COBENEFITS IMPULSE

February 2022

Increasing the Social Performance of Renewable Energy Projects for Communities in Mexico

Applying the capabilities approach to place communities at the center of the energy transition

CONECC
Conectando energía y cambio climático

IASS POTSDAM

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Imprint

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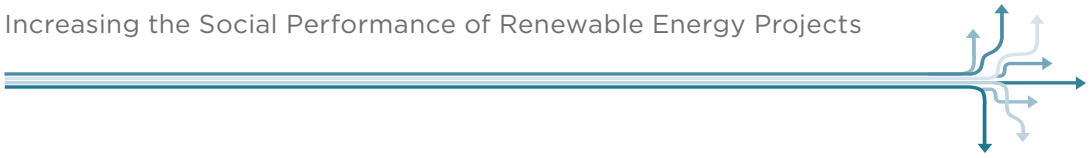


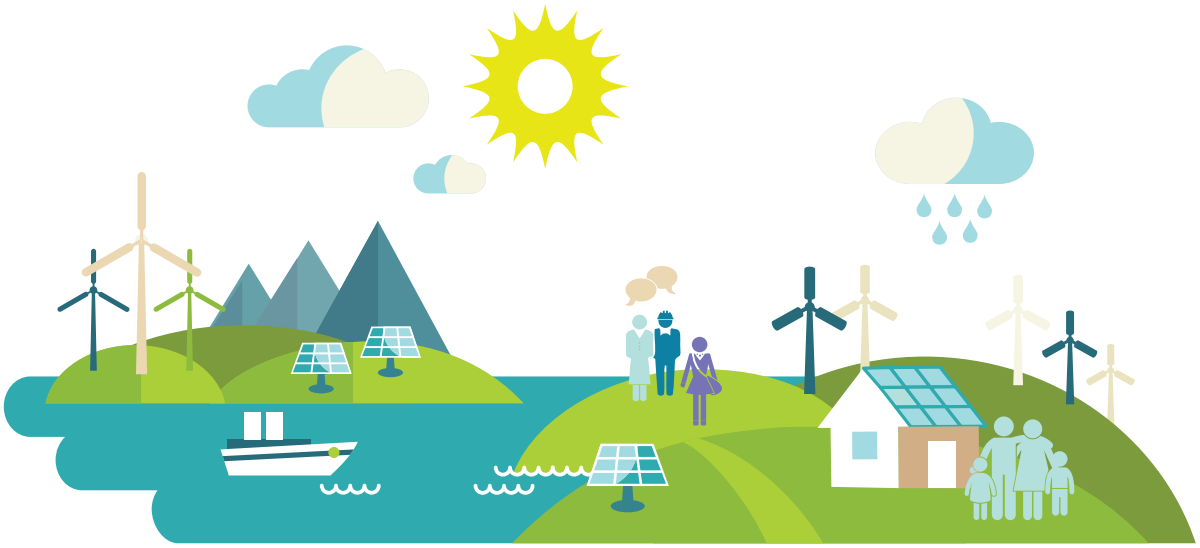
Content

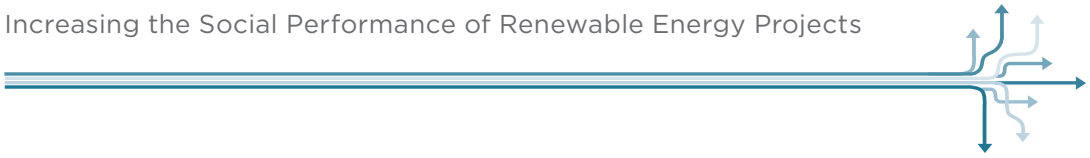
Key Messages

(1) Social and economic co-benefits of renewable energy such as employment opportunities and cost savings have been identified for Mexico. However, the ways in which these opportunities will materialize for communities is dependent on an appropriate enabling policy environment.

(2) The expansion of renewable energy investments and improving the well-being of communities impacted by them are not mutually exclusive. When projects have mechanisms in place that are focused on preserving and enhancing the well-being of impacted communities, renewable energy investments can actively and deliberately increase the social performance of renewable energy projects.

