of goods, works and services related to priority interventions to rehabilitate the hydroelectric plants
- Series of capacity building workshops

Inclusive actions

- **Capacity building workshops on inclusive approaches** were conducted with Electroperú to establish gender, diversity and inclusion (GDI) instructors or focal points within the organization, covering topics such as the application of GDI within infrastructure projects, social risk management with an inclusive approach, and how to design and apply inclusive criteria so that no one is left behind. A talk on protection from sexual abuse and harassment (PSEAH) with the successful bidder is planned to be conducted once the tender has been awarded.
- **Inclusive bid requirements** were included in the tender, requiring the successful bidder to:
  - Have a complaint and suggestion box
  - Attend a talk on PSEAH
  - Hire a GDI specialist
  - Hire local labour
  - Establish minimum employment quotas for women
  - Establish an action protocol for cases of sexual harassment and penalties
- **A mapping of actors** that work with marginalized populations in the intervention area was carried out, and it was recommended to establish strategic alliances with these actors to strengthen the inclusion aspects of the project.
- **A proposal to create a GDI policy** was endorsed to Electroperú to ensure the sustainability of the capacities built through the workshops.

Positive outcomes and impacts

- As a result of the capacity building workshops, Electroperú's officials became aware of the importance of mainstreaming inclusive approaches within infrastructure projects. They decided to develop and implement a GDI policy to sustain the mainstreaming of inclusion within the organization.
- As a result of the inclusive bid requirements, the successful bidder will be required to implement inclusive approaches throughout the project life cycle.

← Return to Maximizing existing systems performance

ACTION CHECKLIST: Civil society organizations

Developing the enabling environment for inclusive energy

1. Amplify the voices of the most marginalized groups in research, policymaking and energy infrastructure development processes

- ☐ Gather evidence of the energy exclusion faced by marginalized groups through surveys, opinion polls, focus group discussions, key informant interviews and community consultation, among other methods.
- ☐ Analyze the process for initial connection to identify systemic barriers that make the connection process particularly cumbersome for women and marginalized groups.
- ☐ Conduct an analysis to identify the appropriate entry points for message dissemination within the energy policy development process.
- ☐ Conduct a stakeholder analysis or audience mapping, and adjust messaging in order to ensure that the message is relevant for the intended audience.
- ☐ Create partnerships with national and local governments, other civil society organizations, academia, the private sector and the media in order to amplify the message.
- ☐ Disseminate the key messages for the target audiences at more effective times with relevant partners to amplify the message.

2. Advocate for inclusion across the life cycle of energy infrastructure development

- ☐ Identify and understand the underlying issues faced by women and marginalized groups due to energy exclusion. Conduct a context or problem analysis, such as through a problem analysis tree or by using systems dynamics.
- ☐ Build a strong case by: collecting credible evidence about the issue, illustrating a clear plan of action for change, clearly articulating the positive and negative impacts of existing energy systems and any changes being proposed, and connecting the issue with domestic and international frameworks on human rights and social inclusion.
- ☐ Advocate for the diverse needs of women and marginalized groups, particularly those who may face challenges in doing so themselves, during consultations and participatory processes within energy infrastructure development.
- ☐ Understand the need and advocate for productive use interventions to support income generation.

3. Advocate for inclusive energy service delivery and ensure customers are informed of their rights and entitlements

- ☐ Disseminate culturally appropriate information about service quality, the rights of consumers, as well as how to obtain new services and raise complaints, among other issues.
- ☐ Disseminate culturally appropriate information to empower consumers to understand and control their consumption (and therefore their energy bills).
- ☐ Advocate for flexible payment modalities for both initial connection fees and consumption tariffs.

Read more

- Tips on how to advocate for inclusive policy: A Guide to Being an Effective Advocate for Gender Equality, International Institute for Democracy and Electoral Assistance, 2022.
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- Conducting GESI analysis for CSOs: The gender and social inclusion toolkit, Civicus.
- Examples of how communities can actively participate in energy decision making: Community Energy Toolkit: Best practices for broadening the ownership of renewables, International Renewable Energy Agency (IRENA) Coalition for Action, 2021.

← Return to Strengthening the enabling environment

ACTION CHECKLIST: Governments and regulators

Developing the enabling environment – policies and frameworks

1. Establish policies, regulations and legal frameworks to support an integrated, cross-sectoral and participatory approach to addressing systemic barriers and energy-related exclusion

- ☐ Ensure that there are adequate governance frameworks to support effective horizontal and vertical inter-sectoral and intra-sectoral coordination and information sharing between public, private and third-sector stakeholders, including NGOs and CSOs that work with and support specific marginalized groups for an inclusive approach to addressing energy-related exclusion.
- ☐ Examine power imbalances between different stakeholders to identify gaps in representation and introduce measures to ensure that women and people experiencing marginalization are able to meaningfully participate in decision-making processes, recognizing their roles as agents of change.
- ☐ Align energy policies and other sectoral policies with national policies on poverty reduction and inclusive socioeconomic development. These policies should provide frameworks to prioritize coordinated investments addressing the needs of women and marginalized groups.
- ☐ Develop cross-cutting laws and regulations to ensure that energy infrastructure development does no harm. This can include laws protecting the environment and indigenous heritage, as well as laws on just land acquisition and compensation that protect informal settlers from displacement without relocation.
- ☐ Develop regulations and legal frameworks for working with small-scale providers, and establish decentralized energy systems.
- ☐ Identify and reduce or eliminate systemic barriers in the connection process, such as high fees or administrative requirements, that can be cumbersome for marginalized groups.
- ☐ Consider well-targeted subsidy policies to ensure benefits are used by those most in need, such as subsidies for interior wiring or initial connection costs.

2. Assess, develop and reform policy, regulatory and legal frameworks towards enabling inclusive energy access

- ☐ Define overarching energy policy objectives with an intersectional lens and with the active participation of women and marginalized groups.
- ☐ Conduct an analysis to identify gaps in the policy, regulatory and legal frameworks with respect to the newly defined energy policy objectives.
- ☐ Develop and reform policy, regulatory and legislative frameworks to ensure that energy policies, planning processes, design standards, and regulatory and legal frameworks align with the new energy policy objectives to respect human rights and support the global sustainability, resilience and inclusion agenda. A commitment to addressing GESI challenges should be explicit, and policies should address both electrification and promotion of clean cooking fuels and technologies. This can include frameworks that enshrine universal access standards, GESI-responsive concepts (e.g., reducing women's time poverty caused by fuel collection) and climate action commitments in energy infrastructure development and operations.
- ☐ Require the identification of critical infrastructure based on the livelihoods and well-being of users as well as economic value.
- ☐ Mandate minimum requirements for climate adaptation and the hazard resilience of critical energy infrastructure.
- ☐ Establish a budget line for the development and reform of policy, regulatory and legislative frameworks and for the well-resourced implementation of any accompanied actions.
- ☐ Establish a monitoring and reporting process to communicate about progress with key stakeholders.
- ☐ Establish and enforce a clear and stable regulatory framework with appropriate tariffs that incentivize new connections, quality service delivery, and resiliency.

- [ ] Establish and enforce open interconnection policies that allow fair and non-discriminatory access to the grid for all market participants, such as generators, consumers or third-party providers.
- [ ] Establish and enforce regulations that permit and encourage off-grid and other decentralized solutions for rural electrification.
- [ ] Establish a process for the regular review of policy, regulatory and legislative frameworks (e.g., every 10 years) to ensure they are kept up to date based on new approaches and thinking.
- [ ] Provide policy support for the development of both centralized and decentralized energy systems.
- [ ] Develop mechanisms for enabling the provision of inclusive energy in areas of conflict and unrest.
- [ ] Innovate and develop context-specific approaches to the regularization and recognition of informal settlements, or land tenure schemes that will enable inclusive energy services.
- [ ] Develop, implement and enforce pro-poor tariff structures, such as lifeline tariffs, and flexible payment options, such as pay-as-you-go 'smart' meters.

3. Assess the readiness of the country to develop and deploy inclusive and renewable energy, and identify actions to address gaps

- [ ] Assess the current status of the country's energy infrastructure, including existing energy resources, markets, infrastructure as well as energy policies, strategies and institutional arrangements.
- [ ] Assess the renewable energy resource potential and technology options available, taking into account any potential risks to the environment, indigenous people and other marginalized groups.
- [ ] Identify capacity needs that need to be addressed.
- [ ] Assess viable energy models and financing options, with particular attention to improving equitable energy access for women and marginalized groups.
- [ ] Disseminate culturally appropriate information related to energy bills and tariffs, empowering consumers to control their consumption.
- [ ] Promote energy efficiency and energy conservation.

4. Develop policy frameworks to improve participation, transparency and accountability in energy infrastructure development

- [ ] Develop legal frameworks to institutionalize the meaningful participation of women and marginalized groups in co-creation processes and decision making across the life cycle of infrastructure development, recognizing their role as agents of change.
- [ ] Develop policies to establish, maintain and improve disaggregated data collection that can support informed energy policy decisions.
- [ ] Develop mechanisms for policy assessment, monitoring, compliance and enforcement, in a manner that respects human rights.
- [ ] Ensure that policies and regulations for public procurement enhance transparency and accountability, eliminate corruption and pursue inclusive objectives.
- [ ] Develop legislation that supports contracting of small local contractors, communities and businesses owned or operated by underrepresented groups, the use of employment-intensive work methods, and contract conditions for energy infrastructure works that reflect the principles of decent work, equal access to employment opportunities for all and equal pay for work of equal value.
- [ ] Implement measures that support reforms in the business environment – including changes in tax administration and regulations for informal businesses, set up of policies to explicitly provide support and capacity building to businesses owned by underrepresented groups, partnerships with women's networks working on energy delivery, and facilitation of women's access to finance.
- [ ] Ensure that policy frameworks indicate clear roles and responsibilities of different stakeholders, such as energy regulators, operators and service providers, including in the informal sector, in operationalizing inclusive energy.

- [ ] Encourage inclusive hiring policies in all organizations, including in government and the private sector, to promote balanced representation of women and men in the workforce, and ensure non-discrimination and reasonable accommodation for marginalized groups.

5. Create and enforce regulations for inclusion requirements throughout the entire energy project life cycle

- [ ] Require inclusion-related project prioritization selection criteria when developing a pipeline of energy projects.
- [ ] Require that during project preparation, socioeconomic impact studies are included as part of project feasibility studies.
- [ ] Require that inclusive outcomes and project objectives are part of the project preparation brief.
- [ ] Require that inclusive outcomes are supported throughout the concept design stage.
- [ ] Develop, adopt and enforce design standards that support inclusive outcomes as well as climate adaptation and mitigation.
- [ ] Develop and promote the use of guidance that translates inclusive design codes and standards into easy-to-follow guidance.
- [ ] Require permitting processes that screen for inclusive outcomes and reject non-compliant projects.
- [ ] Develop, adopt and enforce regulations for accountability regarding safety in construction, safe energy distribution and transmission, and environmental and social safeguards.
- [ ] Develop, adopt and enforce operational performance standards that have use targets for all.

Read more

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  - Capturing the Multiple Benefits of Energy Efficiency, International Energy Agency (IEA), 2015.
  - Recommendations of the Global Commission on People-Centred Clean Energy Transitions, IEA, 2021.
  - Solar pumping for irrigation: Improving livelihoods and sustainability, International Renewable Energy Agency (IRENA), 2016.
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  - Renewable Energy Policies for Cities: Transport, IRENA, 2021.
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- Partnerships development and management, and coordination in humanitarian settings: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, pp. 46-53.
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- Engage communities: Inclusive Community Engagement Playbook, C40Cities, Citi Foundation and Arup, 2019.
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- Policy Brief - Green jobs for women in Africa: Opportunities and policy interventions, UN Women and AfDB, 2021.
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- A framework for gender-sensitive energy policies, plans and strategies: Gender Integration in renewable energy policy: A guideline for renewable energy policy and decision makers, United Nations Environment Programme (UNEP), 2020.
- A tool for government to mainstream gender considerations in infrastructure: Toolkit for Mainstreaming and Implementing Gender Equality 2023, Organisation for Economic Co-operation and Development (OECD), 2023, pp. 85-94.
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  - BS 8300-1:2018: Design of an accessible and inclusive built environment – External environment. Code of practice, British Standards Institution.
  - ISO 21542:2021: Building construction – Accessibility and usability of the built environment, International Organization for Standardization.
  - Outdoor Accessibility Guidance, Paths for All and Sensory Trust, 2023.
- Example of disability inclusion standards for organizations: Minimum and high achievement disability inclusion business standards for each DFID business unit, Government of the United Kingdom.
- A methodology for conducting gender audits of energy policies: 'ENERGIA's gender audit methodology', section 5 in Gender audits: An approach to engendering energy policy in Nepal, Kenya and Senegal, Clancy, Joy S. and Nthabiseng Mohlakoana, 2020.

