

# Promoting Energy Efficiency through Policy

Curaçao

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# The Clean Energy for EU Islands Secretariat

## Who we are

The launch of the Clean Energy for EU Islands Initiative in May 2017 underlines the European Union's intent to accelerate the clean energy transition on Europe's more than 1,400 inhabited islands. The initiative aims to reduce the dependency of European islands on energy imports by making better use of their own renewable energy sources and embracing modern and innovative energy systems. As a support to the launch of the initiative, the Clean Energy for EU Islands Secretariat was set up to act as a platform of exchange for island stakeholders and to provide dedicated capacity building and technical advisory services.

The Clean Energy for EU Islands Secretariat supports islands in their clean energy transition in the following ways:

- It provides technical and methodological support to islands to develop clean energy strategies and individual clean energy projects.
- It co-organises workshops and webinars to build capacity in island communities on financing, renewable technologies, community engagement, etc. to empower them in their transition process.
- It creates a network at a European level in which islands can share their stories, learn from each other, and build a European island movement.

The Clean Energy for EU Islands Secretariat provides a link between the clean energy transition stories of EU islands and the wider European community, in particular the European Commission.

# 1. Introduction

## National Energy Policy for Curaçao

The National Energy Policy for Curaçao [1] was approved and adopted by the Curacao Government in March 2018. It is a comprehensive document that contains an overview of the energy vision of the Curacao Government. This policy document consists of three parts:

- Part 1 provides the focus and main themes of the National Energy Policy. It also defines the targets to be realized.
- Part 2 gives a more in-depth elaboration of their mission. It focuses on the underlying core principles and objectives of the National Energy Policy.
- Finally, in Part 3, the policy objectives are further detailed by measurable actions in a strategic work plan for the coming five years 2018 to 2022.

Nine strategies are defined in the first part, among which Strategy VI - Energy efficient buildings. The National Energy Policy envisages a reduction of the national energy consumption per capita with at least 25 % before 2040. This should, among others, be achieved by an increased energy efficiency for buildings and demand side energy efficiency.

For the implementation of the National Energy Policy new legislation and regulation will be issued. The encompassing legal framework will be contained in an Energy Act. This Energy Act can provide a framework for the development of **secondary regulation**. This may comprise of ministerial decrees, a grid code and other decisions. This Energy Act will offer a clear framework for relevant aspects of energy efficiency in buildings.

## Objective of this assessment

The main struggle for the Curacao government is implementing a policy strategy that makes the built environment more sustainable. This question is of main importance for the island since 60% of the electricity demand of the island originates from cooling. This assessment will be a contribution to the assessments mentioned in the Curaçao Energy policy under Chapter 5 - Energy efficiency and energy conservation.

On Curaçao there is limited knowledge and experience with respect to the implementation of energy efficiency measures. Based on best practices and considering the circumstances on Curaçao, **the overall objective of this assessment is to formulate an effective strategy for energy efficiency with a focus on the built environment, to contribute to the targets set in the National Energy Policy for Curaçao.**

## 2. Energy efficiency policy

Policy development is the process of deciding what should be achieved, what should be done to achieve it, and how to do it efficiently and economically. Ideally this process should be transparent and include consultation throughout the development. In practice, it is very important to use the methods and skills of both policy analysis and legal drafting when preparing items for government decisions [2]. This document merely provides policy considerations for achieving energy efficiency targets and is largely based on the report "Best Policy Practices for Promoting Energy Efficiency" by UNECE, the United Nations Economic Commission for Europe [3]. However, there is no such thing as the absolute 'best' policy instrument for all circumstances. Once priority targets have been chosen, as has been done by the creation of the National Energy Policy for Curacao, some policies may be more appropriate than others depending on local conditions and priorities. For Small Island Developing States (SIDS) specifically, energy systems present inherent characteristics including their small size, remoteness, vulnerability to natural disaster and a power sector that is characterized by small, inefficient generation plants which result in high energy prices. As such, a defining feature of the national energy situations across these SIDS is the high inefficiency in the use of energy resources [19]. This leads to high electricity prices, heavy dependencies on imported fuel and limited private sector participation in energy<sup>1</sup>.

Directive and successful energy efficiency strategies are based on collective learning and shared efforts to develop effective policy implementation. It is recognized that energy efficiency offers multiple benefits that include [3]:

- Macro-economic impacts,
- employment,
- public budget impacts,
- health and wellbeing impacts,
- industrial productivity, and
- energy delivery impacts.

The cornerstone of EU energy efficiency policy is Directive 2012/27/EU of 25 October 2012 on energy efficiency, which aims to bring Member States back on track towards meeting the 2020 targets. The current policy agenda is driven by the comprehensive integrated climate and energy policy adopted by the European Council on 24 October 2014, which sets out to achieve the following by 2030 [4]:

- A reduction of at least 40% in greenhouse gas emissions compared to 1990 levels;
- An increase to 27% of the share of renewable energies in energy consumption;
- An improvement of 20% in energy efficiency, with a view to achieving 30%;

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<sup>1</sup> <https://islands.irena.org/>; <https://sidsdock.org>

### 3. Options for achieving energy efficiency targets

This chapter provides an overview of best practice energy efficiency policies and measures utilized by member states of the United Nations Economic Commission for Europe (UNECE). It is up to Curacao to identify suitable solutions for their unique challenges that can be implemented with their available resources.