(3) In a suitable regulatory environment, renewable energy projects in Mexico can improve the lives of community members, increase awareness of energy usage, boost inclusion and political participation, unite community members, give them a forum; and connect communities to the environment that surrounds them.





1. From igniting community conflicts to unfolding social performance: Prospects for renewable energy projects in Mexico

The Mexican government has reiterated its commitment to transforming the country and bringing greater equality and social justice to Mexican citizens. At the same time, the country is faced with the challenge of fomenting an energy transition that will allow it to meet its national and international climate objectives.

IASS/GIZ (2019). Co-benefits of energy efficiency and renewable energies for sustainable development in Mexico.

The Mexican Energy Transition Law (LTE, Ley de Transición Energética), issued in 2015 (Secretaría de Gobernación), establishes a clear legal framework for developing a greener power sector. It sets clean power generation targets for Mexico and commits the country to increasing the share of renewables in its electricity generation matrix to 35% by 2024. Moreover, following the international commitment of the 2015 Paris Agreement, the Transition Strategy to Promote the Use of Cleaner Fuels and Technologies published in 2020, in line with the LTE (Secretaría de Gobernación), instated two crucial clean power generation targets: 38 % by 2030 and 50% by 2050. The latter boosted Mexico's energy transition and increased the share of renewables in its electricity generation matrix. By the end of 2020, 27.6% of electricity was generated from renewable sources (65,401 GWh) (Secretaría de Energía, 2020).

Nonetheless, this impetus in the Mexican renewable energy generation sector has not been without challenges. More than five years ago, many renewable energy projects, specifically wind energy projects, were subject to social opposition. Communities in the state of Oaxaca, in particular, expressed the difficulties they suffered due to the development of wind parks (Burnett, 2016). Moreover, many communities do not feel that renewable energy projects have benefited them (El Universal, 2019) but have instead polarized communities (Luna & Torres, 2018). Some communities are convinced that the renewable energy generated by these projects does not reach them directly, and that such projects have not increased their well-being (El Universal, 2019).

While the expansion of the renewable energy sector in developing countries like Mexico is paramount and needs to scale up to contribute to the targets of the Paris Climate agreement by decarbonizing energy systems, this process must not leave local communities behind and prevent them from achieving well-being. While social and economic co-benefits of renewable energy, such as employment opportunities and cost savings, have been identified for Mexico (Box 1, IASS & GIZ, 2020, Government of Mexico, 2019), the ways in which these opportunities will materialize for communities is dependent on an appropriate enabling policy environment. Thus, policy makers need to advance solutions that allow the growth of the renewable energy sector together with positive Social Performance, namely solutions that place the needs of current and future generations at the heart of renewable energy projects (IASS, 2021a).

Especially in the context of the 2021 United Nations Climate Change Conference (COP26), Mexican policy makers faced prominent challenges after the strident critique received for failing to advance investment for emissions reductions and instead, directing resources to energy generation plants that operate with fossil energies. Moreover, Mexico declined to join the Global Coal to Clean Power Transition Statement, whose signatories have committed to accelerate the use of renewables and to not invest in new coal-fired power plants. Thus, Mexico was even designated as one of the "Fossils of the Day" by the Climate Action Network-International (CAN) (Aristegui Noticias, 2021).

The societal objections to specific renewable energy projects, the need to avoid stalling or halting the Mexican energy transition, and the urge to prioritize climate change in the political agenda, together indicate the need for a more socially oriented renewable energy sector: one that places local communities at the center of its expansion, that guarantees compliance with current national and international climate commitments, and that allows the deployment of more ambitious objectives. Developing a more social renewables sector, that is equipped to face both current as well as future climate challenges, cannot be achieved without a clear assessment of the social performance of existing projects.

Social performance of energy sector investments refers to direct and positive social impacts on the well-being of individuals and communities during the development and implementation of energy projects and the access to locally generated energy [...]. Social performance can be used to compare how different energy options (e.g., a renewable wind park or a coal-mining site) effectively and comprehensibly improve the lives of people and local communities.