- Reform public procurement policies for transparency: OECD Recommendation of the Council on Public Procurement, OECD, 2015.
- Enabling environment for local contractors: Developing the construction industry for employment-intensive infrastructure investments, International Labour Organization (ILO), 2019, Chapter 2.
- Employment-Intensive Infrastructure Programmes: Labour policies and practices, ILO, 1998.
- Identify channels for investment in sustainable energy infrastructure: Mapping Channels to Mobilise Institutional Investment in Sustainable Energy, OECD, 2015.

ACTION CHECKLIST: Governments and regulators

Developing the enabling environment – capacity building

6. Assess and strengthen personnel capacity for inclusive energy infrastructure development and planning

- ☐ Assess capacity requirements, capacity gaps, and capacity absorption limits across the different stakeholder groups. Consider the need to engage external technical or financial assistance.
- ☐ Ensure adequate staff, technical skills, funding, equipment and facilities are available to conduct effective disaggregated data collection, participatory consultations, capacity building activities and enforcement of inclusive regulations.
- ☐ Integrate inclusion considerations into the structure and delivery of training, with a particular focus on providing a supportive environment for the participation of women, persons with disabilities and marginalized groups in training activities.
- ☐ Improve the capacity of national, regional and local governments to adopt and enforce the policy frameworks for inclusive energy infrastructure development.
- ☐ Provide training and resources (including hiring technical experts) to conduct social and environmental impact assessments of energy systems across all life cycle stages.
- ☐ Provide training for local communities on how to engage in participatory processes and consultations.
- ☐ Provide training on the role of off-grid and decentralized energy solutions in achieving electrification targets, especially in rural areas.
- ☐ Provide training on best practices for developing, operating and maintaining climate resilient infrastructure.

7. Build awareness of and sensitivity to gender equality and social inclusion in energy infrastructure

- ☐ Develop diverse teams that will bring their own perspectives to energy planning, delivery and management.
- ☐ Build awareness of GESI concepts in energy in project teams, partners and suppliers to ensure projects are implemented in an inclusive manner.
- ☐ Conduct public awareness campaigns to improve public attitudes and sensitivity towards the needs of women, persons with disabilities, and other marginalized groups in energy access, and to promote awareness of inclusive energy policies, schemes and projects.
- ☐ Commission and publish research on inclusion in energy, with an intersectional perspective.
- ☐ Through focus groups or other forms of stakeholder outreach, develop awareness of how service disruptions (due to climate or other events) impact the well-being and livelihoods of women and marginalized groups.
- ☐ Provide training and awareness building regarding service issues faced by women and marginalized groups.
- ☐ Identify opportunities for productive use interventions targeted towards marginalized groups.

Read more

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  - Gender Equality and Human Rights in Climate Action and Renewable Energy, UNCC:e-Learn.
  - Gender Equality and Energy, World Bank.

  - Gender and Energy Equality - e-learning course, Energy Sector Management Assistance Program (ESMAP).
  - How to Series 3: Mainstreaming Gender Equality in Infrastructure, United Nations Organization for Gender Equality and the Empowerment of Women (UN Women).
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- Conduct public awareness campaigns on GESI: Building Public Awareness Tool Kit, The City of Red Deer.
- Training guidebook: Gender and Energy Role Playing: Training Guidebook, World Bank, 2019.
- Training guide for actors involved in the Latin American energy sector: Guide on Gender and Energy for Trainers and Managers of Public Policies and Projects, ENERGIA, Olade and International Union for Conservation of Nature, 2015.
- Training on inclusive budgeting:
  - Gender Responsive Budgeting, UN Women.
  - Gender Responsive Budgeting in Practice: A Training Manual, United Nations Population Fund (UNFPA) and United Nations Development Fund for Women, 2006.
- Build technical capacity for inclusive implementation:
  - Building Local Government Capacity for Rural Infrastructure Works, ILO, 2003.
  - ILO Guide for Skills Development in Employment-Intensive Investment Programmes, ILO, 2021.
  - Sustainable community-managed and labour-based upgrading of urban low-income settlements, ILO, 2002.
  - Online training courses for practitioners and policymakers on incorporating decent work principles in infrastructure development: ILO International Training Centre (ITC).

← Return to Strengthening the enabling environment

ACTION CHECKLIST: Governments
Planning inclusive energy infrastructure systems

1. Establish the right conditions so that women and marginalized groups can meaningfully participate in the planning process and influence decisions

- ☐ Ensure that there are adequate and diverse staff, technical skills, funding, equipment and facilities to conduct effective participatory consultations with diverse stakeholder groups.
- ☐ Consider whether particular efforts may be needed to include the voices of key stakeholder groups, such as engaging local CSOs or women's rights organizations to facilitate their participation or using alternative communication methods.

2. Leverage cross-sectoral and cross-functional strategies to ensure integrated approaches to tackling energy exclusion issues

- ☐ Use cross-sectoral and cross-functional approaches to identify and address energy exclusion issues, including through inclusive energy assessments and procurement strategies.
- ☐ Ensure that energy plans are well coordinated with spatial and land use planning, stormwater management, environmental protection, agriculture, health, education, digital communications, public safety, women's affairs and social welfare. Inclusive energy access should be addressed alongside other inclusive approaches in different sectors, such as equitable spatial planning, affordable and adequate housing stock, improved digital communications to leverage smart metering and prepaid technologies, and livelihood and economic programmes for financial inclusion.

3. Promote transparent and inclusive electrification planning to accelerate access

- ☐ Undertake and abide by least-cost generation planning to ensure the cleanest, least expensive, and most reliable generation mix for consumers.
- ☐ Undertake and abide by least-cost electrification master planning processes with clear and transparent multi-tier frameworks for level of service and leveraging both on- and off-grid electrification solutions.
- ☐ Provide culturally appropriate information related to planned electrification solutions and levels of service.
- ☐ Plan grid extension routing such that the greatest number of households and enterprises have the opportunity to connect.

Read more

- Use participatory data gathering and consultation techniques:
  - Ensure accessibility of consultations and events: Toolkit on Accessibility: Organization of Accessible Events, UNICEF, 2022.
  - Women's participation in fragile settings: Beyond Consultations: A tool for meaningfully engaging with women in fragile and conflict-affected states, Gaps UK, Women for Women, Amnesty International, Womankind Worldwide, and Saferworld.
  - Engage older people: Let's go! Steps for engaging older people and improving communities for all ages, Pan American Health Organization, HelpAge International and AARP, 2022; and Participatory research with older people: a sourcebook, HelpAge International, 2011.
- Conduct inclusive energy assessments: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, pp. 27-39.
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- Access to modern energy services for health facilities in resource-constrained settings, World Health Organization (WHO), 2015.
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- Clean household energy policy and programme planning guide, WHO, 2023.

← Return to Energy infrastructure planning

ACTION CHECKLIST: Governments

Prioritizing and preparing projects for investment

1. Develop and prioritize energy projects with inclusive outcomes, aligning with the strategic priorities for sustainability, resilience and inclusion

- ☐ Based on the assessments of different projects, prioritize energy pipeline projects that improve equity for women and marginalized groups. This can include projects promoting clean energy access and reduction of energy poverty, energy efficiency and affordability, as well as projects that promote usage of clean fuels for cooking and household needs, and that support the reduction of women's time poverty and safeguard women's and indigenous communities' land rights.
- ☐ Use Multi-Criteria Decision Analysis (MCDA) as a decision-making tool to analyze multiple (conflicting) social, environmental and financial criteria to help prioritize infrastructure projects. Ensure that criteria are weighted according to the social and environmental commitments outlined in energy policies and plans.
- ☐ Develop a business case for inclusive energy projects.

2. Develop an investment plan that considers the long-term costs of inclusive projects

- ☐ Examine spending on energy services specifically aimed at women and marginalized groups to see if it is sufficient to meet their needs and requirements.
- ☐ Apply an inclusive and gender-responsive budgeting approach to establish a budget line for the well-resourced implementation of inclusive actions within energy projects. This includes the cost of long-term maintenance and training beneficiaries, especially women and marginalized groups, to operate and maintain any energy assets transferred to them.
- ☐ Match each action in national and regional energy plans with a budget line and secure long-term funding to ensure adequate maintenance over the operational lifetime of energy assets.
- ☐ Ensure that proposed investments consider the costs and benefits of climate adaptation (for example, avoided damages, losses and coping costs).
- ☐ Provide transparent accounting of the annual investment priorities set over a multi-year period for energy projects, reflecting how the diverse needs of women and marginalized groups are addressed and prioritized.

3. Identify financiers who support inclusive projects and determine their requirements for effective and competitive project preparation

- ☐ Identify financing partners and funding opportunities that favour inclusion indicators, local job creation and social development.
- ☐ Engage donors and development partners to support inclusive infrastructure projects.

Read more

- Prioritize inclusive interventions in the energy sector:
  - Overview of key and emerging issues in the gender and sustainable energy nexus: Gender equality in the sustainable energy transition, UNIDO and UN Women, 2023.
  - List of priorities for the energy sector: Checklist for Gender Mainstreaming in the Infrastructure Sector, AfDB, 2009, p. 5.
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  - Inclusive energy options in humanitarian settings: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, pp. 41-44.
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  - Handbook on Costing Gender Equality, UN Women, 2015.

← Return to Prioritization, preparation and investment

ACTION CHECKLIST: Planners and energy utilities

Planning inclusive energy infrastructure systems

1. Work with residents and local NGOs to identify and address existing energy inequalities

- ☐ Develop and maintain a georeferenced database of consumer accounts, permitting planners to assess who is most impacted by systems performance gaps.
- ☐ Develop and maintain smart grids that provide timely information about systems performance metrics, for example, System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI), non-distributed energy, etc. to identify and improve areas with poor service.
- ☐ Make use of expert and non-expert knowledge, lived experiences and spatial data (minimally disaggregated data by sex, age, income and disability) to identify gaps in inclusive energy service provision, particularly with respect to climate-related disruptions. Account for inequalities in energy access across and within different regions, cities and communities.
- ☐ Identify where existing energy infrastructure can be improved, renovated or better integrated towards ensuring improved access for diverse people.
- ☐ Develop an inclusive, participatory plan to identify and provide viable alternatives to illicit network connections.
- ☐ When collecting and analyzing data, focus on the Theory of Change to identify what changes in behaviours, knowledge, skills, attitudes and beliefs of users, service providers, planning authorities and other stakeholders are necessary to plan, implement and sustain inclusive energy infrastructure effectively.

2. Use disaggregated data, participatory consultations and context assessments to identify diverse energy needs

- ☐ Compile an inventory of available data and identify gaps that need to be filled.
- ☐ When collecting and analyzing data, focus on the Theory of Change to identify what changes in behaviours, knowledge, skills, attitudes and beliefs of users, service providers, planning authorities and other stakeholders are necessary to plan, implement and sustain inclusive energy infrastructure effectively.
- ☐ Carefully employ ethical data principles in the collection, storage, communication and dissemination of data.
- ☐ Use household surveys to collect georeferenced data on diverse energy needs, preferences, and willingness to pay, disaggregated by sex, age, income and disability, when relevant and applicable.
- ☐ Encode the disaggregated data in spatial maps to identify the spatial distribution of energy needs when possible, and identify differences in usage.
- ☐ Identify communities and neighbourhoods that do not equally benefit from current energy infrastructure investments, and invite them to participate in consultations about their needs and challenges.
- ☐ Conduct focus group discussions with civil society organizations representing women and marginalized groups in order to verify intersectional energy needs that may not be apparent through quantitative data.
- ☐ Carry out a GESI analysis that considers the role of social norms in energy use, access, needs and decision making at household, community and governance levels.
- ☐ Analyze the data and conduct context assessments to identify context-specific requirements and suitable locations for new or renovated energy infrastructure.

Read more

- Develop a Theory of Change outlining how inclusive energy infrastructure projects can lead to inclusive outcomes: Enhancing Gender Equality in Infrastructure Development: Theories of Change, Indicators, and Sector Strategies, ADB, 2023.
- Thematic guidance on gender analysis and energy: Gender Analysis in Technical Areas: Energy Infrastructure, UN Women, 2022.
- Guidance on Social Inclusion Analysis: The gender and social inclusion toolkit, Civicus.

- List of tools and sample survey questions for gender assessments: Gender and Social Inclusion, Online Resources for Integrating Gender into Energy Operations, Step 1, ESMAP, see downloadable resources in Step 1B and 1C.
- Collect energy-specific data: Energy Policies and Multitopic Household Surveys: Guidelines for Questionnaire Design in Living Standards Measurement Studies, World Bank, 2006.
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  - Doing Qualitative Research for Development Programming: A step-by-step guide, The Asia Foundation, 2023.
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- Energy Resilience Framework, Arup.

