



CO-BENEFITS OF ENERGY EFFICIENCY AND RENEWABLE ENERGIES FOR SUSTAINABLE DEVELOPMENT IN MEXICO

INFORMATIVE DOCUMENT FROM THE PROJECT CO-BENEFITS MEXICO: OCTOBER 2019

Cooperation between Mexico and Germany

Since 2018, the project Social, Environmental, and Economic Co-Benefits of Energy Efficiency and Renewable Energies in Mexico has been implemented through the project Enhancing the Coherence of Climate and Energy Policies in Mexico (CONECC) of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, in coordination with the Ministry of Environment and Natural Resources (SEMARNAT) and in collaboration with the Potsdam Institute for Advanced Sustainability Studies (IASS).



1. Mobilizing Co-benefits in Mexico

The Mexican government has reiterated its commitment to transforming the country and bring 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. The decisions made presently in Mexico regarding climate and energy policies will impact upon the social and economic development of the country.

In the search for a sustainable energy route and politically effective decision-making that can activate the different social and economic benefits required in the country, the question arises: **How can energy efficiency and renewables improve the lives of Mexican citizens?** A question that must be answered with scientific rigor and technical information in order to support the Mexican government's decision-making. The studies developed by Co-Benefits Mexico contribute to increasing the scope of actions and measures in these two fields. They also form the basis for providing policy recommendations to varying public administration institutions to maximize the social, economic and environmental benefits related to the increase of energy efficiency measures and renewable energy development.

What are co-benefits? They are the simultaneous fulfillment of several interests or objectives resulting from political intervention, private sector investment, or the combination of both. The focus on co-benefits for climate change mitigation also promotes positive results in other areas, such as air quality and health, economic prosperity and the efficient use of resources.¹



Background

Co-Benefits Mexico arose as a project working alongside the global COBENEFITS project of the International Climate Initiative (IKI). They share the objective of building alliances and enabling co-benefits by connecting social and economic opportunities from renewable energies and energy efficiency. The Co-Benefits Mexico project looks to develop a quantification methodology of the benefits of renewable energies and energy efficiency on a local scale, by socializing the significance that such projects can have on society. It is a shared effort between SEMARNAT, GIZ, and IASS, who have been collaborating since August 2018 to implement four case studies. Both Co-Benefits Mexico and COBENEFITS implement a methodology that fosters exchange

¹Helgenberger S., Jänicke M., Gürtler K. (2019) Co-benefits of Climate Change Mitigation. Encyclopedia of the UN Sustainable Development Goals. Springer, Cham.

between researchers, decision-makers and multipliers. The main elements of this methodological focus are the creation of trust and co-ownership between interlocutors and associated countries; the joint selection of co-benefits; the evaluation of co-benefits through specialized technical studies; and the quantification of social and economic opportunities – all of these capitalized in **policy recommendations** to maximize the co-benefits of climate action.



International Context

Mexico, alongside 185 other countries, has ratified the Paris Agreement and handed in its Nationally Determined Contributions (NDC), aiming to contribute to the global objective of maintaining the average global temperature rise below 2°C, and continue efforts to limit it to 1.5°C. However, both the Mexican NDC and the sum of NDCs are far from meeting the 2°C commitment; and even further from approaching the ambitious goal of 1.5°C, the importance of which was recently published by the Intergovernmental Panel on Climate Change (IPCC) in its special report SR15 – Global Warming of 1.5°C.

If we are to reach these global goals, climate action must be mobilized more ambitiously and effectively. Such characteristics can be reached with the evaluation of economic, environmental and social co-benefits of renewables and energy efficiency. One important component of Co-Benefits Mexico and COBENEFITS is the promotion of dialog and discussion in national

and international climate forums. An example of this was the 24th Conference of the Parties (COP) held in December 2018, where the inclusion of co-benefits was promoted in the negotiations that derived from the signing of the Paris Agreement. The multiple co-benefits events conducted at COP24 provided concrete teachings for the inclusion of the co-benefits topic in climate discussions, and for the development of the Co-Benefits Mexico study:

1. Connecting different political agendas to the climate agenda:

There are different Ministries with varying political objectives. The relevance of connecting the political agendas of different Ministries to the climate agenda in order to progress with the national commitments of the Paris Agreement was emphasized.