Social performance can be measured by assessing the contributions of energy project development, implementation, and use of monetary or non-monetary functionings of well-being (e.g., employment or a healthy environment).

In addition, energy projects also can contribute to an enabling local environment (e.g., through community funds) with a positive or negative effect on these functionings, which can be measured as facilitators of well-being.

IASS (2021a): Social Performance Approach: Fostering community well-being through energy-sector investments.

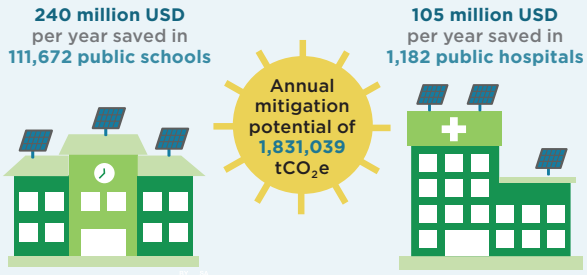
Without a clear overview of the Social Performance of current renewable energy projects, future proposals will lack successful guidelines to follow. Thus, by establishing a comprehensive framework for evaluating the social performance of current renewable energy projects, more socially focused renewable energy policies can be developed and implemented.

Mexico can create 300,000 additional job years by 2030 by ambitiously decarbonising the power sector

MLTE: Current policy pathway towards achieving the goals of the Energy Transition Law (MLTE) in Mexico

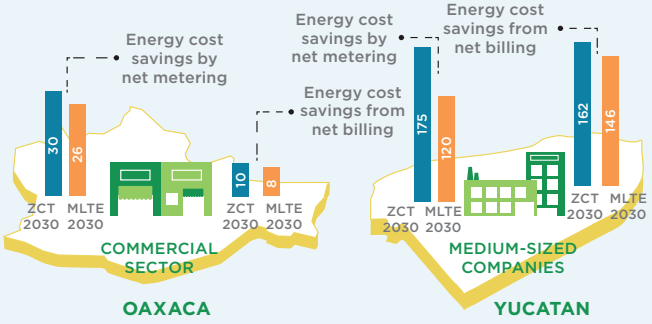
ZCT: Transition policy pathway to zero carbon emissions (Zero Carbon Transition or ZCT)

Mexico's schools and hospitals can save electricity costs with an ambitious decarbonisation pathway for the power sector



Mexico can save **346 million USD** each year by using renewable energy and energy efficiency measures in **schools and public hospitals.**

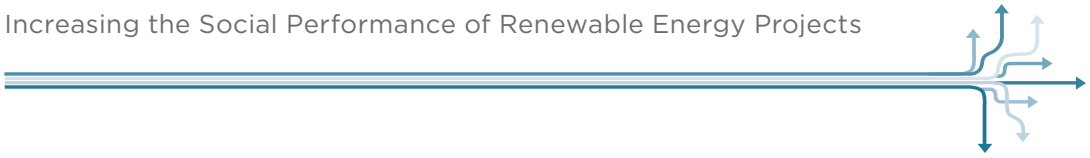
Businesses in Mexico can save electricity costs with an ambitious decarbonisation pathway



MLTE: Current policy pathway towards achieving the goals of the Energy Transition Law (MLTE) in Mexico

ZCT: Transition policy pathway to zero carbon emissions (Zero Carbon Transition or ZCT)

Box 1: Social and economic co-benefits of renewable energy in Mexico (source: IASS & GIZ, 2020)



2. Energy capabilities approach to placing communities at the center of the energy transition

Social Performance addresses the needs, things, activities, and abilities that local communities value the most for achieving a good quality of life. Therefore, assessing the Social Performance of renewable energy projects requires a framework that allows policy makers to understand and incorporate the above-mentioned factors not only in the assessment of a renewable energy project, but also as a tool to implement policies that guarantee good Social Performance by renewable energy investments (cf. IASS, 2021b).