3. Develop and evaluate energy planning options based on sustainable, resilient and inclusive outcomes

- ☐ Based on the identified gaps, future trends and population growth projections, create a long-term energy strategy with inclusive goals, aligned with climate and sustainability strategies. Understand and apply inclusive provisions as stipulated in policies, regulations and laws regarding energy access.
- ☐ In alignment with the long-term energy strategy, develop medium-term plans for energy infrastructure coordinated with land use plans, development plans and other sectoral plans. Ensure that these plans incorporate provisions for inclusion, sustainability and resilience, such as considerations for universal design, crime prevention, gender-responsive design, public safety and sustainable solutions.
- ☐ Identify critical infrastructure in terms of both the system itself and users (for example, substations that serve hospitals) and ensure necessary adaptation measures are taken in planning.
- ☐ Based on an objective, transparent multi-tier framework for access and leveraging both on- and off-grid solutions, provide consumers with the most cost-effective, rapidly deployable energy access solutions possible.
- ☐ Develop routes for network extensions or densifications that serve the greatest number of households and enterprises possible.
- ☐ Engage relevant specialists to conduct a Strategic Environmental Assessment (SEA) and Equality/Diversity Impact Assessment to assess strategic options towards achieving overall goals for sustainability, resilience and inclusion.
- ☐ Identify adverse climate risks and vulnerability through a Climate Risk and Vulnerability Assessment of existing systems and energy sources. Identify possible measures for improving the climate resilience of energy systems, such as the use of underground transmission and distribution cables in areas prone to high-speed winds, floods, landslides and fires.
- ☐ Clearly outline the roles, responsibilities and coordination mechanisms between different actors involved in the planning, implementation, monitoring and long-term operation of energy infrastructure systems.
- ☐ Indicate specific capacity requirements needed to implement the energy strategy and plans and how these will be resourced and strengthened.
- ☐ Outline inclusive implementation approaches that should be prioritized when delivering infrastructure projects, such as the use of participatory planning, employment-intensive and local resource-based work methods, and sustainable construction technologies and materials.

Read more

- Guide for technical planning studies on solar and wind integration in small island states: Transforming small-island power systems, IRENA, 2019.
- Good practice energy sector initiatives contributing to SDGs: SDG Industry Matrix – Energy, Natural Resources & Chemicals, United Nations Global Compact and KPMG, 2017.
- Inclusive energy programme design in humanitarian settings: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, pp. 41-45.
- Planning for disaster preparedness in a resilient city: Energy: optional sectoral module, World Bank, 2018, part of the City Strength Resilient Cities programme.
- Tools to support the formulation of sustainable energy policies and comprehensive national climate strategies:
  - Open-Source Spatial Electrification Tool (OnSSET): A versatile open-source tool designed to facilitate comprehensive spatial electrification analysis, offering support for sustainable energy strategies.
  - OnStove: A geospatial clean cooking tool engineered to enhance environmentally responsible cooking practices and reduce emissions.
    - Sample application to sub-Saharan Africa.
  - OSeMOSYS: An open-source modelling system for in-depth, long-term integrated assessments and energy planning, contributing to informed decision making.
- Guidelines on gender analysis: UNIDO Guide to Gender Analysis and Gender Mainstreaming the Project Cycle, UNIDO.
- Examples of critical questions to ensure intersectionality in the design of community energy projects: Towards an intersectional perspective on community energy: work-in-progress within CESET, Castan Broto V. et al., 2022, pp. 5, 6, 11.
- Guidelines on social and environmental impact assessments:
  - Draft guidelines on SEA in renewable energy, downloadable chapters: IAIA Initiative to Develop and Promote SEA Guidance for Renewable Energy, International Association for Impact Assessment (IAIA), 2023.
  - How to integrate environmental and social safeguards across the project cycle: Environmental and social safeguards guidelines, ILO, 2022.
  - Guidelines for gender-responsive infrastructure, including a tool on Environmental and Social Impact Assessments: Guide on integrating gender throughout infrastructure project phases in Asia and the Pacific, UN Women and UNOPS, 2019.
- Conduct assessments to support decision making and evaluation:
  - Determine the broader impacts of development interventions: Locating the unintended consequences of interventions: A tool for analysing impact inequality in development programming, SEI, 2023.
  - Climate Risk Screening Tools for Low-Emission Energy Development, USAID and Resources to Advance LEDS Implementation, 2019.
- Case study to improve Equality Impact Assessments: Equality impact assessments and equality-responsiveness of budgets in English local authorities, Women's Budget Group, 2021.

← Return to Energy infrastructure planning

ACTION CHECKLIST: Planners and design engineers

Prioritizing and preparing projects for investment

1. Conduct assessments to narrow down inclusive energy projects for prioritization, and exclude projects with unmitigable negative impacts

- ☐ Explore the history of energy projects in the area and the reasons they succeeded or failed.
- ☐ Conduct an Equity Assessment, Strategic Environmental Assessment (SEA), Equality/Diversity Impact Assessment and Social Cost-Benefit Analysis (SCBA) to rank possible projects according to benefits and costs.
- ☐ Conduct technical, environmental and social pre-feasibility assessments of projects. Identify whether project activities could adversely impact access to land, particularly for rural or indigenous communities, and consider mitigation measures that compensate men and women equally.
- ☐ Verify if there is financial and technical capacity to deliver the project within the planned timelines.
- ☐ Create an exclusion list of proposed projects that have been determined through assessments to cause irreversible or unmitigable negative impacts on the environment or people.

2. Assess the intersectional energy needs of stakeholders and beneficiaries to ensure that the project improves energy access for marginalized groups

- ☐ Complete a stakeholder analysis that uses an intersectional approach to identify the needs of different community members. Continue to expand the analysis based on emerging information.
- ☐ Identify how different energy services are currently used. Assess how these can be made more equitable for different users, based on stakeholder consultations and an intersectional analysis of disaggregated data on energy needs and preferences.
- ☐ Assess safety and the risk (both actual and perceived) of crime and sexual harassment on fuel collection routes.
- ☐ Consider the climate change vulnerability of target communities, and how that affects the performance of energy infrastructure (e.g., high-speed winds, fires and floods affecting transmission and distribution lines).
- ☐ Conduct stakeholder consultations to understand the systemic barriers to connection faced by target beneficiaries, with particular attention to women and marginalized groups. Identify actions to address these barriers, such as simplifying administrative requirements or reducing upfront connection and interior wiring costs, so that targeted populations are able to receive the intended benefits.

Read more

- Conduct assessments to narrow down energy projects:
  - Draft guidelines on SEA in renewable energy, downloadable chapters: IAIA Initiative to Develop and Promote SEA Guidance for Renewable Energy, IAIA, 2023.
  - Conduct social analysis: Social Analysis Sourcebook: incorporating social dimensions into Bank supported projects, World Bank.
  - Assess impact on employment: Employment Impact Assessment (EmpIA); Guide for Monitoring Employment and Conducting Employment Impact Assessments (EmpIA) of Infrastructure Investments, ILO, 2020.
  - Energy and health factsheets and tools: Energy and health, WHO.
  - Compare risk and hazards with exposure and vulnerability criteria in countries around the world: Global Systemic Risk Assessment Tool, Oxford Programme for Sustainable Infrastructure Systems, University of Oxford.
  - Conduct a Night-time Vulnerability Assessment: How can lighting make our cities more inclusive?, Arup, 2020.
- Assess gender considerations for developing climate-adaptive energy projects: Her4Climate tool, ARUP and Cities Alliance, 2022.
- Integrate a GESI lens in the analysis of data: Integrating gender and social equality into sustainable development research: A guidance note, SEI, 2018.

3. Design the project concept and theory of change to achieve inclusive outcomes for energy consumers, employees and affected communities

- ☐ Design the project's concept and Theory of Change towards addressing the diverse energy needs of women and marginalized groups (as consumers, suppliers, employees and value chain participants), and with consideration for the sustainability and resilience of the energy asset or service against climate change, disasters and conflict.
- ☐ For electrification projects involving grid extension, grid densification, or mini-grids, ensure that new distribution lines are planned in a way that maximizes connections, ensuring that no one is left behind.
- ☐ For electrification projects in particular, design information and outreach campaigns to accompany the planned infrastructure to ensure that potential consumers actually receive a connection.
- ☐ Understand and apply inclusive provisions as stipulated in policies, regulations and laws regarding energy access.
- ☐ During site selection, ensure that the site is located in an area that provides safe and secure access for women, men and marginalized groups who will operate and maintain the energy asset.
- ☐ Make design choices towards developing systems that will be easy to interact with for all users, and operate and maintain by all employees, with a preference for solutions that require less effort.
- ☐ Plan for cost-effective, safe and accessible energy features.
- ☐ Coordinate with relevant authorities regarding existing and future land use planning to effectively address the current, interim and future access and energy needs of affected communities.
- ☐ Determine the approaches to be used for inclusive implementation, such as employment-intensive and local resource-based approaches, and how this affects the design and planning of the project.

Read more

- Develop a Theory of Change outlining how inclusive energy infrastructure projects can lead to inclusive outcomes: Enhancing Gender Equality in Infrastructure Development: Theories of Change, Indicators, and Sector Strategies, ADB, 2023.
- Design the project concept according to inclusive principles:
  - Global Street Design Guide – Utilities, Global Designing Cities Initiative, 2016.
  - Guidance Note on Disability-Inclusive Project Management Cycle, UNESCAP, 2021.
  - Gender integration checklists for energy projects: STEP 1A | Gender Assessment Resources: Review/Screening, ESMAP.
- An overview of how accessibility should be taken into account in emergencies and disaster preparedness: Toolkit on Accessibility – Section C: Accessibility in emergencies, UNICEF, 2022.
- Policy framework for short-term employment to provide immediate cash opportunities to vulnerable communities: Emergency employment, ILO, 2021.
- Land-related impacts of energy infrastructure, mitigation measures: Getting to Gender Equality in Energy Infrastructure, Lessons from Electricity Generation, Transmission, and Distribution Projects, World Bank, 2018, pp. 37-54.
- Good practice energy sector initiatives contributing to SDGs: SDG Industry Matrix – Energy, Natural Resources & Chemicals, United Nations Global Compact and KPMG, 2017.
- Measuring Impacts and Enabling Investments in Energy-Smart Agrifood Chains, Food and Agriculture Organization of the United Nations (FAO) and GIZ, 2019.

4. Analyze and evaluate project feasibility according to environmental, social, cultural and economic impacts and co-benefits

- ☐ Review the socioeconomic context of the project, including local culture, norms and values in relation to the use of energy services, as well as social and gender inequalities.
- ☐ Determine the project's potential risks and negative impacts on the local community and the environment, including the possibility of perpetuating existing inequalities, discrimination against particular groups, human rights violations, risks to women's safety, disruption of informal networks and environmental risks.

- [ ] Identify any health, safety and environmental impacts and how these will be mitigated, managed and addressed.
- [ ] Consider any inequalities in how communities access ecosystem services and natural resources, and the possibility that project activities could impact access to and management of these natural resources.
- [ ] Identify whether project activities could adversely impact tangible or intangible cultural and natural heritage or ecosystem services.
- [ ] When there are no options to mitigate and prevent major negative impacts on local communities, the environment and/or marginalized groups, projects should be declared unfeasible.

Read more

- Conduct social analysis: Social Analysis Sourcebook: incorporating social dimensions into Bank supported projects, World Bank.
- Assess impact on employment:
  - Employment Impact Assessment (EmpIA), ILO, 2021.
  - Guide for Monitoring Employment and Conducting Employment Impact Assessments (EmpIA) of Infrastructure Investments, ILO, 2020.
- Determine the broader impacts of development interventions: Locating the Unintended Consequences of Interventions: A Tool for Analysing Impact Inequality in Development Programming, SEI, 2023.
- Community health, safety and security: Environmental and social safeguards guidelines, ILO, 2022, pp. 11-13.
- Draft guidelines on SEA in renewable energy, downloadable chapters: IAIA Initiative to Develop and Promote SEA Guidance for Renewable Energy, IAIA, 2023.

← Return to Prioritization, preparation and investment

ACTION CHECKLIST: Design engineers

Design inclusive energy projects

1. Incorporate the results of participatory and co-creation processes in the design

- ☐ Based on the participatory consultations, identify design features or technology options that can support inclusive energy access for women and marginalized groups, with consideration to affected stakeholders.
- ☐ Conduct design workshops to co-create, discuss and agree upon design features or technology options with the target beneficiaries and affected stakeholders.
- ☐ Take into consideration the local culture, norms and values that impact energy use.

2. Integrate design approaches that promote inclusion together with efforts to achieve sustainability and resilience

- ☐ Design projects to incorporate inclusion, climate resilience and sustainability, for example through the use of nature-based solutions for energy conservation in buildings and use of renewable energy. Understand and apply inclusive provisions as stipulated in policies, regulations and laws regarding energy access.
- ☐ Ensure the project design respects existing institutions, establishments, and natural and cultural heritage.

3. Optimize the design to maximize positive impacts, minimize negative impacts, and reduce future operational and maintenance costs

- ☐ Use design codes and standards that are aligned with international best practices, support the needs of all identified end users, protect the local environment and address local hazards.
- ☐ Consider the security and safety of all users, specifically that of marginalized groups and women in all their diversity, while planning the site layout of the infrastructure project.
- ☐ Ensure that the design and site selection consider how diverse groups living, working, studying and playing near the energy infrastructure will be impacted by construction and operations and maintenance activities.
- ☐ Optimize the design of the energy project to reduce future operational and maintenance costs, which affect the affordability of the energy service.
- ☐ Design considering the existing capacity to operate and maintain systems (avoid high complexity) and define the types of capacity building that will need to be provided to operators.
- ☐ For projects involving grid extension, grid densification, or mini-grids, ensure that new distribution lines are routed in a way that permits the greatest possible number of households and firms to connect.

