



## COORDINATED AUDIT: RENEWABLE ENERGY

Power generation – due to the predominance of fossil sources in the world’s energy mix – is the main contributor for greenhouse gas (GHG) emissions. In this context, the replacement of these sources by renewable ones is fundamental to mitigate the climate change process and its effects. In addition, the expansion of renewable energy sources is going through a favorable context due to the development of new technologies and the reduction of costs of unconventional sources, mainly wind power and solar photovoltaic energy.

In particular, the establishment of international emission reduction agreements forces the countries to take measures to leverage the necessary energy transition, given that the climate problem is a transnational issue, to be jointly addressed by several countries.

The greater increase in renewable energy options may represent the expansion of electricity supply without significant environmental impacts, as well as a greater access to electricity for the populations involved.

In a context in which the systemic operation of the electricity sector prevails with environmental restrictions for the construction of new hydropower plants and given the peculiar characteristics of unconventional renewable energy sources, the expansion of intermittent renewable energy options adds several challenges to the planning and the operation of the national electrical systems. The main challenges include: overcoming the technical, financial and institutional difficulties in the definition of strategies and mechanisms for the expansion of these energy

sources; adaptation of the regulation of electrical systems; identification of alternatives for mitigating the impacts of the high variation of generation of wind and solar photovoltaic sources, and so on.

Therefore, the increase of renewables in the electric power mix becomes a complex task for governmental entities and the action of superior audit entities has the potential to identify opportunities for improvements that will enable the overcoming of the challenges.

Thus, considering the worldwide importance of renewable energies, whether due to the environmental aspect or the economic aspect, the Technical Group of Public Works (or “Working Group for Public Works Audit”, GTOP) of the Organization of Latin American and Caribbean Supreme Audit Institutions (Olacefs) decided to carry out a coordinated audit on the topic of investments in sustainable electricity infrastructure during the 2018-2019 biennium, in order to identify the current situation of Olacefs member countries.

The coordinated audit on renewable energy was held in the following countries: **Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay and Venezuela**. This audit has the technical support of the Brazil-Germany Cooperation for Sustainable Development, through GIZ – *Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH* – as part of the project *Strengthening of External Control in the Environmental Field*, which is being implemented in partnership with TCU and Olacefs.

## AUDIT OBJECTIVE

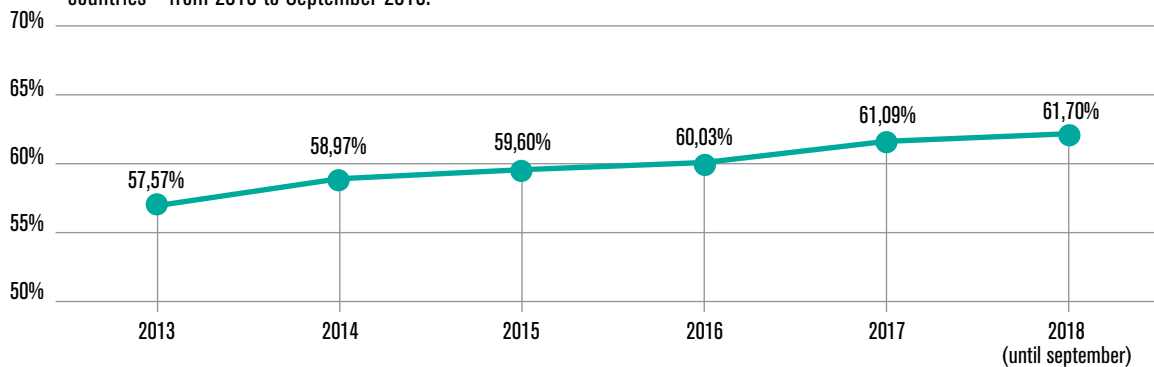
The objective of the audit was to assess the public policies for the expansion of renewable energy sources in the electric power mix, identifying, in particular, good practices and opportunities for the improvement in these policies, in order to contribute to the achievement of the commitments made through the Sustainable Development Goals (SDGs) and the Paris Agreement. In order to accomplish this purpose, the audit encompassed the assessment of the following aspects: national and international guidelines and commitments defined for the increase of renewable energy sources; public policies to sustainably increase the participation of these sources; coordination among the stakeholders who are responsible for these policies; instruments or strategies for the adaptation of the electricity sector to the characteristics of the new renewable energy sources, to ensure the access to reliable, sustainable and affordable energy.

## RESULTS

All audited countries were found to be signatories to the Paris Agreement and have already submitted their Nationally Determined Contributions (NDC) for the reduction of GHG emissions. It was also found that, even in countries with a predominantly renewable electric power mix, these sources are important for the energy transition in a possible scenario of electrification of the vehicle fleet, because there would be the tendency of an increase in the electricity consumption.

Together, the countries participating in the audit have the installed renewable energy capacity above 213 GW. The total percentage evolution, in the last 5 years, occurred according to Chart 1..

Chart 1 – Percentage evolution of renewable energy sources in the installed capacity for electric power generation of the participating countries – from 2013 to September 2018.



The following tables demonstrate the summary of each of the situations and the countries in which they were verified.