Amartya Sen (winner of the Nobel Memorial Prize in Economic Sciences) and Martha Nussbaum advanced an approach to assess quality of life, named the Capabilities Approach (1993). The capability approach to quality of life offers two elements of relevance: functionings and capabilities (Verkek et al., 2001). Functionings are the various things a person manages to do or be in leading their life, whereas capabilities are a specific set of functionings (Sen,1993). Martha Nussbaum developed a concrete list of ten central capabilities (Life; Bodily health; Bodily integrity; Senses, imagination, and thought; Emotions; Practical reason; Affiliation; Other species; Play; and Control over one's environment) that underline the political principles to which every human being should be entitled as a matter of justice (Robeyns, 2005).

The capability approach has recently been employed by researchers in the energy sector, a prominent example being the work advanced by Hillerbrand et al. (2021). By adapting Nussbaum's list of central capabilities to the energy sector, they derived a series of Energy Capabilities that enable the capability approach to function as a framework for assessing renewable energy projects (Table 1).

Table 1: Energy Capabilities (own elaboration based on Hillerbrand et al., 2021)

Energy Capability	Rationale
Life	In the context of energy capabilities, life capability is connected to life-threatening accidents that may occur in the energy sector.
Bodily Health and Bodily Integrity	Encompassed in one in the energy capabilities, these are associated with all the other impacts that energy systems may have on people's health.
Senses, Imagination and Thought	A negative link to this capability arises when some aspects of an energy system are considered taboo, whereas a positive link results when energy systems can constructively influence this capability.
Emotions and Trust	In the context of energy systems, this capability may be negatively affected through fears and trauma. However, such systems can also invoke positive emotions such the certainty of a stable energy source, or the comfort of a well-climatized home.
Practical Reason	This capability incorporates personal reflections on individual energy usage and preferences for a certain energy system. This requires knowledge and an ability to critically question energy systems and political propositions.
Affiliation	This capability is concerned with social interaction abilities, the capability of living with and helping others, and the ability to practice justice. Concerning justice, this capability is related in part with distributive justice, i.e. questions regarding the costs and benefits of energy policy regulations and their effect on distribution.
Other Species (ecological connectivity)	Concerning energy capabilities, Other Species aims at describing the ability to be empathetic towards all beings (human and non-human), and includes small and direct environmental impacts of energy system on nature.
Play	While making a comparison of different energy systems, this capability brings up the question of how the energy services and quantities that are provided impact the capability of play.
Control Over One's Environment	In the context of energy, this capability is closely related to "personal autonomy."

3. Using energy capabilities to assess Social Performance

To assess the Social Performance of renewable energy projects using the capability approach, one needs to look at the impacts that a specific project has had or will have on the Energy Capabilities of the local communities that it affects. Following the work advanced by Hillerbrand et al. (2021), an impact assessment of Energy Capabilities can be conducted using an impact assessment scale from very positive (+++) to very negative (- - -) (see Table Annex 1) whereby each energy capability can have both a positive and a negative impact..

While the evaluation developed by Hillerbrand et al. (2021) provides a basis for assessment, it does not define impact strength in detail. This paper seeks to fill this gap and proposes guidelines to define impact strengths for energy capabilities. The guidelines cover six Energy Capabilities that were found to be most significant in the present geographical context.