4. Maintain flexibility in the design to accommodate current and future needs

- ☐ Consider the temporal and physical dynamics of informal settlements.
- ☐ As there can be a long period of time between the planning and implementation phases of infrastructure projects, ensure that there is flexibility in the design to accommodate small changes, especially for projects in informal settlements, where change can occur very quickly.
- ☐ Identify future use scenarios to inform the design of infrastructure that is durable for its expected life and fit for its intended current and future use.
- ☐ Assess and develop design to include reuse and adaptation of existing infrastructure.

5. Consider the use of performance- or outcome-based specifications with inclusive provisions

- ☐ Consider using performance- or outcome-based specifications as part of the project design documentation. This can support innovative solutions to be proposed by bidders, as well as allow for inclusive performance requirements that address the needs of end users instead of focusing on technical metrics.

Read more

- Conceptualize and design inclusive projects in the energy sector:
  - Gender Tool Kit: Energy Going Beyond the Meter, ADB, 2012.
  - Framework: gender equality in energy development: Gender-Inclusive Approaches in the Energy Sector, ADB, 2018.
  - Guidance Note on Disability-Inclusive Project Management Cycle, UNESCAP, 2021.
  - Design gender-responsive infrastructure: Guide on integrating gender throughout infrastructure project phases in Asia and the Pacific, UN Women and UNOPS, 2019.
  - Gender integration checklists for energy projects: STEP 1A | Gender Assessment Resources: Review/Screening, ESMAP.
- Good practice energy sector initiatives contributing to SDGs: SDG Industry Matrix – Energy, Natural Resources & Chemicals, United Nations Global Compact and KPMG, 2017.
- Integrated Electrification Pathways for Universal Access to Electricity: A Primer, IRENA, 2019.
- Planning pro-poor energy services for maximum impact: The Energy Delivery Model Toolkit, International Institute for Environment and Development and Catholic Agency for Overseas Development, 2017.
- Renewable energy for agri-food systems – Towards the Sustainable Development Goals and the Paris agreement, IRENA and FAO, 2021.
- Performance-Based Specifications: Exploring when they work and why, International Institute for Sustainable Development, 2014.
- Innovative and inclusive energy solutions:
  - Liter of Light
  - Mini-Grid Project Guide Developed for Small Islands, IRENA, 2017.
  - Emergency Power Planning for People Who Use Electricity and Battery-Dependent Assistive Technology and Medical Devices, Americans with Disabilities Act (ADA) National Network.
  - Inclusive energy programme design in humanitarian settings: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, pp. 41-45.
  - Accelerate electrification of healthcare facilities: Energizing health: accelerating electricity access in health-care facilities, WHO, IRENA and World Bank, 2023.
- Examples of design standards for designing external environments (including outdoor lighting):
  - BS 8300-1:2018: Design of an accessible and inclusive built environment – External environment. Code of practice, British Standards Institution.
  - ISO 21542:2021: Building construction – Accessibility and usability of the built environment, International Organization for Standardization.
  - Outdoor Accessibility Guidance, Paths for All and Sensory Trust, 2023.
- Community-based approach to delivering public lighting interventions: Tip Sheet 1: Public Lighting, Gender and Safety in Emergencies, Oxfam, 2020.

← Return to Design

ACTION CHECKLIST: Energy utilities

Preparing projects for investment

1. Engage participatory consultation experts to conduct continuous participatory consultations and co-creation processes with local communities and civil society organizations to inform project definition, resolve land conflicts and address context-specific energy needs

- ☐ Engage participatory design and community consultation experts to support and inform the participatory process.
- ☐ Use disaggregated data to identify key stakeholder groups that should be engaged in consultations, particularly underrepresented groups.
- ☐ Conduct a gender and power analysis to determine appropriate methods of engagement with respect to sociopolitical dynamics. Consider whether particular efforts may be needed to include the voices of key stakeholder groups, such as engaging local CSOs to facilitate their participation, using alternative communication methods, or conducting consultations in different places and group sizes.
- ☐ Coordinate with local governments, CSOs, local businesses and other community-based organizations to ensure an integrated approach to information gathering.
- ☐ Carry out consultations and focus group discussions with users and CSOs in each community affected by the energy infrastructure in order to understand their daily lived experiences and the nuances associated with the energy consumption patterns of different users, particularly women and marginalized groups.
- ☐ Consider using participatory data gathering techniques to inform the planning of the energy project, such as participatory mapping of fuel collection patterns in the community. Consider using the citizen-science approach, or employing and training local residents as data collectors and project advocates.
- ☐ Use participatory and human rights-based methods to mediate and resolve any conflicts over land that is planned to be used for the energy project.
- ☐ Include the understanding of sociocultural practices related to energy use and fuel collection in assessments.
- ☐ Improve the motivation, opportunities and ability of target users to use a proposed energy solution in order to improve community acceptance and create demand for the energy project.

Read more

- Align with international standards on community engagement: Minimum quality standards and indicators in community engagement, UNICEF, 2020.
- Stimulating investment in community energy: Broadening the ownership of renewables, IRENA Coalition for Action, 2020.
- Conduct participatory and co-creative processes:
  - The Role of Local Energy Communities in Clean Energy Transitions, IEA, 2023.
  - Tool box: Co-design exercises, Active Neighbourhoods Canada.
  - Local resource-based (LRB) approaches and community infrastructure, ILO, 2020.
  - Playbook on involving citizens in implementing climate mitigation or adaptation action, available in English, French, Spanish and Portuguese: Inclusive Community Engagement Playbook, C40Cities, Citi Foundation and Arup, 2019.
  - An example of a participatory approach to introduce the concept of transitioning to electricity for cooking: Beyond fire: Backcasting a pathway to fully electric cooking in rural Kenya by 2030, Stockholm Environment Institute (SEI) and Hivos, 2020.
  - Gender tool kit: Energy – Going beyond the meter, Asian Development Bank, 2012.
- Ensure that women and marginalized groups can meaningfully participate:
  - Toolkit on Accessibility: Organization of Accessible Events, UNICEF, 2022.
  - Beyond Consultations, A tool for meaningfully engaging with women in fragile and conflict-affected states, Gaps UK, Women for Women, Amnesty International, Womankind Worldwide, and Saferworld.
  - Let's go! Steps for engaging older people and improving communities for all ages, HelpAge, 2022.
  - Participatory research with older people: a sourcebook, HelpAge, 2011.
  - Participatory approaches for gender-sensitive research design, CGIAR, 2014.
- Deal with land conflicts in an inclusive and participatory manner: Dealing with Conflict, Chapter 9 of *Advancing inclusive land governance*, Both ENDS, 2020.

2. Incorporate inclusion targets and objectives in the project brief

- ☐ Incorporate inclusion objectives within the project brief, including targets, constraints and required standards or international best practices for inclusive design and implementation to be followed.
- ☐ Align the project objectives with strategic targets for inclusive, sustainable and resilient energy.
- ☐ Conduct a Social Cost-Benefit Analysis (SCBA) to quantify the intangible social benefits of the project such as environmental impacts, time savings, health and well-being benefits, and accident costs.
- ☐ Conduct studies of the target stakeholders' ability and willingness to pay for the energy service to determine whether financial subsidies are necessary to improve the affordability of the energy service.
- ☐ Identify whether the project can be used to offer short-term employment to provide immediate cash opportunities to communities affected by disasters and conflicts.

Read more

- Conduct a Social Cost-Benefit Analysis: Valuation Techniques for Social Cost-Benefit Analysis, HM Treasury and UK Department for Work and Pensions, 2011.
  - Example of a Social Cost-Benefit Analysis: Social cost-benefit analysis of climate change mitigation options in a European context, Energy research Centre of the Netherlands, 2006.
- Identify if the project can provide short-term employment in response to shocks and stresses:
  - Disaster-affected communities: Emergency employment, ILO, 2021.
  - Communities in fragile and conflict-affected contexts: How to design, monitor and evaluate peacebuilding results in Jobs for Peace and Resilience programmes, ILO, 2019.

← Return to Prioritization, preparation and investment

ACTION CHECKLIST: Energy utilities

Operate and maintain inclusive energy assets and services

1. Build GESI awareness to foster inclusive environments in the energy sector

- ☐ Improve workforce policies, training programmes and hiring outreach to encourage the participation of underrepresented groups, especially women and marginalized groups, in the operation and maintenance of energy assets and services.
- ☐ Conduct awareness campaigns to prevent discrimination, gender-based violence and sexual harassment in the energy sector.

2. Operate and maintain energy assets and services to provide safe, reliable and accessible energy for all types of consumers

- ☐ Ensure that electricity networks are well serviced and operational, with particular attention to reducing technical losses and ensuring public safety.
- ☐ Understand and apply inclusive provisions as stipulated in policies, regulations and laws regarding energy access.
- ☐ Communicate information about any service disruptions immediately to consumers to allow them to make informed decisions for their daily energy-related activities, and include an estimate of when the disruption will be resolved.
- ☐ Conduct periodic safety performance and risk mapping activities to inform safety improvement or investment plans.
- ☐ Engage local authorities to improve public safety around power lines and substations.

3. Establish inclusive monitoring and feedback mechanisms

- ☐ Provide timely and accurate reporting on service quality as required by the regulator. Encourage public access to these reports.
- ☐ Ensure that feedback mechanisms on the energy service quality, reliability and affordability are in place.
- ☐ Where appropriate, establish a community committee for operation and maintenance with balanced representation of genders, as well as representatives of marginalized groups, in leadership positions.
- ☐ Improve service delivery in response to feedback.

4. Collect information about energy asset condition and performance to identify areas for routine and specialized maintenance activities to improve inclusive outcomes

- ☐ Collect data on energy asset condition and performance for use in routine maintenance and planning.
- ☐ Collect, review and update data on target consumers, including their preferences, willingness to pay, and other factors that may influence their energy consumption patterns and choices. Use the data to determine whether changes should be made in the operations of the energy asset.
- ☐ Identify critical energy assets and create Asset Management Action Plans to ensure these are properly managed.

5. Maintain user affordability through proper financial management and by prioritizing budgets for the maintenance of inclusive features

- ☐ Ensure the allocation of sufficient funds for the O&M of the energy service to sustain a safe and reliable service, including provision of continuous electricity supply in critical facilities.
- ☐ Diversify funding sources and do not rely only on user fees.
- ☐ Leverage technology such as prepaid electricity meters and waste-to-energy solutions to promote inclusive energy access for all consumers.

6. Develop inclusive emergency response plans

- ☐ Ensure that emergency response programmes consider impacts from disruptions related to the well-being and livelihoods of all consumers, not just economic impacts.
- ☐ During disruptions, ensure that mechanisms are in place to immediately restore or augment inclusive services or features targeted at marginalized groups, such as backup power systems in hospitals and care facilities for older persons and persons with disabilities.

Read more

- Manage infrastructure assets:
  - Managing Infrastructure Assets for Sustainable Development: A Handbook for Local and National Governments, United Nations, 2021.
  - Tools for Infrastructure Asset Management, United Nations Department of Economic and Social Affairs.
- Collect energy-specific data:
  - Energy Policies and Multitopic Household Surveys: Guidelines for Questionnaire Design in Living Standards Measurement Studies, World Bank, 2006.
  - Doing Qualitative Research for Development Programming: A step-by-step guide, The Asia Foundation, 2023.
- Identify channels for investment in sustainable energy infrastructure: Mapping Channels to Mobilise Institutional Investment in Sustainable Energy, OECD, 2015.
- Increase affordability by providing subsidies and loans, and lowering connection fees: Last Mile Connectivity Program, Global Infrastructure Hub, 2018.
- Considerations for inclusive subsidy initiatives: Toward Gender-Informed Energy Subsidy Reforms: Findings from Qualitative Studies in Europe and Central Asia, World Bank, 2015, pp. 22-24.
- Attributes of end-user subsidy design: The Role of End-User Subsidies in Closing the Affordability Gap, SEforALL, 2022, pp. 10-12.
- Safety resources:
  - Working safely near our network, Endeavour Energy.
  - Examples of safety leaflets, stickers and postcards: Helpful Resources, Scottish and Southern Electricity Networks.
  - Environmental and social safeguards guidelines, ILO, 2022, pp. 11-13.
- Tip sheet on integrating gender in the private sector: Accelerating Gender Equality in the Renewable Energy Sector, ADB, 2022.
- Opportunities and potential entry points for gender equality and social inclusion (GESI) for clean energy businesses: Theme Guide: Gender Equality & Social Inclusion, UK Research and Innovation and UK Aid, 2023.
- Gender mainstreaming in operations and maintenance: Guide on integrating gender throughout infrastructure project phases in Asia and the Pacific, UN Women and UNOPS, 2019, Part V.
- Identify employment entry points where GESI can be promoted:
  - Gender and renewable energy: Entry points for women's livelihoods and employment, Climate Investment Funds, 2017.
  - Illustrated guidelines for gender-responsive employment intensive investment programmes, ILO, 2016.
  - Inclusion of lesbian, gay, bisexual, transgender, intersex and queer (LGBTIQ+) persons in the world of work: A learning guide, ILO, 2022.
  - Example diversity and inclusion employer strategy: Ofgem Diversity and Inclusion Strategy 2022, Office of Gas and Electricity Markets, 2022.
- Partnership development and management, targeting, coordination, monitoring and managing gender-based violence disclosures and referrals: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, pp. 46-54.
- Establish inclusive feedback and accountability mechanisms: Feedback and Complaints, CARE, and Inclusive Monitoring and Feedback Mechanisms, Global Shelter Cluster.
- Establish community committees for O&M: Operations and maintenance of rural infrastructure in community-driven development and community-based projects: lessons learned and case studies of good practice, World Bank, 2015.