2. Increasing the regional focus:

The calculation of social and economic co-benefits becomes more relevant when attending regional problems. The regional focus undertaken by co-benefit studies is crucial for the satisfactory advancement of climate action and for helping to aspire to a Just Transition.

3. Connecting co-benefits to NDC:

In the current NDC revision process, some countries like Vietnam have decided that their NDC should also be a means to communicate how climate action can simultaneously leverage social and economic opportunities for their countries by including a co-benefits section within it. Besides rallying domestic support for climate action, co-benefits sections in NDCs can spark imitation and contribute to building global momentum for developing a strong alliance for ambitious and early climate action.



Session on interdepartmental dialog at COP 24. 6th December 2018, Katowice, Poland.

Co-Benefits Mexico

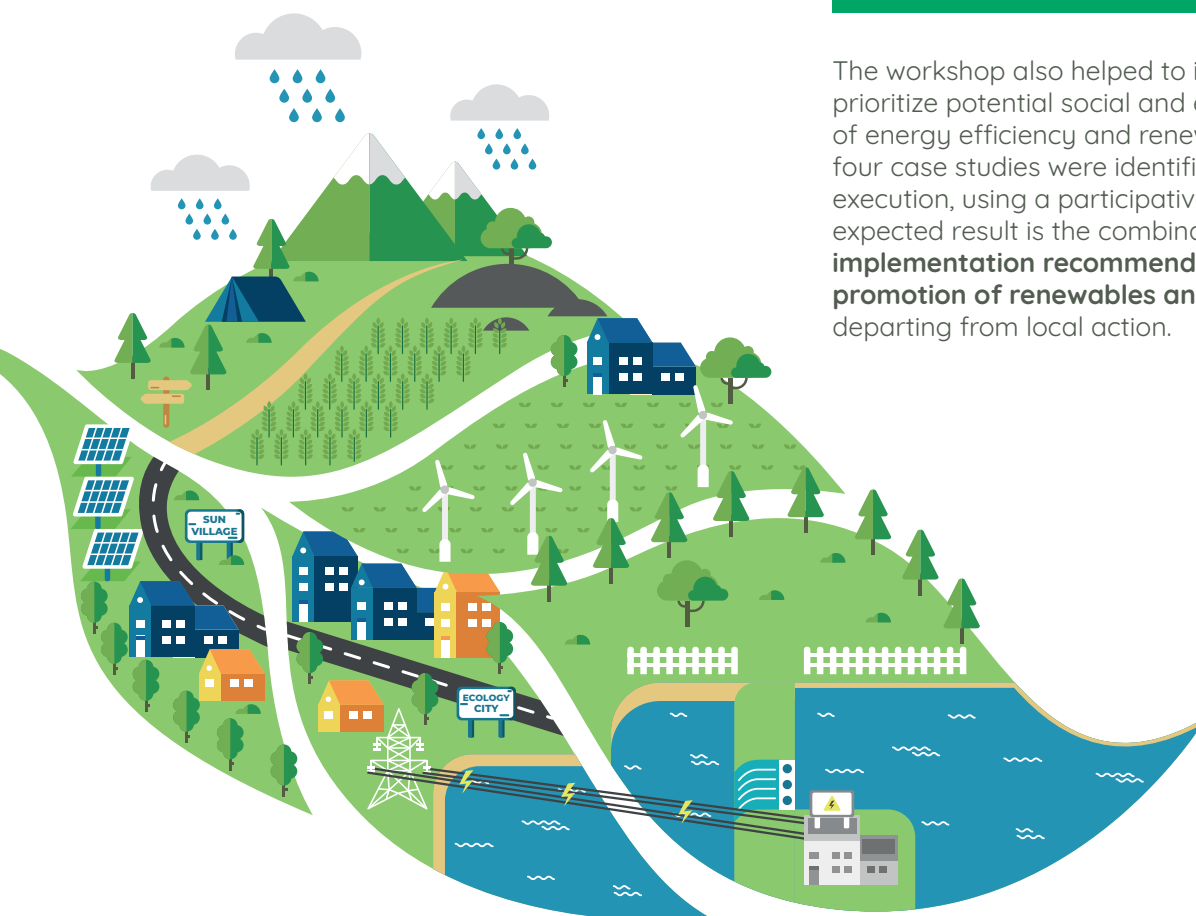
In September 2018, the first phase of research and dialog with research centers, experts, organizations and public institutions – at state and local levels – took place, with the aim of elaborating a deep analysis of renewable energies, energy efficiency, and existing studies

