



Regulatory impact assessment for implementing energy efficient lighting standards in the small island developing state of Antigua & Barbuda

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ABSTRACT

A regulatory impact assessment (RIA) was conducted to provide information and analyses to support government decision-making on policy and conformity assessment options for adoption of proposed energy efficient lighting standards in the Caribbean island nation of Antigua and Barbuda. The methodology comprised of a multi-criteria assessment methodology coupled with perceptual cost effectiveness assessment, based on primary data obtained from an expert panel. Findings suggest that a voluntary incentive policy with intervention in the consumer market such as a product subsidy possibly coupled with a product exchange scheme in phased approach towards a mandatory obligation to energy efficient lighting products could be the way forward. Findings also suggest suitability of a third-party conformity assessment approach whereby manufacturers/suppliers/importers will require certification for energy efficient lighting products by an approved, accredited entity before or upon local market entry. The RIA is useful to government policy makers seeking to justify and prioritize their available options for efficient and effective adoption of the proposed lighting standards. This study also introduces the RIA as an approach that should be institutionalized in the Caribbean region as a tool for data driven and evidence based policy decisions.

1. Introduction

The economic challenges that small island developing states face because of their energy dependence on imported fossil fuels is well documented as is the recommendation to adopt energy conservation strategies [19,22,53]. In fact, recent estimates suggest that the adoption of energy-efficient technologies in the Caribbean could cut electricity consumption by as much as 10% over the next decade, potentially saving the region billions of dollars in investments that would otherwise be needed to expand power generation capacity [22,38]. Notwithstanding this, electricity rates in the region continue to be among the highest in the world, averaging some \$0.35/kWh [57].

In 2015, Caricom ministers approved energy perform standards for CFLs and LEDs. These standards were approved to protect consumers from “underperforming products” while simultaneously protecting importers of highly efficient products from competitors saturating the market with “cheaper”, low-performance products. While some Caribbean nations have started enacting energy conservation policies,

the efficacy of such policies remain untested and have not yet resulted in full scale national transitions.¹ Some examples of efforts include Trinidad and Tobago businesses being afforded a tax allowance when they conduct energy audits and install energy-saving equipment; and Grenada, St. Lucia, Jamaica and Barbados are piloting net metering [38]. But notwithstanding such early efforts, sustained implementation is slow and successes uncertain² [21].

National policies will have to overcome lack of political inertia and sometimes conflicting short term political priorities to move progressive regulations, standards and market incentives forward. This includes convincing monopolistic and/or state power generators to promote energy efficient products and technologies needed modernization from both cost and environmental standpoints [65]. It is also about creating that important, sustained shift in the consumer market towards investing in energy efficiency transition in homes, communities and businesses [11,49]. Some peer experiences however, give reason for optimism. The French Caribbean territories of Guadeloupe and Martinique have catalyzed significant decreases in per capita electricity

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¹ <https://www.crosq.org/index.php/media-and-resources/news-articles>.

² The Caribbean Community Market (Caricom) is an organization of Caribbean nations established in 1973 whose main purposes are to promote economic integration and cooperation among its members, to ensure that the benefits of integration are equitably shared, and to coordinate foreign policy. Full members include Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago. Several other Wider Caribbean countries and territories are associate members.

consumption through measures including state-sponsored sales and distribution of energy-efficient appliances, lighting and energy efficient building construction standards [21,60].

The regional concern among policy makers has shifted from building support for progressive energy conservation positions to how implementation can be achieved and sustained. In support of this concern, this study focuses on one particular aspect of the energy efficiency discourse – energy efficient lighting. Although regional policy makers suggest that total national and regional transitions to compact fluorescent lighting (CFLs) and light emitting diodes (LEDs) can be an ‘easy win’, this is not yet the reality [14]. To understand how such transitions can be achieved from a policy perspective and to shed light on why efforts have not met the objective yet, this study responds to two questions. First, what are the most suitable policy instrument(s) that can be implemented to achieve this transition in a cost effective manner? Second, what mechanisms do countries need to put in place to ensure that the lighting products being allowed into their markets are of the expected quality/performance standards³?

This study tackles both questions in the two-island independent Caribbean nation of Antigua and Barbuda in the Eastern Caribbean. Saddled with high electricity tariffs, the government has approved a National Energy Policy that features an ambitious 20% national energy conservation target to be attained by 2025. The government estimates that it could potentially reduce the national energy bill by 13–15% (representing a 4–5% increase in GDP) in the long run [58]. The study used a regulatory impact assessment methodology comprised of multi-criteria assessments to answer each research question. The methodology also allowed examination of the potential policy solutions and conformity assessment opportunities not only on a technical/policy basis but also with considerations of potential costs and social implications, even where, in situation such as this, and common in developing countries, relevant quantitative data is not available. More broadly, this study represents one of the first efforts to apply a regulatory impact assessment to intended policy implementation in the Caribbean. Whereas such methodology is commonplace in industrialized countries, especially concerning the introduction of new or updated product and process standards, it is not institutionalized in Caribbean countries [40]. This work was supported in the field by the Antigua and Barbuda Bureau of Standards with technical advice from other partners including the Caribbean Regional Organization for Standards and Quality (CROSQ).