← Return to Operations & Maintenance

ACTION CHECKLIST: Project managers and teams

Planning and mobilizing for project delivery

1. Mobilize capacity to create and deliver on inclusive targets, including hiring GESI specialists and providing skills and capacity building for teams and private sector stakeholders

- ☐ Engage GESI and accessibility specialists to ensure that all project activities and outputs are responsive to gender, age, disability, and other relevant social factors. GESI specialists should be included in planning all project activities, selecting social impact assessment indicators, carrying out a GESI analysis and developing a GESI Action Plan.
- ☐ Engage long-term GESI specialists in a geographical entity and/or project team to ensure that GESI Action Plans are implemented.
- ☐ Engage participatory design and community consultation experts to support and inform participatory processes.
- ☐ Ensure that the project team has the right people, resources, skills and capacity to effectively implement, monitor and evaluate project activities according to inclusive targets defined in the GESI Action Plan.
- ☐ Provide training for private sector stakeholders, such as designers, contractors and project managers, on integrating participatory processes and inclusive activities in implementation work.
- ☐ Consider the need to conduct capacity building activities at different levels on how to understand differentiated needs and implement inclusive approaches.

Read more

- Hire GESI specialists and accessibility consultants:
  - Generic terms of reference for Gender Expert (Project Design), UNIDO.
  - Toolkit on Accessibility: ToR – Accessibility Assessment Consultant (Section G: Accessibility Checklists), UNICEF, 2022.
  - Expertise needed: Blueprint Guide for Creating Gender-sensitive Energy Policies, The Clean Energy Solutions Center, 2019, p. 14 and Annex 2 (terms of reference – TORs).
  - Sample TORs for gender experts for project design, project implementation, gender analysis: Guide on Gender Mainstreaming in Energy and Climate Change Projects, UNIDO, 2014, Annexes.
  - Sample TORs for gender assessments, gender action plans: Online resources for integrating gender considerations into energy operations: Repository of Gender Terms of Reference (ToRs), ESMAP.
- Improve the skills and capacity of private sector stakeholders to engage in participatory and inclusive implementation:
  - Small-scale contractor development in the construction sector, ILO.
  - Developing the construction industry for employment-intensive infrastructure investments, ILO, 2019.

2. Ensure that project budgets can support inclusive, lasting implementation through adequate allocation and ring-fencing of resources for inclusive activities

- ☐ Allocate adequate financial resources for GESI-mainstreaming activities and incorporate considerations for an inclusive and gender-responsive budget that disaggregates expenditures minimally in terms of gender, age and disability, where possible.
- ☐ Allocate a budget for participation and engagement activities, including venue rental, printing, participation costs, and translation/interpretation costs.
- ☐ Consider the budget needed for inclusive implementation, such as the costs of social protection provisions, use of employment-intensive approaches, or providing reasonable accommodation at the worksite for workers with disabilities.
- ☐ For decentralized solutions in particular, ensure there is sufficient budget for a warranty/guarantee period for equipment and the use of longer term maintenance or service contracts until local capacity is sufficiently developed to undertake routine maintenance and parts replacement.

Read more

- Gender-responsive budgeting:
  - Engendering Budgets: A Practitioners' Guide to Understanding and Implementing Gender-Responsive Budgets, Commonwealth Secretariat, 2003.
  - Gender-Responsive Budgeting in Asia and the Pacific: Key Concepts and Good Practices, UNESCAP, 2018.
  - Handbook on Costing Gender Equality, UN Women, 2015.
  - Gender budgeting in the energy sector: Energy and Gender in Asia: A regional review, Friedrich-Ebert-Stiftung and The Energy and Resources Institute, pp. 3-6.
- Conduct a Gender-Disaggregated Beneficiary Assessment and Gender-Disaggregated Expenditure Incidence Analysis: Part II in Guide on integrating gender throughout infrastructure project phases in Asia and the Pacific, UN Women and UNOPS, 2019.
- Socially inclusive & gender responsive budgeting, Swiss Agency for Development and Cooperation SDC, 2019.
- Training on gender-responsive budgeting:
  - Gender Responsive Budgeting, UN Women.
  - Gender Responsive Budgeting in Practice: A Training Manual, UNFPA, 2006.

3. Develop a GESI Action Plan with realistic targets, activities, indicators and appropriately allocated resources

- ☐ Review documents and lessons learned from similar projects or contexts to identify information that can inform the project, including successful and unsuccessful GESI activities.
- ☐ Formulate realistic targets linked to inclusion-related objectives and specific, measurable, achievable, relevant, and time-bound (SMART) indicators. Targets and strategies should enable step-by-step progress, bringing incremental changes and challenging the culture without threatening it. Targets should facilitate monitoring of participation and benefits.
- ☐ Ensure that the GESI Action Plan uses an intersectional and participatory approach and presents an evidence-based rationale for recommended activities directly linked to overall project objectives. These activities should support the intended project solution in addressing all users' diverse needs and requirements, such as the accessibility, safety, security and well-being of women and marginalized groups.
- ☐ Plan empowerment activities for women and marginalized groups that can be undertaken as part of the project. These should also include activities to help other community members learn about and contribute to transforming harmful sociocultural norms that cause discrimination against and social exclusion of women and marginalized groups.
- ☐ Define the resources (human and financial) required and capacity strengthening necessary to deliver the GESI Action Plan.
- ☐ Define clear monitoring and evaluation indicators and opportunities for participatory monitoring.
- ☐ In combination with the GESI Action Plan, prepare a Stakeholder Engagement Plan (SEP), Communication Plan (CP), Vulnerable Groups Plan (VGP), Grievance Redress Plan (GRP), Decent Work Plan (DWP) and Capacity Development Plan (CDP). Depending on the outcome of the stakeholder analysis, it may also be necessary to include an Indigenous People Plan (IPP), a Resettlement Plan (RP), and/or a Disaster Risk Reduction (DRR) plan.
- ☐ Incorporate environmental and social safeguards within the project activities.

Read more

- Assess who needs to be included: The Social Inclusion Assessment Tool (SiAT), World Bank.
- A Toolkit for Integrating GESI in Design, Monitoring, and Evaluation, World Vision, 2023.
- Identify activities and make a GESI Action Plan:
  - Inclusive programme design: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, pp. 41-44.
  - Mainstreaming Gender in Energy Projects, A Practical Handbook, ENERGIA, 2011, pp. 47-61.
  - Formulation of gender outcomes, outputs and indicators in energy projects: Guide on Gender Mainstreaming in Energy and Climate Change Projects, UNIDO, 2014, p. 35.

- Sample gender action plan: Gender-Inclusive Approaches in the Energy Sector, ADB, p. 8.
- UNIDO Guide to Gender Analysis and Gender Mainstreaming the Project Cycle, UNIDO, 2021.
- Checklist for Gender Mainstreaming in the Infrastructure Sector, AfDB, 2009.
- Employment-Intensive Investment Programme (EIIP): Environmental and social safeguards guidelines, ILO, 2022.
- African Development Bank Group's Integrated Safeguards System 2023, AfDB, 2023.
- Guidance Note on Disability-Inclusive Project Management Cycle, UNESCAP, 2023.
- sustainABLE tool suite, UNOPS.

- Lessons learned on incorporating cultural heritage and spiritual issues in energy projects: Bujagali Energy projects in Uganda : Lessons learned on cultural heritage and spiritual issues, Independent Review Mechanism, AfDB, 2021.
- Identify activities for inclusive employment-intensive approaches:
  - Disability Inclusion in EIIP Stocktaking and way forward, ILO, 2022.
  - Illustrated Guidelines for Gender-responsive Employment Intensive Investment Programmes, ILO, 2016.
  - Towards the Right to Work: A guidebook for designing innovative Public Employment Programmes, ILO, 2012.

← Return to Project delivery planning and mobilization

ACTION CHECKLIST: Project managers and teams
Design inclusive energy projects

1. Review and validate concept designs with the end users, especially women and marginalized groups, to ensure that they fulfil diverse energy needs

- ☐ Involve and engage community members, local government officials, as well as other key stakeholders (e.g., CSOs and NGOs, and supply market), in consultations and the decision-making process to review and validate the concept designs of energy infrastructure assets. Ensure that participants represent the community's diversity as identified in the stakeholder analysis.
- ☐ Update the concept designs with the energy planners and design engineers to incorporate the findings of the review exercises until validation is achieved.

2. Ensure that participatory consultations are conducted in an inclusive and accessible manner

- ☐ Establish a community committee for ongoing consultation and monitoring. Ensure a balanced representation of all genders and adequate representation of marginalized groups within the community.
- ☐ Evaluate whether power imbalances or gender norms make it uncomfortable for, or negatively influence the ability of, diverse stakeholders to participate in consultations meaningfully. Schedule separate workshops if necessary, in spaces where diverse participants can feel safe about voicing their opinions.
- ☐ Ensure that workshops are located in safe, convenient and easy-to-access areas.
- ☐ Schedule workshops at convenient times for all relevant stakeholders, including women and marginalized community members, so they can attend. Adapt the methods and schedules to accommodate the diverse needs of stakeholders, including taking a proactive approach to engage with 'hard-to-reach' communities.
- ☐ Consider using diverse and accessible communication techniques during consultations and workshops to ensure input is received from the majority of the concerned community, particularly women and marginalized community members. Where feasible, leverage technology and digital communication methods to enhance reach and accessibility.

Read more

- Conduct participatory and co-creative processes:
  - Stakeholder consultations: Mainstreaming Gender in Energy Projects – A Practical Handbook, ENERGIA, 2011, pp. 35-46.
  - Tool box: Co-design exercises, Active Neighbourhoods Canada.
  - Ensure accessibility of consultations and events: Toolkit on Accessibility: Organization of Accessible Events, UNICEF, 2022.
  - Women's participation in fragile settings: Beyond Consultations: A tool for meaningfully engaging with women in fragile and conflict-affected states, Gaps UK, Women for Women, Amnesty International, Womankind Worldwide, and Saferworld.
  - Engage older people: Let's go! Steps for engaging older people and improving communities for all ages, HelpAge, 2022; and Participatory research with older people: a sourcebook, HelpAge, 2011.
  - Involve the local community in development: Local resource-based (LRB) approaches and community infrastructure, ILO, 2020.
  - Participatory approaches for gender-sensitive research design, CGIAR, 2014.
  - An example of a participatory approach to introduce the concept of transitioning to electricity for cooking: Beyond fire: Backcasting a pathway to fully electric cooking in rural Kenya by 2030, SEI and Hivos, 2020.
- Stakeholder mapping tool for infrastructure: Stakeholder Mapping, Active Neighborhoods Canada.
- Playbook, involving citizens in implementing climate mitigation or adaptation action: Inclusive Community Engagement Playbook, C40Cities, Citi Foundation and Arup, 2019.

← Return to Design

ACTION CHECKLIST: Project managers and teams
Construct inclusive energy projects

1. Improve the capacity of project teams, contractors and labourers to implement inclusive construction practices, foster an inclusive workplace, and respect local cultural practices

- ☐ Conduct skills training and capacity building for inclusive construction practices – such as providing training and educational resources for PSEAH – among project teams, contractors, labourers and construction supervisors.
- ☐ Conduct awareness and sensitivity training to promote an inclusive and non-discriminatory work environment for diverse groups.
- ☐ Contact educational institutions, such as local schools, to organize training programmes, internships and professional placements.
- ☐ Identify local cultural practices that should be respected during construction activities, such as ensuring workers can maintain rituals and observances at appropriate times and minimizing noise during important cultural activities.

Read more

- Learn how to improve skills in employment-intensive infrastructure investment:
  - ILO Guide for Skills Development in Employment-Intensive Investment Programmes, ILO, 2021.
  - Developing the construction industry for employment-intensive infrastructure investments, ILO, 2019.
  - Site Supervisor Course for Labour-Based and Community-Managed Upgrading of Urban Low-Income Settlements – Supervisor's Site Reference Handbook, ILO, 2002.
- Improve awareness and sensitivity for an inclusive workplace:
  - Inclusion of lesbian, gay, bisexual, transgender, intersex and queer (LGBTIQ+) persons in the world of work: A learning guide, ILO, 2022.
  - Illustrated guidelines for gender-responsive employment intensive investment programmes, ILO, 2016.
- Solar PV: A Gender Perspective, IRENA, 2022.
- Renewable Energy for Agriculture: Insights from Southeast Asia, IRENA, 2022.