on co-benefits in Mexico. This analysis helped identify the relevant actors for the organization of a **kickoff workshop**, a process of institutional exchange and multifactor dialog that looked to identify priority co-benefits for Mexico, on a national and local scale. The workshop took place on **30th October 2018**, and more than 15 public and private sector institutions and NGOs took part.



Participants of the kickoff Co-benefits workshop. 30th October 2018, Mexico City, Mexico.

The workshop also helped to identify and prioritize potential social and economic benefits of energy efficiency and renewables. From this, four case studies were identified and selected for execution, using a participative process. The expected result is the combination of **key implementation recommendations for the promotion of renewables and energy efficiency** departing from local action.



Subsequently, in June 2019, the regional workshops relating to each case study of Co-Benefits Mexico were carried out. These workshops took place in La Paz and Los Cabos in Baja California Sur; Mexico City; Mérida, Yucatan; and Oaxaca City, Oaxaca. The aim of each session was to present the preliminary results of the case studies and obtain feedback that could strengthen the studies in pursuit of maximizing social, economic, and environmental co-benefits.

Finally, the **national results workshop** took place on **15th August 2019** to present the preliminary results of Co-Benefits Mexico, with significant participation from the public sector – at the state and local levels – as well as from academia, research institutes, and private sector representatives. The workshop enabled the design of public policy recommendations, and the qualitative aspects of the co-benefit studies were reinforced.



Participants of the national results workshop. 15th August 2019, Mexico City, Mexico.

Co-Benefits Mexico is now in its final consolidation phase. Among the next steps, a study with climate policy recommendations is being elaborated and will be published in November 2019, conveying the results of the case studies and the knowledge acquired throughout the project's activities.

2. Co-Benefits Mexico: Case Studies

Co-Benefits Mexico developed four case studies

with the aim of analyzing the **multiple social, economic, and environmental benefits** of renewables and energy efficiency that can drive investment in the energy sector. These are the selected case studies:

- a. Energy efficiency and renewables in public sector buildings (hospitals and schools), in Mexico City and La Paz, Baja California Sur.
- b. Energy efficiency and renewables in tourist sector buildings (hotels) in Los Cabos, Baja California Sur.
- c. Renewables and the employment opportunities: national and regional analysis in Oaxaca and Yucatan.
- d. Renewable energy and its benefits in cost savings and income generation for the communities of Oaxaca and Yucatan.

The methodology involved a revision and analysis of existing literature, previously developed case studies, and energy audits of buildings in the sectors and cities. What is more, qualitative methods were used to identify additional co-benefits through inquiries and interviews, as well as workshops with key actors, local and federal officials, and representatives of the energy industry and civil society, among others.

a. Energy efficiency and renewables in public sector buildings (hospitals and schools), in Mexico City and La Paz, Baja California Sur

The aim of this case study was to provide local, state, and federal governments with information for the development of new programs and policies that support the adoption of renewables and energy efficiency in public buildings, specifically hospitals and schools. An evaluation estimated the savings of public sector building costs and the potential for mitigation of energy efficiency and renewables. The case study was developed in Mexico City and La Paz: Mexico City, since it ranks first in the country in terms of energy costs of health sector operations; La Paz, on the other hand, is isolated from the rest of the

country in terms of electricity, and its electric energy is mainly generated from the burning of fossil fuels, resulting in a high level of local greenhouse gas emissions.

