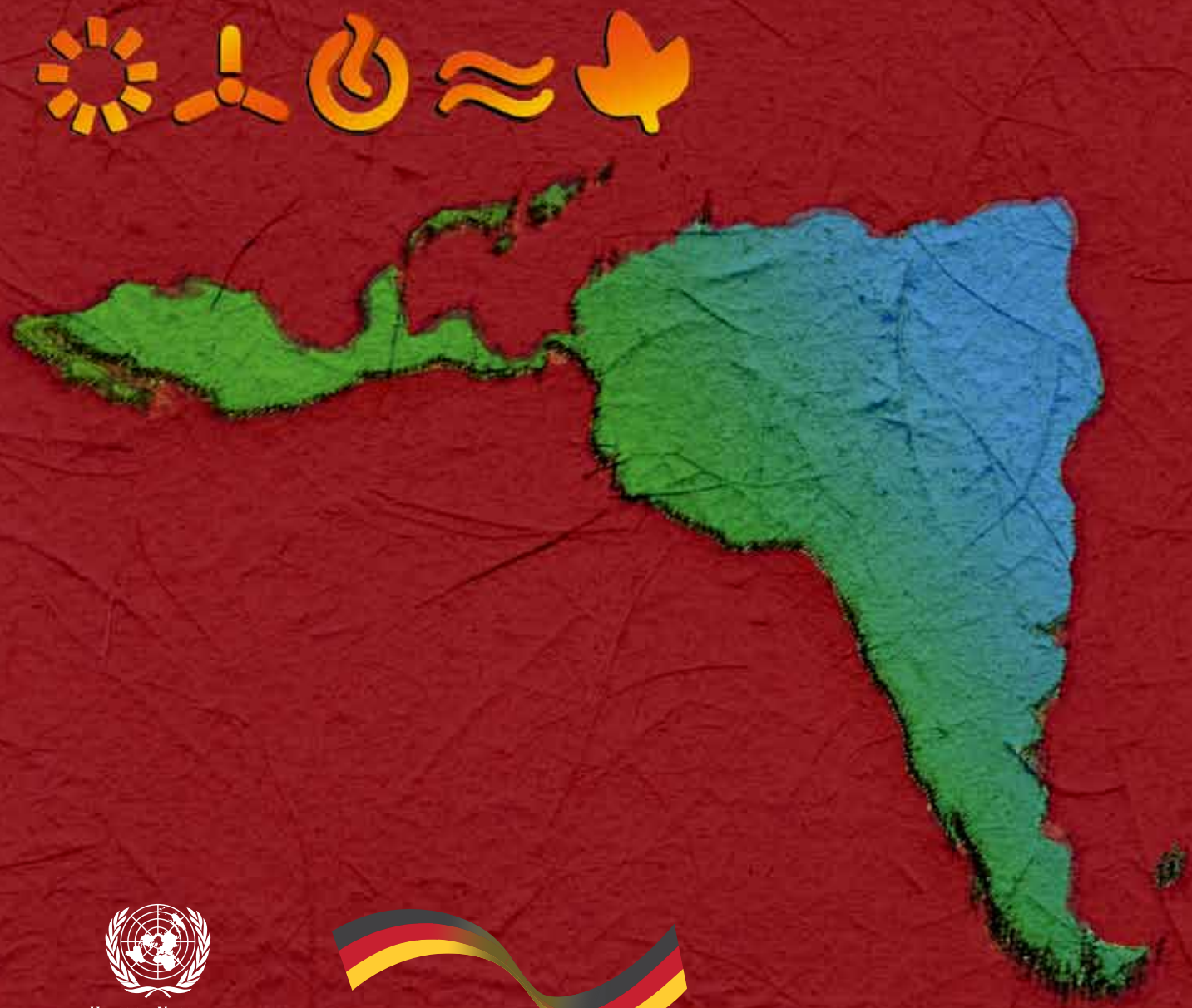
ENERGY EFFICIENCY IN LATIN AMERICA AND THE CARIBBEAN: PROGRESS AND CHALLENGES OF THE PAST FIVE YEARS

Executive Summary



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Energy efficiency in Latin America and the Caribbean: Progress and challenges of the past five years

Executive Summary

Economic Commission for Latin America and the Caribbean (ECLAC)

This document is a translation of the executive summary of “Eficiencia energética en América Latina y el Caribe: avances y desafíos en el ultimo quinquenio” (LC/W.562), which was prepared by Claudio Carpio, consultant in the Natural Resources and Infrastructure Division of the Economic Commission for Latin America and the Caribbean (ECLAC), with the help and supervision of Manlio F. Coviello, Chief of the Division’s Natural Resources and Energy Unit.