2. Monitor, evaluate and learn from inclusion efforts

- ☐ Plan, monitor and report on disaggregated indicators that specifically measure the achievement of inclusion criteria and relevant impact through both quantitative and qualitative data.
- ☐ Consider engaging a third-party monitoring agent, where relevant, or implement community-based monitoring to monitor environmental issues, inspect construction work and ensure transparency in projects.
- ☐ Engage local community members in participatory data collection, lessons learned workshops and post-closure evaluations of the project. Ensure that the sampling accurately represents the community.
- ☐ Train data collectors to be sensitive to gender, age and disability to help prevent bias.
- ☐ Determine if the delivery of the agreed project objectives and activities, and the GESI Action Plan in particular, sufficiently address the needs of women and marginalized groups.
- ☐ Document inclusion-related aspects of best practices and lessons learned so that they can be applied to new projects. Identify any gender-related benefits and achievements produced by the project using disaggregated data, indicators and statistics.

Read more

- Monitor, evaluate and learn from gender mainstreaming:
  - Gender Monitoring, Evaluation & Learning Mainstreaming, Renewable Energy and Energy Efficiency Partnership, 2017.
  - Mainstreaming Gender in Energy Projects, A Practical Handbook, ENERGIA, 2011, pp. 77-86.
- Monitoring energy projects in humanitarian settings: Inclusive Energy Access Handbook, Mercy Corps and Women's Refugee Commission, 2020, p. 53.

- ESMAP resources and tools to support completion and evaluation, including a template for the results framework, and a tool to identify indicators: Gender: Social Inclusion in the Energy Sector. Online Resources for Integrating Gender Considerations into Energy Operations, Step 4, ESMAP.
- Monitor employment impacts: Guide for Monitoring Employment and Conducting Employment Impact Assessments (EmpIA) of Infrastructure Investments, ILO, 2020.
- Formulate inclusive indicators for results monitoring:
  - Guidelines on designing a gender-sensitive, results-based monitoring (RBM) system, Deutsche Gesellschaft für Internationale Zusammenarbeit, 2014.
  - Sample indicators for disability-inclusive infrastructure: Guidance Note on Disability-Inclusive Project Management Cycle, UNESCAP, 2021.
  - Gender Tool Kit: Energy Going Beyond the Meter, ADB, 2012, pp. 35-38.
  - Sample indicators for inclusive infrastructure: Checklist for Gender Mainstreaming in the Infrastructure Sector, AfDB, 2009, p. 3.
- Enable community-based monitoring: Basic principles of Community-Based Monitoring, United Cities and Local Governments, 2014.

3. Implement the GESI Action Plan and safeguards against negative social and environmental impacts of construction

- [ ] Engage long-term GESI specialists to ensure that the GESI Action Plan is completed, incorporated as part of the Implementation Plan, implemented accordingly, and reported against.
- [ ] Prepare and implement an Environmental and Social Management Plan, based on the results of Environmental and Social Impact Assessments, to minimize water, soil, air and noise pollution and carbon emissions.
- [ ] Refer to and adopt the technical specifications for the project design as per the relevant construction standards, considering reasonable accommodation, safety, gender responsiveness and local context factors.
- [ ] Ensure that there is a proper redress mechanism for reporting and addressing any incident involving discrimination, sexual exploitation, sexual harassment, abuse of authority, or acts of gender-based violence by or towards any individual connected to the project.

Read more

- How to integrate environmental and social safeguards across the project cycle:
- Environmental and social safeguards guidelines, ILO, 2022.
  - African Development Bank Group's Integrated Safeguards System 2023, AfDB, 2023.
- Implement measures for protection from sexual exploitation, abuse and harassment (PSEAH) and to address gender-based violence:
  - PSEAH Implementation Quick Reference Handbook, CHS Alliance, 2020.
  - Addressing Gender-Based Violence and Harassment (GBVH) in the Construction Sector, CDC Group (CDC), European Bank for Reconstruction and Development (EBRD) and International Finance Corporation (IFC), 2020.
  - Sexual exploitation, abuse and harassment (SEAH) Infrastructure Tool, Department for International Development (DFID) Safeguarding Unit, Infrastructure & Cities for Economic Development (ICED), 2019.
- Protection of children and young people in infrastructure: DFAT Child Protection Guidance Note: Child Protection in Infrastructure Activities, Department of Foreign Affairs and Trade Australia (DFAT), 2020.
- Multilingual resource hub on safeguarding (English, French, Arabic, Kiswahili): Safeguarding Resource and Support Hub.

4. Engage stakeholders in transparent and participatory project implementation

- [ ] Prepare an effective communication strategy to disseminate critical information about the project, such as its scope, foreseen impacts, and expected benefits, to all stakeholders and the community in the area of influence. This strategy must allow all interested groups to participate and express their concerns regarding the project's development to facilitate corrective or complementary actions.
- [ ] Think about how to make communications accessible and inclusive. Consider the use of tactile information, multiple languages, different media formats, etc.
- [ ] Incorporate community consultations as a continuous process activity to facilitate better follow-up to the agreements established in the previous stages, and improve management of new problems related to project implementation across its area of influence.

- ☐ Engage representatives from different interest groups in the communities, the contractor, and the contracting agency to support the implementation of the GESI Action Plan. These representatives must be briefed or trained regarding their specific roles in monitoring compliance with social safeguards and in identifying and implementing corrective actions.
- ☐ Share periodical progress updates and monitoring reports with stakeholders to promote transparency.

← Return to Construction

ACTION CHECKLIST: Project managers and teams

Renovate, retrofit, repurpose and decommission assets

1. Repurpose old energy infrastructure assets into more appropriate types of energy, social or civic infrastructure that better serves communities

- ☐ Conduct studies of old energy infrastructure assets to determine the possibility of repurposing them into other types of energy infrastructure or social and civic infrastructure.
- ☐ Conduct public consultations and participatory design processes that engage local communities, especially women and marginalized groups, about their ideas, needs and preferences regarding the repurposed infrastructure asset.
- ☐ Ensure alternative energy options exist before repurposing the asset, especially if this is the primary energy source for marginalized groups.

2. Support inclusive decommissioning activities, including safe and inclusive waste management

- ☐ Ensure alternative energy options exist before decommissioning the asset, especially if this is the primary energy source for marginalized groups.
- ☐ Prioritize the recycling and reuse of construction materials recovered from decommissioned assets.
- ☐ Ensure that waste management practices and work conditions are safe and inclusive for informal workers.
- ☐ Prioritize the hiring of local community members, especially women and marginalized groups, and local suppliers in the decommissioning activities.

Read more

- Examples of energy infrastructure assets being repurposed:
  - Repurposing Coal Infrastructure On The Path To Net Zero, International Energy Forum, 2022.
  - Design and regulate for separation and recovery, Knowledge Hub.
- Carry out asset recycling and material reuse:
  - Guidelines for Implementing Asset Recycling Transactions, World Bank.
  - Reuse of building products and materials – barriers and opportunities, Buildings As Material Banks, 2021.
  - Circular Economy of Construction and Demolition Waste: A Literature Review on Lessons, Challenges, and Benefits, Purchase, Callun Keith, et al., 2021. See Section 10. Frameworks and Model Approaches.
- Ensure inclusive waste management practices:
  - Gender Factsheet: Why Does Gender Matter in the Sound Management of Chemicals and Waste?, UNEP, 2022.
  - Gender and waste nexus: Experiences from Bhutan, Mongolia and Nepal, International Environmental Technology Centre (UNEP-IETC) and GRID-Arendal, 2019. Recommendations for interventions and tools on p. 77.
  - Gender and Recycling: Tools for Project Design and Implementation: Regional Initiative for Inclusive Recycling, IDB, 2013.

← Return to Renovating, Retrofitting, Repurposing, Decommissioning

ACTION CHECKLIST: Procurement officers

Planning and mobilizing for project delivery

1. Conduct project strategic procurement planning to ensure the capacity to implement sustainable and inclusive procurement processes

- ☐ Conduct targeted market research and analysis.
- ☐ Develop the procurement strategy and plan in line with inclusion objectives, taking into consideration the inclusive market preparedness of both suppliers and products.
- ☐ Assess and plan procurement officers' need for training in sustainable procurement and how to mainstream inclusion into procurement processes.
- ☐ Ensure early market engagement with timely public notifications about the procurement plan and process.
- ☐ Ensure that procurement process methods include inclusion-related evaluation criteria in decision making.
- ☐ When feasible, break a tender into several lots to allow small and medium-sized enterprises (SMEs) to bid for contracts, and consider the adoption of alternative proposals.
- ☐ Ensure technical support is provided to suppliers to advance inclusion-related performance if required.

2. Implement measures to ensure integrity, accountability and transparency in the procurement processes, especially for public energy infrastructure projects

- ☐ Review the context of the project to identify any risks to achieving inclusive and transparent procurement, including the level of corruption, level of competition, lack of technical capacity, and insufficient cultural awareness.
- ☐ Ensure that procurement processes for government-led infrastructure projects are transparent to the public, guaranteeing that public funds support the affordability and quality of energy services. This can be achieved through open data, e-procurement, professional capacity and integrity training of procurement officers, joint transparency initiatives between governments and bidders, regular monitoring and evaluation reporting, engagement of relevant CSOs in the procurement processes, enhancement of probity assurance, and by securing easy and timely access to procurement information and relevant documents.

Read more

- Improve procurement transparency through open data: Open Contracting Data Standard (OCDS), Open Contracting Partnership.
- Inclusive Public Procurement Playbook, UNDP, 2022.
- Online training on inclusive procurement: How to Series 4: Mainstreaming Gender Equality in Procurement, UN Women Training Centre.
- Renewable energy benefits: Leveraging local capacity for onshore wind, IRENA, 2017.

← Return to Project delivery planning and mobilization

ACTION CHECKLIST: Procurement officers

Conduct inclusive procurement

1. Ensure that underrepresented qualified suppliers are able to participate in the bidding process

- ☐ Consider supplier engagement workshops, events and meetings (e.g., Q & A sessions, site visits, and pre-bid, pre-contract, contract start-up and contract progress meetings).
- ☐ Conduct capacity building in how to participate in bidding processes (especially for underrepresented suppliers, such as businesses owned or operated by women, youth, and persons with disabilities).
- ☐ Advertise the tender through both traditional and non-traditional methods, including through local youth or women's business associations or networks.
- ☐ Consider and take measures that increase the participation and contracting of typically underrepresented suppliers, for example, businesses owned or operated by women, youth, and persons with disabilities. These measures can include limited competition, suitable bidding time, subcontracting, joint ventures and price preferences.
- ☐ Eliminate unduly restrictive requirements and/or liabilities without compromising the quality of the goods, works or services. Ensure there are appropriate securities, insurance and eased or direct payment terms to eliminate potential barriers for micro-, small and medium-sized enterprises and youth- and women-owned businesses.
- ☐ Consider using simplified and/or harmonized tender documents (with inclusive language) and short forms of contracts for low-value or inclusive procurement (e.g. the Short Form of Contract from the International Federation of Consulting Engineers or FIDIC) for works of relatively low capital value, as it reduces the time needed for their analysis. This particularly benefits SMEs, who have fewer resources at their disposal for the preparation of bids, and lessens the complexity of contract management.
- ☐ Monitor and audit the procurement performance (e.g., track the percentage of project funds spent on typically underrepresented suppliers).
- ☐ Adopt focused capacity building initiatives (e.g., tender guidelines, learning platforms) targeting businesses owned by women and marginalized groups.
- ☐ Accommodate for centralized one-time registrations of underrepresented suppliers to be shared with all relevant contracting authorities (and avoid repetitive requests for bidding requirements).
- ☐ Where local supplier capacity is insufficient, consider inviting international, well-reputed infrastructure suppliers in the bidding process, and incorporate bid requirements that encourage the subcontracting of locally established suppliers. This can support the dissemination of good standards and practices.

2. Integrate inclusion conditions when formulating bid requirements, contract clauses and key performance indicators

- ☐ Require core prime suppliers to have policies and mechanisms to implement and address GESI issues, such as equal pay for equal work, equal access to work opportunities, non-discrimination, protection from sexual exploitation, abuse and harassment, and prohibition of child labour and forced labour.
- ☐ Require core prime suppliers to have policies and mechanisms to address feedback, including mechanisms for alternative dispute resolution, grievance redress, and claim and complaint management.
- ☐ Ensure a local inclusive approach to site establishment (and access thereto) with positive engagement with the local community (e.g., capacity building, recruitment, awareness events).
- ☐ Create conditions for site establishment that require the contractor to maintain safe and inclusive site facilities.
- ☐ Encourage main contractors to use SMEs and local subcontractors, suppliers and locally available construction materials, as applicable. Where required, ensure that bidders have completed training in local resource-based (LRB) or employment-intensive approaches.