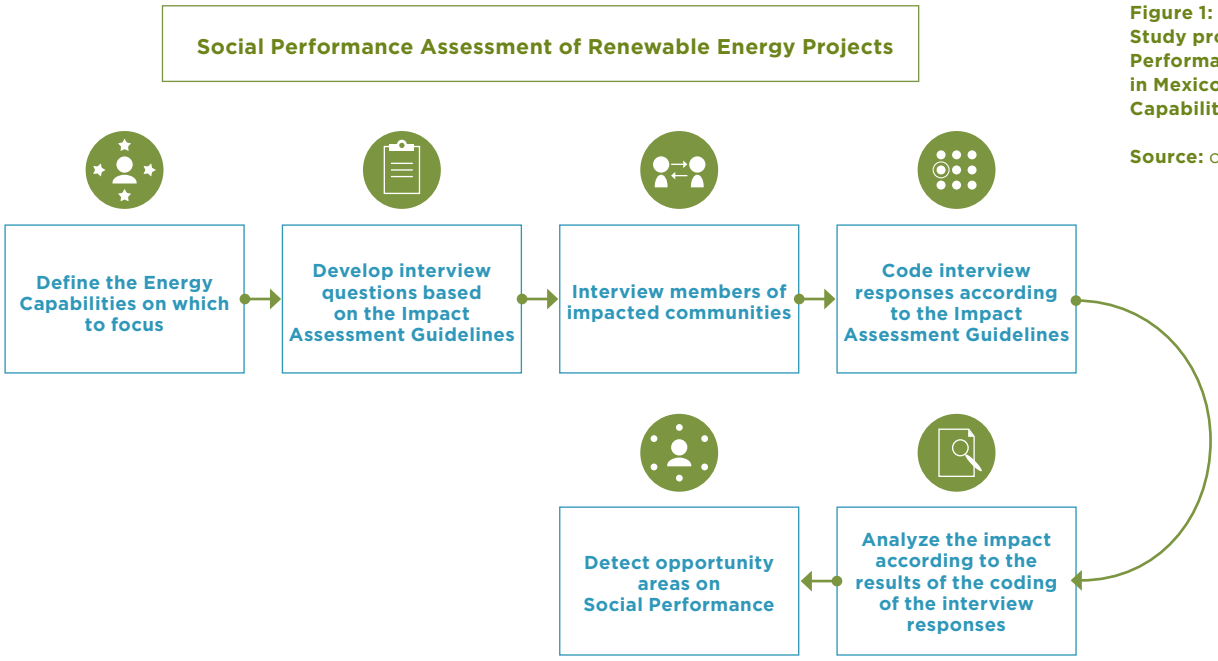


Figure 1:
Study process: Social Performance Assessment in Mexico based on Energy Capabilities

Source: own

The present research employed Hillerbrand et al.'s (2021) Energy Capabilities framework to conduct a Social Performance assessment of two renewable energy projects in Mexico. The assessment involved interviews with members of the communities impacted by the projects. Interviewees' responses were analyzed to determine the project impacts in accordance with the assessment guidelines presented above.

The two case studies were chosen following a polar-type selection rationale (meaning that each case has contrasting characteristics) based on a set of specific criteria: **i) Ownership Framework:** The selected projects ought to have a distinct ownership framework; **ii) Source:** Projects should use dissimilar renewable energy sources; and **iii) Scale:** Projects should be of different scale. Based on these selection criteria, two renewable energy projects were selected for detailed analysis.

4. Which renewable energy projects were assessed?

Case 1: Small-scale solar photovoltaic (PV) project in Hidalgo state: The project, located in the state of Hidalgo, in a community within the Los Mármoles National Park, was developed as part of an initiative by the Ministry of Environment and Natural Resources of Hidalgo (Secretaría de Medio Ambiente y Recursos Naturales Hidalgo, SEMARNATH) to provide electricity to a community in need (Secretaría de Medio Ambiente y Recursos Naturales Hidalgo, 2021). The project comprises 117 solar panels (one per household) each with installed capacity of 0.15 kilowatts peak (kWp), total estimated annual generation of 31.59 megawatt hours (MWh), and an estimated monthly consumption of 12–15 kilowatt hours (KWh) per household (Secretaría de Medio Ambiente y Recursos Naturales Hidalgo, n.d.). Each household owns its solar PV panel, and the resulting energy is supplied directly to the home rather than being sold and/or fed into the national electricity grid. Consequently, the community owns both the equipment and the power that it provides. The participating households were involved in the initiation, installation, and operation of the solar panels (Secretaría de Medio Ambiente y Recursos Naturales Hidalgo, 2021).

Case 2: Large-scale wind park project in Yucatan state: The project, located in the municipality of Dzilam Bravo, Yucatan, is privately owned with no element of community ownership. While the community was included in stages before and during development of the project, by way of receiving constant information and engaging in discussions on the project and about what renewable energy is (Vive Energía & Gobierno del Estado de Yucatán, 2021), this is not a community-owned project. The project comprises 28 wind turbines with an installed capacity of 2.5 MW each and an average yearly generation capacity of 216.3 GWh in total (Vive Energía, 2021).