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Contents

Introduction

The present document analyses the progress of national programmes and activities associated with the promotion and development of energy efficiency between the years 2008 and 2013 in the 27 Latin American and the Caribbean member countries of the Latin American Energy Organization (OLADE).

The new study is based on the original report —prepared by ECLAC and OLADE between July 2008 and July 2009[1]— taking into consideration any progress made over the past four to five years, an interval long enough to justify an update both of the current status of energy efficiency and its prospects, developments and challenges in the Region of Latin America and the Caribbean.

The country updates were focused on the following aspects of national Energy Efficiency programmes and activities carried out by each country:

- Progress in the political, regulatory and institutional framework during the review period
- Key new actors in energy efficiency and their impact
- The resources and financing mechanisms of the energy efficiency programmes
- The programmes and their outcomes (once known and assessed) from 2008 to the present
- The remaining barriers, both general and specific to each country, where relevant
- The lessons learned, both prior and subsequent to the period under analysis

In general, there have been clear improvements in the focus on and diligence about the issues surrounding energy efficiency in most countries. This has been due mainly to the conviction that climate change is a reality and that one of the most efficient ways of mitigating its impacts is by implementing cost-effective energy efficiency policies.

[1] ECLAC Document # LC/W 280: '*Situación y Perspectiva de la Eficiencia Energética en América Latina y el Caribe*',(Energy Efficiency Status and Outlook in Latin America and the Caribbean), October 2009.

A. The political, regulatory and institutional framework during the period 2008-2013

Evaluation of progress made shows that there have been clear improvements in most countries, albeit to varying degrees.

Some examples include: the official publication of legislation on energy efficiency in Uruguay (2009), which included a law establishing a Trust Fund to finance energy efficiency projects; Venezuela (2011), Panama (2012), Supreme Decrees regulating the Energy Efficiency Law (Peru, 2007), and the preparation of Bills of Law in several other countries (Guatemala, El Salvador, Nicaragua, the Dominican Republic and Grenada).

These new laws and/or bills of law can be added to the list which includes a Law on the Rational Use of Energy (URE Law) in Costa Rica which is one of the oldest in force (1994), an Energy Efficiency Law in Brazil (2001, product of a severe energy supply crisis) and another in Colombia (URE Law 697 of 2001).

The study was thus able to verify the consolidation of institutional actors involved in energy efficiency and the creation, in some cases, of new institutional frameworks: Vice-Ministry of Energy Development responsible for Energy Efficiency (Bolivia, 2007), the Bolivian Energy Efficiency Network (April 2013), the Ministry of People's Power for Energy Efficiency (Venezuela, 2009), the Chilean Agency for Energy Efficiency (2010), the National Office for the Rational Use of Energy of Cuba, the Colombian Energy Efficiency Council (private sector, Colombia, 2010), the Ministry of the Environment, Energy and Seas (Costa Rica, 2012), the National Energy Efficiency and Renewable Energy Institute (Ecuador, 2012), and finally, the resurgence of the National Commission for the Efficient Use of Energy, CONUEE (Mexico, 2012).

Analysis of the 27 countries demonstrates the existence of natural differences in the regulatory frameworks for energy efficiency unique to each country which, in consequence, prevent the establishment of simple "common denominators" for the Region.

However, there is evidence of a tendency in most countries to establish national energy efficiency programmes (or to strengthen any such programme already in existence), backed by the legal and regulatory support necessary to uphold government policy on energy efficiency.