- [ ] Ensure that all inclusion-related requirements, including performance reporting, are clear for bidders.
- [ ] Establish evaluation criteria to assess inclusion considerations in the proposals/bids (and alternative proposals, when applicable). Ensure that a GESI specialist reviews both the evaluation criteria and the proposals.
- [ ] Implement a supplier corrective and preventive action process to manage non-conformances with agreed inclusion-related requirements, to address their impact, to analyze the reason for the non-conformance, and to establish appropriate actions to correct the issue and prevent any repetition.
- [ ] Ensure adequate actions are taken when suppliers fail to perform according to agreed inclusion-related requirements, such as labour rights, codes of conduct, and health, safety, security and environment regulations.

3. Enhance the transparency of the procurement process to maximize infrastructure investments for the benefit of the end users

- [ ] Prevent corruption and avoid conflicts of interest in public procurement processes.
- [ ] Enhance the capacity, integrity and accountability of procurement officers and ensure good recordkeeping.
- [ ] Set up proper complaints, appeal and relevant feedback systems with regular public reporting.
- [ ] Facilitate targeted procurement audits and monitor and evaluate procurement performance.

Read more

- Conduct inclusive procurement to support businesses owned by women and marginalized groups:
  - Gender-responsive Public Procurement, UNOPS, 2023.
  - Inclusive Procurement And Contracting: Building a Field of Policy and Practice, PolicyLink, 2018.
  - Women's Empowerment Principles: Gender-Responsive Procurement Guidance Note, UN Women.
  - Empowering women through public procurement and enabling inclusive growth, UN Women, 2021.
  - Gender Equality and Social Inclusion (GESI) Checklists for donors to use in design and procurement, Integrity, Triple Line and NIRAS Tanzania, 2021.
  - Making Public Procurement Work for Women, International Trade Centre, 2020.
  - Guidance: Gender in the MAPS framework, OECD, 2022.
- Conduct disability-inclusive procurement: Guidelines on the Implementation of Indicator 8: Procurement, High-Level Committee on Management Procurement Network, 2020.
- Policy recommendations for promoting women's participation: Empowering women through public procurement and enabling inclusive growth, UN Women, 2021.
- Strategies to address structural barriers to procurement: Contracting for Equity: Best Local Government Practices that Advance Racial Equity in Government Contracting and Procurement, Insight Center for Community Economic Development.
- Consider using the Short Form of Contract from FIDIC for simple works of limited duration: Short Form of Contract 2nd Ed (2021 Green Book), FIDIC, 2021.
- Conduct inclusive procurement for employment-intensive works and community-based contracting:
  - Guide on gender-responsive procurement for Employment-Intensive Investment Programmes (EIIPs), ILO, 2022.
  - Contracting Local Infrastructure Works, ILO, 2009.
  - Community contracts in urban infrastructure works, ILO, 2001.
  - Community Contracting and Organisational Practices in Rural Areas: A Case Study of Malawi, ILO, 2005.
  - Organisation, Contracting and Negotiation in Development Programmes and Projects: A Study of Current Practice at the Community Level, ILO, 2001.

- Improve the capacity of local and small-scale contractors:
  - Small-scale contractor development in the construction sector, ILO, 2003.
  - Developing the construction industry for employment-intensive infrastructure investments, ILO, 2019.
- Improve procurement transparency through open data: Open Contracting Data Standard (OCDS), Open Contracting Partnership.
- Inclusive Public Procurement Playbook, UNDP, 2022.
- Implement measures for protection from sexual exploitation, abuse and sexual harassment (PSEAH) and the protection of children and young people:
  - PSEAH Implementation Quick Reference Handbook, CHS Alliance, 2020.
  - Sexual exploitation, abuse and harassment (SEAH) Infrastructure Tool, DFID Safeguarding Unit, ICED, 2019.
  - DFAT Child Protection Guidance Note: Child Protection in Infrastructure Activities, DFAT, 2020.

← Return to Procurement

ACTION CHECKLIST: Contractors
Construct inclusive energy projects

1. Engage in inclusive work practices and workforce management, which promote diversity and inclusion in hiring practices

- ☐ Before the start of construction works, organize meetings with the concerned communities, contractors, the contracting agency, local authorities and relevant local NGOs and CSOs to discuss the availability of labour inputs from the local communities.
- ☐ Prioritize hiring workers from the local community, including women and people in marginalized groups, to ensure they benefit from employment in the construction, operations and maintenance of the infrastructure asset.
- ☐ Ensure that job descriptions or terms of reference (TORs) use inclusive language and gender-neutral terms and are published in the main working language of the project site.
- ☐ Share project-related employment opportunities in channels likely to reach more women and diverse candidates.
- ☐ Ensure equal pay for equal work is offered, regardless of sex, gender, age or disability.
- ☐ Establish hiring quotas within job types to ensure the diverse and equitable representation of women and men (and marginalized groups where applicable) at all levels, from administration and operations to management and technical positions.
- ☐ Establish rotational systems if the labour supply exceeds the availability of job opportunities to ensure equitable distribution of employment benefits.
- ☐ Respect workers' rights to work in decent conditions, both wage and non-wage related. This includes ensuring timely and full payments of decent wages, providing wage entitlements and establishing inclusive complaint redress procedures. It also includes enacting Occupational Safety and Health (OSH) provisions, such as providing adequate tools, establishing arrangements to minimize the risk of accidents, providing transport to and from the worksite, ensuring coverage under accident insurance and other social protection entitlements, training workers before the actual start of the construction works and establishing safeguards.
- ☐ Provide ongoing training and mentorship opportunities for all people, at all levels. When planning training sessions, take into consideration gender- or disability-specific needs.
- ☐ Provide opportunities for on-the-job training, internships and apprenticeships in collaboration with higher education institutions, technical and vocational education and training programmes and local organizations providing training. Promote initiatives that expose women and girls to science, technology, engineering and mathematics (also known as STEM subjects) or relevant non-STEM subjects, and that raise awareness of career opportunities.
- ☐ When hiring community members as construction workers, provide training in safe construction practices, working effectively in groups, GESI awareness, and Protection from Sexual Exploitation, Abuse and Harassment (PSEAH).
- ☐ Promote flexible working policies and parental leave policies. Use an output-based payment system, with equal pay for equal work. This provides flexibility regarding working hours, which can support women and marginalized groups who may have time constraints that prevent them from working full-time.
- ☐ Ensure that all new labourers sign the code of conduct and are trained in its provisions.

Read more

- Engage local communities in infrastructure work:
  - Community contracts in urban infrastructure works: practical lessons from experience, ILO, 2002.
  - Emergency employment, ILO, 2021.
- Build a diverse workforce to support the skill side of the energy transition:
  - Renewable Energy and Jobs Annual Review 2021, Special Edition, Labour and Policy Perspectives, IRENA and ILO, 2021, pp. 75-78.
  - Practical Guide to Women in Energy Regulation, USAID, 2018.
  - Disability Inclusion in EIIP Stocktaking and way forward, ILO, 2022.

- Illustrated Guidelines for Gender-responsive Employment Intensive Investment Programmes, ILO, 2016.
- Inclusion of lesbian, gay, bisexual, transgender, intersex and queer (LGBTIQ+) persons in the world of work: A learning guide, ILO, 2022.

- Improve capacity for employment-intensive infrastructure programmes:
  - Employment-Intensive Infrastructure Programmes: Capacity building for contracting in the construction Sector, ILO, 1999.
  - ILO Guide for Skills Development in Employment-Intensive Investment Programmes, ILO, 2021.
- Labour regulations and social safeguards: Developing the construction industry for employment-intensive infrastructure investments (Chapter 8), ILO, 2019.

2. Engage in inclusive construction management, which ensures decent work conditions and enforces health, safety, security and environment (HSSE) standards

- ☐ Ensure adequate and safe WASH facilities and practices in the workplace.
- ☐ Where cultural norms and capacity allow, ensure that there is a diverse range of construction supervisors on site (including both women and men) and that adequate and safe working facilities are provided for people of all genders.
- ☐ Ensure that there is no child and forced labour on construction sites, unless in non-hazardous tasks and under a formal apprenticeship related to their education.
- ☐ Ensure that on-site practices and activities support flexible working hours as much as practical, considering the convenient times for women, men and gender-diverse workers who may be responsible for additional care and household responsibilities.
- ☐ Depending on the sociocultural context and the work demands, it may be necessary to have separate work groups for women and men, and to assign women's work groups to worksites closer to their homes.
- ☐ Complete a risk assessment and establish controls to ensure that hazards are minimized. Continuously monitor safety in the work zone and surrounding areas.
- ☐ Use environmentally sustainable work methods and local materials to construct or improve assets.
- ☐ Enforce health, safety, security and environment (HSSE) standards.

Read more

- Minimize negative impacts of construction on local communities: Considering inclusion in construction, Costain.
- Apply health, safety, security and environment (HSSE) standards:
  - Environmental and social safeguards guidelines, ILO, 2022.
  - Guidelines on occupational safety and health management systems, ILO, 2009.
  - ILO Code of practice: Safety and health in construction (Revised edition), ILO, 2022.
- Ensure adequate and safe WASH facilities in the workplace: WASH@Work: a Self-Training Handbook, ILO, 2021.
- Gender-responsive construction management and supervision: Guide on integrating gender throughout infrastructure project phases in Asia and the Pacific, UN Women and UNOPS, 2019, p. 56.

3. Maintain safe and inclusive construction sites

- ☐ The GESI specialist should review and monitor the site establishment provisions to ensure that site facilities are safe and inclusive.
- ☐ Women workers and those living nearby can conduct a women's safety audit of the site, providing recommendations to address any concerns they may have.
- ☐ Ensure that road signs, site rules signage and any other health and safety-associated signage are in well-lit areas and are comprehensible by all workers and community members.
- ☐ Enforce policies and mechanisms for non-discrimination, protection from sexual exploitation, abuse and harassment (PSEAH), and prohibition of child labour and forced labour.
- ☐ Provide segregated, private, secure and menstrual hygiene management-friendly toilet facilities on site for people who menstruate.

- [ ] Ensure on-site accommodation facilities are separated based on the requirements of women and men involved in the labour force and ensure safety and security measures are in place.
- [ ] Ensure that personal protective equipment (PPE) is inclusive and fits properly on different types of people.
- [ ] Where cultural norms and capacity allow, provide family-friendly work facilities on site.
- [ ] Ensure there are private spaces for workers to express milk, quiet areas for neurodivergent people, areas for people to take medicine, faith areas for prayer and cultural or religious routines, and anything else that is relevant to the context.
- [ ] Where relevant to the context, provide accommodation for animals (including assistance animals and animals as a mode of transport).
- [ ] Ensure that all workers have safe and accessible transportation options to the construction site(s) and their place of accommodation.
- [ ] Ensure that an appropriate traffic management plan is implemented in and around the construction site to minimize public inconvenience and safety hazards. Ensure that any rerouting of sidewalks and pedestrian paths provides proper accommodations for persons using wheelchairs, strollers or carts.
- [ ] Conduct an assessment of the works' impact on surrounding areas, and ensure adequate protection and safety measures are in place.

Read more

- Safety Guidelines for Women in Construction, Occupational Safety and Health Administration.
- Safety, health and welfare on construction sites: A training manual, ILO, 1995.
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← Return to Construction

ACTION CHECKLIST: Small-scale asset owners & operators

Operate and maintain inclusive energy assets and services

1. Collect information about energy asset condition and performance to identify areas for routine and specialized maintenance activities

- ☐ Collect data on energy asset condition and performance for use in routine maintenance and planning.
- ☐ Collect information and data, which strengthens base demand projections and trends of usage, making investment analysis easier and more reliable and allowing amendments to the system. Usage data can then be analyzed to adapt the system and smooth out peaks in consumption.

2. Establish and implement an appropriate asset management action plan for the asset's design, service life, components and materials

- ☐ Establish an appropriate maintenance plan for the asset's design, service life, components and materials.
- ☐ Ensure the allocation of sufficient funds for the O&M of the energy asset to sustain safe and reliable service.
- ☐ Build capacity to conduct regular maintenance and repairs. Create opportunities for apprenticeships and training within the community related to the operations and maintenance of energy assets.
- ☐ Undertake preventative maintenance and regular inspection.
- ☐ When a larger grid becomes available, connect autonomous mini-grids to increase security of supply.
- ☐ Where possible, include features to prevent thefts of the power grid elements. This can include an algorithm to detect when a piece is stolen or when someone is illegally connecting to the grid.

Read more

- Manage infrastructure assets: Tools for Infrastructure Asset Management, United Nations Department of Economic and Social Affairs.

← Return to Operations & Maintenance

ACTION CHECKLIST: Energy utilities and small-scale asset owners

Renovate, retrofit, repurpose and decommission assets

1. Collect information about energy asset condition and performance to identify issues and opportunities for renovating, retrofitting, repurposing or decommissioning

- ☐ Collect data on energy asset condition and performance to identify gaps in inclusive access for women and marginalized groups.
- ☐ Collect feedback and conduct participatory consultations with diverse user groups to identify opportunities for improvement.