The case study compiled and analyzed the different actions undertaken in Mexico City in the field of energy efficiency. In the case of La Paz, the aim was to generate substantial indicators that would allow the evaluation of savings in public sector buildings and the potential of mitigation of renewables and energy efficiency.

b. Energy efficiency and renewables in tourist sector buildings (hotels) in Los Cabos, Baja California Sur

The aim of this case study was to provide the private sector, as well as local, state, and federal governments, with technical information for the development of new programs and policies that support the adoption of renewables and energy efficiency in the tourism sector, specifically hotels. An evaluation calculated the savings of public sector building costs and the potential for mitigation of energy efficiency and renewables. Additionally, the reduction of electricity consumption was sought through energy efficiency measures and distributed renewable energy projects.

The research process collected first-hand information regarding energy usage and costs at hotels in Los Cabos, as well as analyzing existing databases. Subsequently, indicators were generated for comparative purposes, providing an estimate for financial and energy savings in private sector buildings.

c. Renewables and the employment opportunities: national and regional analysis in Oaxaca and Yucatan

The aim of this case study was to evaluate the employment opportunities created upon increasing renewable energies. The quality and different kinds of employment created were analyzed, whether direct, indirect, or induced. This study focused on the co-benefits generated upon increasing renewable, wind, and photovoltaic solar energy specifically, in Oaxacan and Yucatan



Dialogue of regional actors on the Co-benefits of renewable energies and energy efficiency in Merida, Yucatan.

communities. The evaluation of the effect on employment is two-dimensional: an analysis on national and state employment levels in renewables; and an analysis of the potential of employment generation in local jobs upon increasing the use of renewables in municipal communities.

To evaluate the impact in job creation for the case study of Oaxaca and Yucatan, the International Jobs and Economic Development

Impacts (I-JEDI) model from the National Renewable Energy Laboratory (NREL) were used.

d. Renewable energy and its benefits in cost savings and income generation for the communities of Oaxaca and Yucatan

The aim of this case study was to analyze the potential of energy and cost savings and revenue generation in selected municipal communities of Oaxaca and Yucatan. The available, existing distributed generation schemes in the legislation of Mexico's electrical system were taken into account. The case study evaluated savings in energy expenditure through self-sufficiency and consumption of renewable energies in small and medium-sized enterprises (SMEs) and housing through photovoltaic solar energy; it also quantified the revenue generation for the municipal community through participation in cooperative models for large-scale photovoltaic solar installations. Just like the former case study, the information was compiled by revising relevant literature for the study and interviews with project developers, companies, government entities, associations, and social organizations.

3. Preliminary key results and policy opportunities

Key policy opportunity #1 - Greater development of renewable energy in Mexico can positively affect net employment. A least-cost electricity pathway with high penetration of renewable energy not only creates more jobs in the electricity sector (enough to offset decreases in the coal and natural gas sector) but would also create the most jobs across the entire economy.



Key policy opportunity #2 - Mexico has the opportunity to enable multiple benefits for society through the existing renewables distributed generation schemes². The commercial sector in Oaxaca and Yucatan could save annually up to 61 and 183 million pesos respectively in the existing distributed generation wholesale scheme, and 70 and 271 million pesos per year respectively through net metering, between 2020 and 2024 alone.