B. Key energy efficiency actors, their impact and their progress between 2008 and 2013

In most countries, the activities, projects and programmes associated with the promotion and development of energy efficiency have remained in the public domain, under the direction of ministries, national commissions and/or secretariats or energy divisions, having varying degrees of visibility and influence according to country. There have been no 'Energy Efficiency –type Agencies' created during the period, except in Chile, although several concepts are being evaluated in a few countries (Colombia, Grenada, Peru, Trinidad and Tobago, and Jamaica), all of which are intended to create an Energy Efficiency Unit, or suchlike, by law.

Similar to the conclusions of the previous study, there are still very few cases in which the energy distribution enterprises encourage energy efficiency among their clientele and, in such cases, the focus is on reducing peak demand to mitigate specific supply issues; similarly, few of these enterprises actually manage energy demand in a systematic manner.

In synthesis, the scope and efficiency of public and private actors involved in the promotion and development of energy efficiency programmes in countries in the Region is the result of four main factors: (a) the political support of Governments; (b) continuity in the efforts and of the frameworks associated with energy efficiency; (c) ability to access financing; and (d) capacity to report on "what can be done" in each demand sector in order to develop energy efficiency strategies.

C. Resources and financing mechanisms for energy efficiency programmes

In most countries, the funds used to promote and develop energy efficiency are derived mainly from national budgets, which implies —with the exception of those countries with dynamic energy efficiency policies— significant limitations to their implementation.

There still exists a high level of participation of multilateral organizations providing support in the form of loans and/or technical cooperation focused on energy efficiency projects or programmes, as well as smaller ad hoc contributions (mainly of European origin) for specific projects. This proliferation of donors lacks overall supervision and tends to produce duplications in the interventions.

Nonetheless, in updating the document to incorporate the new period into the analysis, the report has found evidence of a substantial increase in the number of ways of boosting the funding available for energy efficiency, arising many times from the need to meet environmental goals related to mitigating the impacts of climate change. For example, Bolivia is setting up a Bolivian Energy Efficiency Fund; Uruguay has established the Uruguay Trust Fund for the Development of Energy Efficiency (FUDAEE); Argentina is designing a Fund for the development of energy efficient projects under a Global Environment Facility (GEF/BM) support framework, and so on.

There has been a proliferation of the number of financial institutions, mostly public and some private, offering various kinds of facility for the evaluation and implementation —once proven feasible— of energy efficiency projects.

D. The degree of evaluation of the results of energy efficiency programmes in each country

The degree of evaluation of the results of energy efficiency programmes in each country was based on the quantity and quality of the information available: this was not entirely satisfactory in terms of its validity for drawing meaningful conclusions about whether a national programme was on the right track, or not achieving goals and needing to be rectified.

Analysis of the data confirms that the quality of the statistics and performance indicators that enable the results of national energy efficiency programmes to be quantified continues to be unsatisfactory.

ECLAC, in a effort to bridge this gap, is working on the issue of energy efficiency indicators through the BIEE (Base Indicators for Energy Efficiency in Latin America and the Caribbean) regional programme, which is based on the technical and political process and the operational logic of the European Commission ODYSSEE programme.[2] The expectation is that a set of specific indicators would be developed that would enable the progress of national energy efficiency programmes to be determined, the results analysed and —in consequence— the corresponding policy decisions to be made.

The BIEE programme was launched by ECLAC —in coordination with, and supported by, OLADE— in 2011; this was made possible by the contribution of the German Technical Cooperation agency (GTZ) with the technical support of the French Agency for Energy and the Environment (ADEME), within the framework of the IPEEC (International Partnership for Energy Efficiency Cooperation). There are currently 11 countries in the Region[3] involved in the BIEE programme, and the plan is to expand to other Latin American and Caribbean countries in 2014.

[2] For more on the ODYSSEE programme, see [online]: http://www.odyssee-indicators.org/.
[3] Argentina, Bolivia, Brazil, Costa Rica, Chile, El Salvador, Guatemala, Mexico, Panama, Paraguay and Uruguay.