2. Consider how to improve inclusion, sustainability and resilience aspects while retrofitting or renovating energy infrastructure

- ☐ Conduct studies of old energy infrastructure assets to determine the need to retrofit inclusive features, such as adding motion sensors to activate street lights.
- ☐ Organize different audits to identify barriers and to mitigate risks and stresses, so that people can make informed energy infrastructure system choices. Look at this activity network-wide to set interrelated priorities and maximize impact.
- ☐ Determine retrofit features that can enable the achievement of sustainability, resilience and inclusion outcomes. This can include energy efficiency fixtures and transitioning to renewable energy sources.
- ☐ Ensure that alternative options exist before retrofitting the energy asset or its parts, especially if this is the primary energy source for some marginalized groups.

3. Proactively seek funding to retrofit existing assets

- ☐ Identify public funding opportunities to retrofit existing assets with features to improve sustainability, resilience and inclusion.

Read more

- Example of retrofitting project in social housing: ICA Fund | Addressing energy poverty by supporting low-income residents to retrofit, C40 cities, case study.

← Return to Renovating, Retrofitting, Repurposing, Decommissioning

Abbreviations

GESI
Gender equality and social inclusion

LGBTIQ+
Lesbian, gay, bisexual, transgender, intersex, queer or questioning, plus

LNOB
Leave no one behind

SDG(s)
Sustainable Development Goal(s)

Glossary

The use of inclusive language

This publication has been developed with the best effort to use inclusive language. This includes avoiding the use of derogatory and discriminatory language that perpetuates negative stereotypes about any group or promotes a sense of hierarchy placing any group of people below others.

People-first language is prioritized, such as in the use of terms ‘persons with disabilities’ and ‘people living in poverty’. Gendered language is used when popular beliefs or preconceptions may obscure the presence or action of any gender. For example, recommendations in this publication may openly state that “both women and men” should be included in infrastructure works, as this is a male-dominated industry in many Global South countries. In other places, gender-neutral language is used, such as ‘labour force’ instead of ‘manpower’.

Read more
- Guidelines for gender-inclusive language in English, United Nations.
- Disability-Inclusive Language Guidelines, United Nations.

Agency
The ability of a person and communities to act freely and make choices about their lives and what they deem important, which can be constrained by institutional structures, social barriers, and access to resources and power.[30]

Aggregator

A grouping of agents in a power system (i.e., consumers, producers or prosumers) to act as a single entity when engaging in energy system markets or selling services to the operator.[31]

Capacity

The ability of people, organizations and society as a whole to manage their affairs successfully.[32] This can include individual capacities (e.g., skills, knowledge), organizational capacities (e.g., strategies, systems, processes), and enabling environment capacities (e.g., policy frameworks for economic, political, environmental and social factors).[33]

Children

Persons under 18 years of age, as defined by the UN Convention on the Rights of the Child.[34]

Decent work

As defined by the International Labour Organization, decent work involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for all, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men.[35]

Disaggregated data

Data that has been broken down into detailed subcategories, for example marginalized group, age, sex, gender, region or level of education. Disaggregated data can reveal deprivations and inequalities that may not be fully reflected in aggregated data.[36]

Distributed or Decentralized Energy Resources (DERs)

Small-scale energy resources usually situated near sites of electricity use, such as rooftop solar panels and battery storage.[37]

Diverse needs

This term is used throughout this publication to capture two key concepts in inclusion: diversity and equity. Diversity is about recognizing, respecting and valuing differences. Equity is about each person having the right tools at the right time in order to live a good life. The term ‘diverse needs’ acknowledges that the right infrastructure can be different for people depending on their age, sexual orientation, gender identity, health or disability status, legal status, ethnicity, religion, education, income or geographical location.

Do-no-harm principle

In the context of infrastructure development, the do-no-harm principle involves preventing and mitigating any negative impact of infrastructure development on affected populations and the environment, including unintended consequences.

Employment-intensive

A generic expression to describe strategies, approaches, technologies and activities that will promote and increase direct or indirect employment generation in investment programmes and projects.

Employment-intensive investments

Investments in infrastructure that link infrastructure development with employment creation, poverty reduction and local economic and social development.[38]

Empowerment

The process of enabling people to exercise their agency successfully. This can include increasing a person's control over personal decisions, their ability to make autonomous choices and influence household decisions, their ability to change aspects of their life, and their ability to collectively change things in their community.[39]

Energy infrastructure system

An energy infrastructure system refers to all components related to the production, conversion, delivery and use of energy.[40]

Energy infrastructure assets

Energy infrastructure assets are the components that allow the generation, transmission and distribution of energy, including physical networks of oil and natural gas pipelines; oil refineries; and transportation elements such as marine and rail transportation.[41]

Energy transition

The transformation of the global energy sector to shift away from fossil-based to zero-carbon energy sources, in order to reduce energy-related greenhouse gas emissions to mitigate climate change.[42]

Environmental and social safeguards (ESS)

A term used by development institutions, international treaties and agencies to refer to policies, standards and operational procedures designed to first identify and then try to avoid, mitigate and minimize adverse environmental and social impacts that may arise during the implementation of development projects. ESS also have a proactive dimension to try to increase the chances that development projects deliver better outcomes for people and the environment.[43]

Forced labour

Work that is performed involuntarily and under the menace of any penalty. This includes situations in which persons are coerced to work through the use of violence or intimidation, or by more subtle means such as accumulated debt, retention of identity papers or threats of denunciation to immigration authorities.[44]

Gender

Refers to the roles, behaviours, activities and attributes that a given society at a given time considers appropriate for men, women and gender-diverse people. In addition to the social attributes and opportunities associated with being male and female and the relationships between women and men and girls and boys, gender also refers to the relations between women and those between men. These attributes, opportunities and relationships are socially constructed and are learned through socialization processes. They are context-/time-specific and changeable. Gender determines what is expected, allowed and valued in a woman or a man in a given context. In most societies, there are differences and inequalities between women and men in the responsibilities assigned, activities undertaken, access to and control over resources, as well as in decision-making opportunities. Gender is part of the broader sociocultural context, as are other important criteria for sociocultural analysis, including class, race, poverty level, ethnic group, sexual orientation, age, etc.[45]

Gender identity

While concepts of gender identity vary greatly across the world, it is generally defined as each person's deeply felt internal and individual experience of gender, which may or may not correspond with their sex assigned at birth or the gender attributed to them by society. It includes the personal sense of the body, which may or may not involve a desire for modification of appearance or function of the body by medical, surgical or other means.[46]

Gender expression

The range of cues, such as names, pronouns, behaviour, clothing, voice, mannerisms and/or bodily characteristics, to express a person's gender. It can be the same as or different from an individual's gender identity. One does not have to have a diverse sexual orientation or gender identity or diverse sex characteristics to have a diverse gender expression. There is a common misunderstanding that gender identity and gender expression only apply to transgender and gender-diverse people, but this is not true. As the Independent Expert on Sexual Orientation and Gender Identity (IE SOGI) put it, "All human beings live in gendered societies traversed by power hierarchies and preconceptions". In some cultural and geographical contexts, it is especially pertinent to highlight gender expression since 'non-conforming' gender expressions increase the vulnerability of some individuals.[47]

Gender equality

This refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not mean that women and men will become the same, but that women's and men's rights, responsibilities and opportunities will not depend on whether they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. Gender equality is not a women's issue but should concern and fully engage men as well as women. Equality between women and men is seen both as a human rights issue and as a precondition for, and indicator of, sustainable people-centred development.[48]

Gender equality and social inclusion (GESI) transformative approach

Activities that attempt to redefine traditional gender roles and relations and transform inequality and the marginalization of particular groups to promote shared power, control of resources, decision making and support for gender equality and social inclusion.

Global South

The phrase 'Global South' refers broadly to the regions of Latin America, Asia, Africa and Oceania, mostly (though not all) low-income and often politically or culturally marginalized. The use of the phrase Global South marks a shift from a central focus on development or cultural difference towards an emphasis on geopolitical relations of power.[49] While the term is not geographically accurate, this publication uses this term over 'developing countries', which implies that development can only be achieved in the same manner as 'developed countries', disregarding inequalities brought about by colonization.

Horizontal and vertical inequalities

Vertical inequalities are the inequalities between individuals or households that are not related to group-based distinctions, such as income inequalities. Horizontal inequalities are the inequalities that exist between ethnic and other population groups.[50] Horizontal inequalities are often historically rooted and persist over generations because of entrenched deprivation or advantage. Current trends, such as migration, including refugee influxes, may also lead to horizontal inequalities.[51]

Inclusion (social inclusion)

The process by which efforts are made to ensure equal opportunities so that everyone, regardless of their background, can achieve their full potential in life. Such efforts include a combination of top-down and bottom-up policies and actions that promote equal access to public services and enable citizens' participation in the decision-making processes that affect their lives.[52]

Indigenous peoples

People with distinct social, economic or political systems, including language, culture and beliefs, who have a strong link to ancestral territories and surrounding natural resources. They often form non-dominant groups of society and have a historical continuity with precolonial and/or pre-settler societies.[53]

Infrastructure

A key pillar of development. It is the set of fundamental facilities and systems that deliver essential services needed for our society to function, such as energy, transport, water, waste management, digital communications and more. It has three dimensions that work together to provide services that enable the achievement of development benefits: the built environment, the enabling environment and the natural environment.

Infrastructure development

The process of planning, delivering and managing infrastructure across the entire infrastructure life cycle.

Internally displaced persons (IDPs)

Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized state border.[54]

Intersectionality

The interconnected nature of social categorizations such as race, gender identity, sexual orientation, religion, disability and social class, which overlap to create interdependent systems of privilege, oppression, discrimination or disadvantage.[55]

LGBTIQ+

An acronym for lesbian, gay, bisexual, transgender, intersex, and queer or questioning people. The plus ('+') sign represents people with diverse sexual orientations, gender identities, gender expressions, and/or sex characteristics (SOGIESC) who identify using other terms or none.[56]

Leave no one behind

The central, transformative promise of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals. It represents the unequivocal commitment of all United Nations Member States to eradicate poverty in all its forms, end discrimination and exclusion, and reduce the inequalities and vulnerabilities that leave people behind and undermine the potential of individuals and of humanity as a whole.[57]

Local resource-based (LRB) approach

LRB approaches optimize the use of local resources, including local labour and technologies, as well as locally available materials, tools and equipment through local suppliers.[58]

Marginalized groups

Groups and communities that experience discrimination and exclusion (social, political and economic) because of unequal power relationships across economic, political, social and cultural dimensions.[59] Marginalized people can be excluded in a specific context on the basis of different personal characteristics or grounds, such as sex, gender, age, ethnicity, religion or belief, health status, disability, sexual orientation, gender identity,

education, income, or living in various geographic localities. A person belonging to a marginalized group (whether actual or perceived) faces increased risk of experiencing inequalities in accessing rights and the use of services and goods,[60] including essential infrastructure services.

Meaningful participation

The concept of 'meaningful' participation ensures that women and marginalized groups are not only present in the process of infrastructure development, but that their concerns are heard and taken on board, and that they have the opportunity to articulate their contributions and expertise, to ensure that intersectional perspectives and analyses inform and shape infrastructure processes, and that outcomes benefit the whole of society.[61]

Older people

An older person is defined by the United Nations as a person who is over 60 years of age. However, families and communities often use other sociocultural referents to define age, including status in the family, physical appearance or age-related health conditions.[62]

People living in poverty

People living in a condition characterized by sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights.[63]

Persons with disabilities

According to the United Nations Convention on the Rights of Persons with Disabilities, this includes persons who have long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.[64]

Person who is neurodivergent

A person whose brain and cognition function differently from what is considered 'typical'. This term recognizes that brains do not all function in the same way. It includes people who are autistic, those with ADHD, and people with dyslexia.[65]

Prosumer

Prosumer denotes a consumer who both produces and consumes electricity. They 'self-consume' some of the electricity they produce and sell the excess to the grid.[66]

Reasonable accommodation

According to the United Nations Convention on the Rights of Persons with Disabilities, this means necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities (as well as women and marginalized groups) the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms.[67]

Refugees

Under international law and the mandate given to the Office of the High Commissioner for Refugees (UNHCR), refugees are persons outside their countries of origin who are in need of international protection because of feared persecution, or a serious threat to their lives, physical integrity or freedom in their country of origin as a result of persecution, armed conflict, violence or serious public disorder.[68]

Stakeholders

Individuals, groups or organizations who may affect, be affected by, or perceive themselves to be affected by a decision, activity or outcome related to a project.[69]

Suppliers

Vendors of works, supplies, goods and services.

Universal design

The design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of age, size or disability. This includes public places in the built environment, such as buildings, streets or spaces that people have access to; products and services provided in those places; and systems that are available, including information and communications technology (ICT).[70]

The seven principles of universal design are: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use.[71]

Vulnerable

Social vulnerability refers to the varied capacity or inability of groups and individuals to deal with hazards and take effective measures to insure against losses. This is based on their physical and socioeconomic position, control over resources, as well as exposure to, awareness of, management of and ability to respond to risk.[72]

Youth

All persons between the ages of 15 and 24 years, without prejudice to other definitions by Member States.[73]

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