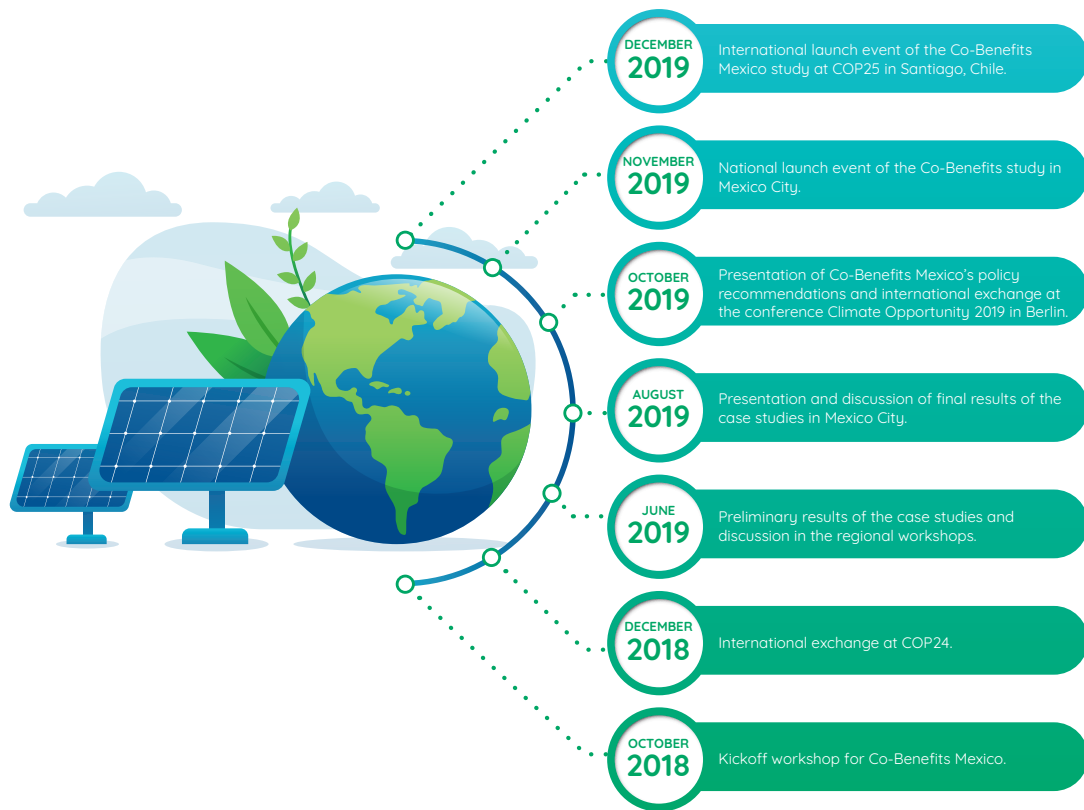


Key policy opportunity #3 - Important co-benefits for the population can be achieved with low investments. The Mexican government could generate annual savings in public hospitals and schools of up to 918 and 1,997 million pesos respectively, by implementing energy efficiency measures. Savings could be redirected to increase the budget of the public education and health sector in Mexico or even to scale up renewables in public buildings to increase savings and reduce the carbon footprint.

Key policy opportunity #4 - Renewables and energy efficiency measures in Mexico can support the achievement of other social agendas. Redistributing energy costs savings in social welfare and creating employment opportunities contribute to social goals proposed by the Mexican government, such as the Sustainable Development Goals, the national development plan and social programs.

² Existing schemes for distributed generation in Mexico: Net metering, net billing and wholesale.

4. TIMELINE OF CO-BENEFITS MEXICO



IASS

The Institute for Advanced Sustainability Studies (IASS) conducts research with the goal of identifying, advancing, and guiding transformation processes towards sustainable societies. IASS cooperates with partners in academia, political institutions, administrations, civil society, and the business community to understand sustainability challenges and generate potential solutions.

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CONECC

The project Enhancing the coherence of climate and energy policies in Mexico (CONECC) operates within the context of the restructuring of the Mexican energy market. It promotes the climate-friendly development of the energy sector and the harmonization of the two policy areas of climate and energy. It provides technical support to SEMARNAT.

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