E. Barriers to the systematic development of energy efficiency activities and programmes in the Region

There continue to be barriers to the systematic development of energy efficiency activities and programmes in the Region, which can be summarized as follows:[4]

- A critical factor in several countries —although some improvement has been noted since the previous study— has been the lack of continuity of the institutions involved in the promotion and development of energy efficiency —or, more specifically, of specific sectors within them. This, in consequence, tends to result in the loss of personnel with energy efficiency expertise.
- In some countries, the sector responsible for promoting and developing energy efficiency policy has too little influence, too lowly a position in the organizational structure of the ministry and/or secretariat that handles energy matters; consequently, the promotion of energy efficiency programmes has scant success and, likewise, low impact in terms of any —positive— changes in energy intensity.
- Some countries assign more institutional importance to the sectors associated with the environment and climate change, considering energy efficiency to be a mere appendage to environmental policy (such is the case with the concept of "clean and eco efficient production"). In such countries, the organs that promote energy efficiency tend to be absorbed into programmes of a more environmental focus and scope.
- There continues to be, on a large scale, insufficient knowledge – at all social levels – about the activities that can be carried out, the economic benefits that can be obtained, and the technologies that can be used to reduce energy consumption, especially in the residential sector (with the exception of the —already classic— substitution of incandescent bulbs for LFCs), in the small and medium sized enterprise sector, both commercial and industrial, and in the public services sector (hospitals, schools, municipal buildings, and so on).
- In some countries, the availability and market penetration of improved technologies for energy savings are impeded by costs too inaccessible to the majority of the population.
- There continue to be insufficient effective regulations to encourage energy efficiency activities and projects. Although some countries already do have laws that promote the development of energy efficiency, in some cases no regulations exist, so there have not yet been any concrete applications. As mentioned in the previous study, the mere existence of an energy efficiency law does not in itself guarantee the actual development of this kind of initiative.
- In some countries, the energy tariffs do not reflect properly the cost of supplying energy to the market, due to the existence of subsidies, whether implicit or explicit; this situation affects the feasibility of energy efficiency projects, by increasing the payback period and putting implementation at risk, especially because such investments compete —at the enterprise level— with others (such as increasing production, research and development, marketing-oriented development, working capital, and so on).
- Decisions on whether or not to invest in energy efficiency projects continue to take into account only the initial cost of the energy-efficient product or equipment and tend not to consider the operating cost —the energy consumption— of the cheaper equipment during its service life (an expense that can be significantly greater, for example, in the case of evaluating the substitution of conventional electric engines for high-efficiency engines).

[4] The list of barriers is not exhaustive; neither are the barriers listed by order of importance.

- In general, Governments adopt the concept of energy efficiency more as another way of continuing to satisfy demand with installed capacity and, in this way, putting off investment on the supply side.
- In several countries, it is difficult (perhaps due to inefficient customs controls) to prevent the importation of low energy-efficient equipment, products or vehicles, that enter the market under favorable price conditions which, clearly, are offset by their high levels of energy consumption and greater environmental impact. This also threatens the success of energy labeling programmes for quality energy-consuming equipment.
- International cooperation clearly influences the development of energy efficiency projects and programmes in the Region, to the point of duplication of effort among institutions. International cooperation in itself is not a bad thing, but if projects are only implemented because there is cooperation funding available, the strategy of promoting and developing an independent or national policy on energy efficiency – a responsibility that cannot be delegated by any country – can no longer be considered sustainable.
- Although the financial system is beginning to understand the dynamics of energy efficiency projects better, lending institutions are still reluctant to provide funding for energy efficiency projects. The mistrust in the financial world about the feasibility of investment in this kind of project continues to be high, as reflected in higher interest rates and/or more stringent borrowing requirements.
- The energy services enterprises (ESEs or ESCOs) market is not yet fully established, due to the lack of a financial market prepared to handle performance contracts (and by factors exogenous to energy, such as inflation, high interest rates, scarcity of expertise in this type of contract, etcetera, all of which are detrimental to the potential profitability of a contract). The exception might be Brazil, although it is finding it very difficult to operate in the public sector with this type of contractual arrangement.
- Somewhat linked to the previous point, there continues to be mistrust —especially in the small and medium sized enterprise sector— in the technical assistance provided by energy-savings experts. Some negative experiences have generated this lack of confidence on the part of companies that do not have such experts on their regular staff.
- Most countries in the Region have not yet developed a set of indicators that represent adequately the progress of energy efficiency programmes and projects and that show the concrete results of the measures that have been implemented. As mentioned before, ECLAC is already working on the issue in some countries in South America, Central America and Mexico, within the framework of the BIEE (Base Indicators of Energy Efficiency) project.
- The implementation of ISO 50001 (Energy Management) has not been sufficiently widespread: there has been a consequent impact on the potential generation of systematic programmes of energy efficiency (mostly due to the fact that it is a voluntary standard).