Mexico has a diverse renewable energy resource base. © Chris Ford via flickr.com (CC BY-NC 2.0)

5. Study results

An impact assessment was conducted using interview responses from both projects, the findings of which are presented below. The results are of a qualitative nature and should be considered as an overview of the situation; more precise results would require a larger number of interviews and a quantitative research methodology. The findings offer on-the-ground insights into the impacts of two differing renewable energy projects in two communities in Mexico.

Table 2: Assessment of Impacts on Energy Capabilities: Synopsis of Interview Results (own elaboration)

Energy Capability	Impact of Domestic Autonomous Solar PV Project in Hidalgo	Impact of Wind Park Project in Yucatan
Life	Very strong positive	Strong positive
Emotions and Trust	Strong positive	Strong positive and Moderate negative
Practical Reason	Very strong positive	Moderate positive
Affiliation	Very strong positive	Very strong positive
Other Species	Strong positive	Very strong positive
Control over One's Environment	Strong positive	Moderate positive and Moderate negative

Case 1 – Solar PV in Hidalgo: Improving the lives of the community members, increasing awareness of energy usage, and boosting inclusion and political participation

When examining the Hidalgo domestic autonomous solar PV project, some of the most salient findings include the very strong positive impact on Practical Reason Energy Capability and the strong positive impact on Other Species Energy Capability. The interviews revealed that the project has not only pushed the community to reflect on how their behavior impacts energy use, but has also awakened a sense of gratitude for being able to consume electricity in a way that does not harm the environment, because "[the form] we used before is damaging and affects global warming" ("consumir luz que no daña el medio ambiente porque la que usábamos antes afecta al calentamiento global" [Martinez, 2021]). Moreover, as Carlos Daniel mentioned: the participants now have greater awareness of their environment, and now know that they must respect and preserve it ("la conciencia que temenos respecto al medio ambiente es mucho mejor, ahora sabemos que hay que respetar y preservar") (2021).

These results suggest that the strengths of the Hidalgo project lie in its ability to: a) improve the lives of community members by providing them the electricity needed for them to be safer against different types of threats (interviewees stated that having lighting available at night has prevented robberies and also incursions by dangerous animals), reducing emissions, and improving their health (Life Capability); b) encourage community members to reflect on how their behavior impacts energy use by making electricity usage more visible and understandable (Practical Reason Capability); and c) boost inclusion and political participation in issues related to energy by way of providing the community more options and tools to communicate and improve community cohesion (Affiliation Capability).

In a suitable regulatory environment, renewable energy projects in Mexico can improve the lives of community members. © Adolfo Félix via unsplash.com

Case 2 – Wind power in Yucatan: Connecting community members, increasing environmental awareness and agency on energy and environmental issues

In the case of the Yucatan wind park project, it can be observed that while wind parks have been subject to much criticism by local communities in Mexico and worldwide, in this case the interviewees expressed a rather positive view of the project. The project's strong positive impact on the Life Energy Capability demonstrates that the community does not feel threatened by the presence of the wind turbines; on the contrary, the community feels safe and has adapted to the situation. In the words of one interviewee: "At the beginning, there was uncertainty regarding noise and other factors, but once it is established it is very different, and one adapts" ("al principio había mucha incertidumbre respect al sonido y otros factores, pero en realidad ya que está establecido es muy diferente y uno se adapta") (Puc, 2021).

Moreover, an unexpected result was observed for Affiliation Energy Capability, where even though the project is not community-owned, the Dzilam Bravo community has grown stronger and closer as a result of the project. In the words of a community member: "There has been much more outreach; I have had the opportunity to meet, to grow. Thanks to the activities that the company has organized, the people have now started to form small cooperatives together" ("Ha habido mucho más acercamiento, he tenido la oportunidad de conocer, de crecer, gracias a las actividades que la compañía ha organizado ahora las gente ha empezado a hacer pequeñas cooperativas juntos") (Dzi, 2021).