GOVERNMENTAL COMMITMENTS AND GUIDELINES FOR THE EXPANSION OF RENEWABLE ENERGY SOURCES	
SITUATION VERIFIED	COUNTRIES
Outdated data on GHG emissions, which makes it difficult to monitor possible advances regarding the reductions	Brazil, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico and Paraguay
Weaknesses in the definition of guidelines and goals, which are crucial for the greater increase of renewable energy sources in the electric power mix	Brazil, Chile, Costa Rica, Ecuador, El Salvador, Honduras and Paraguay
Problems on the follow-up of goals or guidelines due to the lack of proper monitoring or due to weaknesses in the established indicators	Colombia, Costa Rica, Cuba, Ecuador, Honduras, Mexico and Paraguay

## COORDINATION AMONG THE STAKEHOLDERS INVOLVED WITH THE EXPANSION OF RENEWABLE ENERGY SOURCES

SITUATION VERIFIED	COUNTRIES
Flaws in the coordination of policies for the inclusion of renewable energy sources in the electric power mix	Costa Rica, El Salvador, Mexico, Paraguay and Venezuela
Weaknesses in the articulation among the stakeholders who are responsible for the policies for the inclusion of renewable energy sources in the electric power mix	Brazil, Colombia, Cuba, Ecuador, El Salvador, Honduras, Mexico and Paraguay
Flaws in the engagement of key stakeholders in the creation of more effective policies	El Salvador, Guatemala and Paraguay

## PUBLIC POLICIES FOR THE SUSTAINABLE INCREASE OF RENEWABLE ENERGY SOURCES

SITUATION VERIFIED	COUNTRIES
Insufficient incentive policies for the sustainable expansion of the electric power mix	Brazil, Colombia, Ecuador, El Salvador and Mexico
Incoherence between the established strategies and the governmental guidelines for increasing the percentage of renewable energy sources	Brazil, Ecuador, El Salvador, Guatemala, Mexico, Paraguay and Venezuela
Incentive policies without an adequate level of transparency or absence of support for the popular participation in the creation of initiatives	Colombia, Guatemala, Honduras, Mexico, Paraguay and Venezuela
No evaluation of the results of incentives granted for renewable energy sources, which brings the risk that the adopted strategies are not justified in the cost-benefit aspect	Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras and Mexico

## INSTRUMENTS FOR THE ADAPTATION OF THE ELECTRICITY SECTOR TO THE INCLUSION OF RENEWABLE ENERGY SOURCES

SITUATION VERIFIED	COUNTRIES
Flaws in the proper evaluation of direct and indirect environmental impacts, related to the expansion of renewable energy sources	Brazil, Colombia, Guatemala, Honduras, Mexico and Venezuela
Weaknesses of governmental instruments to ensure that the expansion of renewable energy sources is carried out in such a way as to guarantee the reliability and the economy of the electrical system	Colombia, Costa Rica, Cuba, Ecuador, Honduras, Mexico and Venezuela
Regulatory weaknesses for a greater increase in renewable energy sources	Brazil, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Paraguay and Venezuela
Technical weaknesses for a greater increase in renewable energy sources	Brazil, Chile, Ecuador, Guatemala, Honduras, Mexico, Paraguay and Venezuela

## EXPECTED BENEFITS

The accomplishment of this joint work has enabled the exchange of data and information among the participating Supreme Audit Institutions (SAIs), providing a diagnosis of the evolutionary framework of the expansion of renewable energy sources in the electricity sector. This assessment enabled the compilation of several lessons, opportunities for improvement to tackle the weaknesses that were pointed out and good practices that, when disseminated, can help the governmental entities of each member country make the decisions that are most appropriate to their respective realities, in order to make the public policies related to increase clean energy more effective and efficient. It is emphasized that the success of the energy transition

can contribute not only to reducing GHG emissions, but also to increasing the supply of electricity to the populations of the involved countries, given that the decreasing cost of clean energy sources and the possibility of decentralized electric power generation can make the access to electricity feasible, even in places that are far from the transmission and distribution grids.

Finally, the joint action of Olacefs member countries can be used as an example for future coordinated audits to be conducted by other SAIs, as the mitigation of the effects of climate change is a transnational topic that requires the joint effort of the international community.

For information regarding the audit work:  
[www.tcu.gov.br/energiasrenovaveis](http://www.tcu.gov.br/energiasrenovaveis)



## AUTHORITIES

BRAZIL (FEDERAL COURT OF ACCOUNTS - TCU)  
Aroldo Cedraz (Rapporteur)

SAI - CHILE  
Jorge Bermúdez Soto (Head of the SAI)

SAI - COLOMBIA  
Carlos Felipe Córdoba Larrarte (Head of the SAI)  
Ricardo Rodríguez Yee (Mine and Energy Head)

SAI - COSTA RICA  
Marta Acosta Zúñiga (Head of the SAI)

SAI - CUBA  
Gladys Maria Bejarano Portela (Head of the SAI)

SAI - EL SALVADOR  
Carmen Elena Rivas Landaverde (Head of the SAI)

SAI - ECUADOR  
Pablo Celi de la Torre (Head of the SAI)

SAI - GUATEMALA  
Edwin Humberto Salazar Jerez (Head of the SAI)

SAI - HONDURAS  
Roy Pineda Castro (Head of the SAI)

SAI - MEXICO  
Agustín Caso Raphael (Minister Supervisor)

SAI - PARAGUAY  
Camilo D. Benítez Aldana (Head of the SAI)

SAI - VENEZUELA  
Elvis Amoroso (Head of the SAI)

Support



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