There are some obstacles or deficiencies within the aforementioned group that are being surmounted: the institutional barriers (more specific actors in charge of matters and more funding to fulfil their mandates), the normative barriers (various countries have established diverse regulations, from decrees to laws, and other countries are in the process of so doing), and barriers to dissemination, teaching and training (there is much activity in this area in most of the countries in the Region).

F. Official documents that evaluate the experience of developing national energy efficiency programmes

It is still difficult to find, in relation to lessons learned, any official documents that evaluate the experience of developing national energy efficiency programmes

The systematization of lessons learned from national energy efficiency initiatives and experiences is scant —or simply does not exist— at the institutional level.

This is due, in part, to a natural tendency not to acknowledge failure, and partly to a lack of systematization of information; the confluence of the two situations automatically excludes those that "didn't work well" from official reports.

There do exist a few scattered documents and personal experiences of consultants who were, or are, linked to energy efficiency in each country. These documents provide indications on the outcomes of energy efficiency programmes, but do not constitute an ordered and institutionally-reliable set of national statistical metadata.

One lesson that emerges from the experiences of the Region is that the mere existence of an Energy Efficiency Law does not guarantee, in any way, the achievement of satisfactory results in practice in improving energy consumption. The Law does not ensure the achievement of a positive impact —which can be verified through a rational decrease in energy demand— if there is a persistent policy deficit in the systematic development and implementation of activities, projects and programmes on the efficient use of energy, adapted to the circumstances of each country.

This situation is linked to the difficulty that each State still has in controlling —and sanctioning, if so established by the Law— behaviour that departs from that which is required by the Law.

There are also cultural reasons in the societies of Latin America and the Caribbean which produce this tendency to partial fulfillment of the regulations regarding energy efficiency.

Nevertheless, the emergence of new legislation and numerous bills of law in several countries during the period under review (2008-2013) is a good sign of governmental concern over the matter, largely influenced these days by the need to take action to mitigate climate change.

The 2008-2009 report had collated a number of lessons learned which did not refer specifically to any particular country, but whose concepts doubtless could be applicable, in general terms, to several countries.

G. Conclusions

The main conclusions of the current study, presented as a comparison between the conclusions of the 2008 ECLAC/OLADE study and the "snapshot" of the situation in 2013, are as follows:

- Institutions

  2008: In order to achieve concrete results in terms of the rational and efficient use of energy, there must be institutions that design, introduce and operate programmes in a stable and continuous manner.

  2013: This conclusion remains relevant. However, there have been significant improvements in the 2008-2013 periods, as several countries have assigned greater institutional importance to energy efficiency.

- Energy-saving potential

  2008: Energy-saving potential continues to be high. In general, about 15-20% of energy consumption could be avoided using measures with short payback periods.

2013: This conclusion remains valid. This demonstrates that the potential for energy saving still exists using measures requiring little or no investment, such as better habits, for example.

- Policy signals

  2008: Policy guidelines have been insufficient to encourage energy-saving behaviour and habits in consumers.

  2013: There has been significant improvement in recent years, although there still need to be more —and better— public policy guidelines on energy efficiency.

- Institutional capacity

  2008: Decentralized (state or provincial, municipal) institutional capacity to design energy efficiency programmes must be promoted.

  2013: There is no evidence of any domestic proliferation – especially in the larger countries – of entities or state-run/municipal organizations involved in energy efficiency.

- Funding

  2008: There must be better harmonization of private funding with energy-saving opportunities.

  2013: This observation continues to be relevant.

- Training and information

  2008: Efforts in capacity-building, training and public information need to be increased.