The results in this case indicate that the strengths of the project lie in: a) boosting inclusion and political participation by offering activities for community members to draw near to each other, while also providing them a forum to engage in activities destined to mobilize issues regarding energy and environment (Affiliation Capability); and b) connecting the community to the environment that surrounds it by improving options to protect and to better relate to the environment (Other Species Capability).

6. Conclusions

The way in which the capability approach was used to assess the Social Performance of renewable energy projects offers several useful insights: i) the energy capabilities approach encourages investigation of components of well-being that are often ignored or overlooked; ii) the impact assessment scale and guidelines propose new ways of looking at how renewable energy projects affect specific communities; and iii) the impact assessment scale offers policymakers a means of quickly exploring areas of opportunity. Moreover, this assessment can be scaled up by replicating it in other case studies and by harnessing the results for policymaking.

Social and economic co-benefits of renewable energy, such as employment opportunities and cost savings, have been identified for Mexico. However, the ways in which these opportunities will materialize for communities is dependent on an appropriate enabling policy environment.

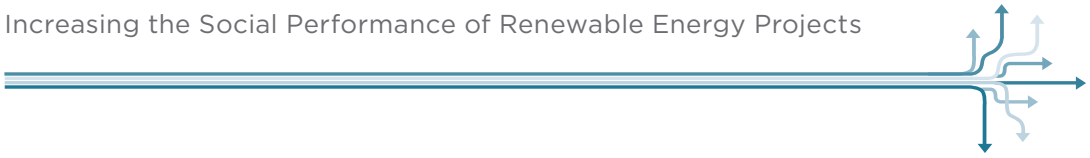
The case study findings suggest that renewable energy and Social Performance can go hand in hand. Both cases revealed that renewable energy investments can deliver positive Social Performance, so long as projects have mechanisms in place that are focused on preserving and enhancing the well-being of impacted communities — either by including them fully in the project and making them complete beneficiaries of it, as in the case of Hidalgo; or by delivering clear and continuous social programs, as in the case of Yucatan.

In a suitable regulatory environment, renewable energy projects in Mexico can improve the lives of community members, increase awareness of energy usage, boost inclusion and political participation, unite community members, give them a forum; and connect communities to the environment that surrounds them.

The expansion of renewable energy investments and the well-being of communities impacted by them are not mutually exclusive. Policymaking should provide an enabling framework to actively and deliberately increase the Social Performance of renewable energy projects, thereby simultaneously pursuing renewable energy development and community well-being. Positive Social Performance of renewable energy projects can be achieved if policymakers consider renewable energy projects and communities' well-being as complementary components of the same objective.

In the context of international agreements and negotiations events such as the UNFCCC Conference of the Parties (COP), where decisionmakers from around the world may either accelerate the pathways towards climate neutrality — or delay them, thereby posing risks to both the environment and local communities around the world — it is of outmost relevance to demonstrate that ways of scaling up renewable energy projects while protecting and enhancing the well-being of local communities are not only necessary but feasible.

Renewable energy and social performance can go hand in hand. © Ricardo Gomez Angel via unsplash.com



Drawing on the lessons learned from assessing the Social Performance of renewable energy projects, the following recommendations are provided for tool users and policymakers:

Recommendations for tool users:

1. Select specific energy capabilities to focus on. Depending on the nature of the project, some of the energy capabilities may not be impacted at all.
2. Formulate interview questions based on the impact assessment guidelines, to ensure that the responses can be aligned with the impact assessment scale.
3. Approach interviewees through a person or organization already known to them, to ensure that they feel sufficiently comfortable to share their experiences of the topic in question.

Recommendations for policymakers:

1. Develop performance assessment mechanisms (such as the one presented here), for current and future renewable energy investments, that consider the impacts of the investment on the well-being of affected communities.
2. Encourage policies that oblige companies to accompany their investments in the renewable energy sector with social programs that protect and promote the well-being of communities that their projects impact.
3. Promote the implementation of community-owned frameworks in the renewable energy sector to ensure that the energy capabilities of impacted communities are safeguarded and endorsed.