2. Background

2.1. Caribbean energy efficiency policies

High electricity prices primarily derived from the need to import oil and gas affects all Caribbean consumers from low income households unable to afford electricity to large businesses [35]. Energy policies have therefore traditionally tried to alleviate these costs. These have included tax exemptions in Guyana; a tax allowance of 15% in Trinidad and Tobago granted to commercial and industrial enterprises for expenditure on energy savings systems and subsidies and electricity tariffs for commercial and heavy consumers in Antigua and Barbuda, Saint Kitts and Nevis, and Saint Vincent and the Grenadines.

Turning to energy efficiency more specifically, the IEA (2014) notes that “energy efficiency is widely recognized as the most cost-effective and readily available means to address numerous energy-related issues,

including energy security, the social and economic impacts of high-energy prices and concerns about climate change.” Electrical lighting accounts for 9% of total global energy consumption, and represents approximately 8% of the world CO₂ emissions (IEA, 2014). Interestingly, in nearly every country that energy efficient lighting is promoted, government support mechanisms are involved. These include, for example, doing retrofits, utility finance programs and national campaigns in consumer education [8,20,41]. The most common policies to promote energy efficient lighting and appliances in developing countries include encouraging households and businesses to buy energy efficient appliances [49]; energy-efficient building codes; particularly for hotels [28]; and energy labeling for consumer goods and appliance efficiency standards to encourage the use of energy efficient items [37,48].

Caribbean countries generally lag behind in promoting energy efficiency, constrained by limited financing, weaknesses in institutional capacity, and insufficient expertise [23,49]. Potentially substantial gains have been noted, should policies target heavy energy consumers such as the tourism and hospitality sector [35]. In a recent review, the Inter-American Development Bank (IDB) suggested that more incentive based instruments could improve energy conservation technology adoption but cost effectiveness would be critical. While such incentives could work to increase market penetration, they could also increase business and household budgets in the short term, creating further pressures. The IDB study also highlights that among energy efficiency gains to be made through a portfolio of upgrades to air-conditioning, refrigeration, mechanical operations and appliances, lighting including CFLs present commercially and economically viable strategies for the Caribbean [22]. Despite this, rules-based policies are not the norm in the region and CFLs and LEDs has not been widely adopted by Caribbean consumers who often cite the high initial cost and poor bulb quality [51].

2.2. Regulatory impact assessment

Regulatory impact assessment (RIA) refers to empirically based tools employed to improve policy design and implementation choices. The objective is to deploy analyses to ascertain likely impacts of new regulations in both quantitative and qualitative terms [39]. Regulatory processes allow policy-makers to balance competing interests and have been critical to the development of the modern state. Improving the quality of regulation has shifted in focus from identifying problem areas, advocating specific reforms and eliminating burdensome regulations, to a broader reform agenda that includes adopting a range of explicit, overarching policies, disciplines and tools. Explicit policy support for the regulatory reform agenda, targets and evaluation mechanisms is essential. Governments have had to adopt a consistent approach to the rule-making process and employ new policy tools, such as regulatory alternatives, consultation mechanisms and RIA. RIA is an example of the trend towards more empirically based regulation and decision-making. Policy makers increasingly value regulation that produces the desired results as cost-effectively as possible. Much government action involves trade-offs between different possible uses of resources to maximize the benefits to society. RIA furnishes empirical data that can be used to make effective regulatory decisions.

By 2010, the practice was a norm in most of the OECD, but despite strong promotion by the World Bank and USAID in developing countries, it has gathered less traction to date [40]. Developing countries including those in the Caribbean have faced slow adoption due to factors including overly ambitious implementation targets and lack of underlying capacities. With the institutionalization of CROSQ however, there has been increased interest in RIA processes suitable for the region's development context and in focus sectors such as energy, agriculture and manufacturing. While Caribbean countries have not employed RIAs per se, there have been some recent efforts to support the introduction of various new or revised pieces of legislation, policies and

³ IEC standards: (1) IEC 62612: 2013 ‘Self Ballasted LED Lamps for General Lighting with Supply Voltages > 50 V-Performance Requirements; and (2) IEC 60969: 2001 Self Ballasted Lamps for General Lighting Services-Performance Requirements were considered and recommended to be adopted by the CARICOM Member States and by so doing it will be endorsed as a CARICOM Regional Standard.

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