  2013: There has been some degree of improvement over the 2008-2013 period; each country has, to a greater or lesser extent, specific policies with regard to capacity-building, training and public information, although much more still needs to be done.

- Regulations and standards

  2008: The implementation of regulations and standards of efficiency has increased the potential for energy saving, by providing information to the consumer.

  2013: This process continued and increased during the 2008-2013 period, incorporating more and more energy-consuming equipment. This has been one of the most significant improvements in energy efficiency during the five-year period.

- Equipment substitution

  2008: There is still potential for huge savings in the substitution of obsolete household appliances for those with higher energy efficiency.

  2013: This remains relevant, despite the significant increase in energy efficiency of new household appliances on the market.

- Cogeneration/combined heat and power generation

  2008: There is still great potential to implement cogeneration energy technologies for industries and large plant in the tertiary sector which is not being utilized, due to insufficiently clear

regulations in this regard, especially concerning the prices at which the system would purchase the excess electricity generated by the process of cogeneration.

2013: This situation continues to be the same, with a few exceptions, such as Mexico, for example.

- National programmes

  2008: National energy efficiency programmes require the establishment of financing mechanisms designed specifically to respond to and coordinate the enormous volume of investment decisions that such programmes imply.

  2013: There is an evident shortage of specific financing for national energy efficiency programmes, which makes it difficult to implement the investments arising from such programmes.

- Regulatory frameworks

  2008: There is a proven absence of, and/or weakness in, regulatory frameworks

  2013: Despite the fact that there have been significant improvements in this area between 2008 and 2013, much still remains to be done.

- Specialist staff

  2008: There are very few energy efficiency specialists at the national or regional level.

  2013: This remains a critical gap in most countries.

- Energy service companies

  2008: Scant, if any, development of the market for energy service companies (i.e. ESCOs).

  2013: This lack is still evident, because the implementation of performance-type contracts, financed by the investments of ESEs or ESCOs is almost non-existent throughout the Region. There are cases in Brazil, and a few in Mexico, where ESCO mechanisms are applied, but these are not examples of generalized usage.

- Electrical companies

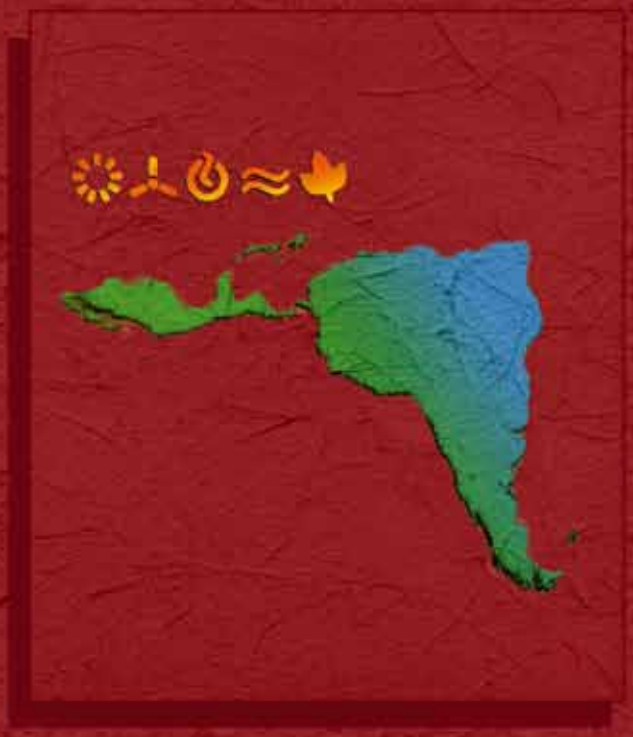
  2008: There is very little involvement of suppliers and distributors of electricity and fuels in energy efficiency programmes.

  2013: This situation remains the same to date, although the electrical companies have improved a great deal in terms of the information they provide to their clientele – oriented towards reducing unnecessary energy consumption.

- Technology advances

  2008: On the supply side, there have been important reductions in specific energy consumption, due to advances in technology.

  2013: These advances have continued in the 2008-2013 period, in an ongoing process of improvement; for example, combined cycle plants for electrical energy generation.



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