Box 2: Recommendations for tool users and policymakers

Recommended reading

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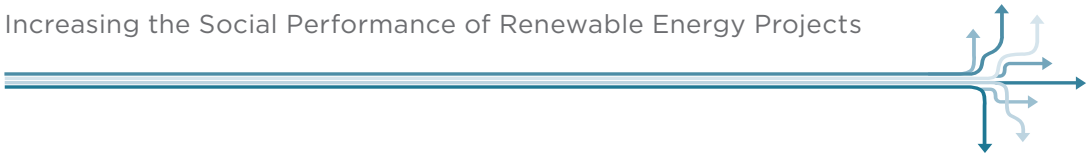

Annex

Table Annex 1: Guidelines for Assessing Impacts of Renewable Energy Projects on Energy Capabilities
(Own elaboration, based on the assessment of two renewable energy projects by Hillerbrand et al., 2021)

	Positive impact			No impact	Negative Impact		
Energy Capability	+++	++	+	0	-	--	---
Life	The community feels safer and healthier. Emissions have been reduced.	The community feels safe and the project has potential to reduce emissions.	The community does not feel endangered, and there is potential to reduce emissions.	No information on either positive or negative impact.	Malfunctions exist, which could cause an accident.	Accidents have occurred; people have been injured.	The project has posed risks to life; a person has lost their life.
Emotions and Trust	Comfort is provided and a stronger community is built, including unfrequented members.	The project has made people feel safe and brought the community closer.	Since the project came into operation, community members are closer to each other.	No information on either positive or negative impact.	Community members still feel a sense of distrust toward unfrequented or new members.	The project has made people feel unsafe and has polarized them.	People feel unsafe and community-building is hindered.
Practical Reason	Electricity usage is visible, and the community is able to reflect on energy generation and use.	Electricity usage is visible, but reflection on energy usage has not been pushed.	Electricity usage is not visible, but the community is pushed to reflect on energy use.	No information on either positive or negative impact.	Information is provided, but is not understandable to everyone.	The project does not foster reflection on energy usage.	Access to information, reflection, and awareness are hindered.
Affiliation	Strong community is fostered, with more active political participation in sustainable energy.	Tools are provided for inclusion and information exchange on sustainable energy.	Interest in community building and sustainable energy arises through the project.	No information on either positive or negative impact.	Reduced will to become involved in political activities on sustainable energy.	Less inclusion and fewer options for social interaction.	Less inclusion, social interaction, and political participation on sustainable energy.
Other Species	Improved and increased options are provided to protect and better connect with the environment.	Enhanced options are provided to protect the environment.	The community shows a will to take better care of the environment.	No information on either positive or negative impact.	Community members feel less connected to the environment.	The project has decreased and worsened options to protect the environment.	Options to protect and better relate to the environment are prevented and decreased.
Control over one's environment	Use of locally generated renewable energy is maximized and the community is independent from the main electricity network.	Locally generated renewable energy is maximized.	Tools to lead a more autonomous way of life are provided indirectly.	No information on either positive or negative impact.	No options provided to be independent from the main electricity network.	The project has made the community more dependent on the main electricity network.	The community is dependent on the main electricity network and on external factors.

COBENEFITS
Mobilising the Co-Benefits of Climate Change Mitigation through Capacity Building among Public Policy Institutions

COBENEFITS works with national authorities and expert organisations in countries across the globe such as Germany, India, Kenya, Mexico, South Africa, Vietnam, and Turkey to quantify and unlock the social and economic co-benefits of early climate action in these countries. With a focus on renewable energy COBENEFITS supports efforts for enhanced NDCs with the ambition to deliver on the Paris Agreement and the 2030 Agenda on Sustainable Development (SDGs). COBENEFITS facilitates capacity building and cross-country learning among policymakers, expert organisations, CSOs and the private sector through a set of connected measures: Country-specific socio-economic assessments, an international COBENEFITS training programme, policy dialogues and briefings on enabling political environments and overcoming barriers to maximise co-benefits of renewable energy and climate action for people, communities and businesses.

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