Policies are arranged in terms of market function or sector to offer a structured menu of high impact or best practice policies. A brief summary of each of the solutions is provided with a more in-depth discussion per policy option in the next chapter.

#### Finance

Many banks are developing energy efficiency investment portfolios. Multilateral Development Banks are important resources for emerging and developing economies, increasingly working through local commercial banks to underwrite risk and leverage commercial funds to energy efficiency and other sustainable energy projects. Some of the cross sectoral policies include [3]:

- Government and International Financial Institutions (IFI) leveraged loans funding and Dedicated credit lines;
- Public-Private Finance including Energy Service Companies (ESCOs);
- Tax incentives and rebates;
- Government grants or subsidies;
- International Climate Finance and Carbon Finance.

#### Utility focus

Utilities can motivate economic investment in demand and supply side energy efficiency by implementing cost-reflective prices. With established technical, financial, managerial and marketing capabilities, utilities are well placed to deliver energy efficiency policies. Curaçao could usefully start its energy efficiency programmes with utility ESCOs. The results from such energy efficiency actions reduce unprofitable energy sales and improve demand management pay back investments for both consumers and the utilities. Some policies to consider includes [3]:

- Cost reflective pricing and energy price subsidy reform;
- ESCOs;
- White Certificates;
- Loan Finance for Energy Efficiency;
- Voluntary Energy Efficiency Programmes (including reductions in transmission and distribution losses).

#### Household focus

The massive transformation that is required to develop new built zero energy buildings and significantly upgrade existing buildings at scale is universally recognized as a priority in the UNECE region. Building codes remain a key vehicle for advancing energy efficiency, but they are inherently customized to local environmental and market conditions. It is important that codes are regularly reviewed and updated. Policies need to move beyond the state-of-the-art efforts on codes to actively accelerate the market transformation of the building industry. Implemented polices include [3]:

- Existing homes insulation / weatherproofing through a wide array of technologies;
- Minimum Energy Performance Standards (MEPS) & Energy Performance Certificates (EPC) of buildings;
- Standards and Labelling of household appliances;
- Efficient lighting.

### **Business sector focus**

Energy efficiency offers a strategic approach to improving productivity in the business sector. While this may be obvious for larger energy intensive industries, it is also important for small to medium enterprises where energy costs are less obvious but may be more manageable as they are defined by business practices rather than process plant thermodynamics. Governments generally prefer a light-handed approach to working with industry, so effective voluntary measures are important policies. The importance of motivating managerial focus on energy efficiency cannot be underestimated. The following policies have been implemented [3]:

- Energy Audits, Energy management (ISO 50001) & Energy management capacity building;
- Commercial buildings;
- Industry network ;
- Voluntary Agreements;

Each of these policies options will be discussed in more detail in the following chapter.



## 4. Evaluation of policy options for Curaçao

Each of the policy options mentioned in the previous chapter will be discussed in terms of the following features to evaluate the suitability for Curaçao:

- Effectiveness w.r.t. energy demand reductions and multiple benefits; assuring significant quantifiable results;
- **Complementarity, synergies and integration attributes;** guaranteeing compatibility with other national, regional and international measures and policies;
- **Political alignment, governance and accountability attributes;** ensuring that they are acceptable and workable in multi-layer governance frameworks;
- **Marketability and market impact;** warranting the adoption in global and local markets by technology providers, politicians and financial institutions.

In the discussion below, we describe in which way a policy option fits any of the abovementioned features. For some features, concerns that should be considered and addressed if the policy is to be applied in Curaçao is highlighted by underlined text.

The experiences of island nations similar to Curaçao that have successful markets for energy efficiency applications were assessed. This was done to gain insight into the policies, strategies and circumstances that either supported or hindered the development of a thriving sustainable energy market economy. This information was collected through literature survey. Where relevant, **examples and use cases** implemented in other countries are presented for each of the selected policy options relevant those.

Policies that have worked well in one setting do not automatically work well in another. It is recommended for Curaçao to carefully reflect on their respective development needs, the local conditions that need to be recognized and motivated, and the priorities for tailored energy efficiency policy. It is also advisable to pursue a portfolio of different policies.

## Finance

### 1. Government and International Financial Institutions (IFI) leveraged loans funding and Dedicated credit lines

Overall, many Energy Efficiency (EE) technologies have an economic rationale: if properly financed, the investment costs are paid back over short periods from energy cost savings. However, projects with compelling economic returns are often not materializes. This is caused by a lack of EE finance and delivery mechanisms that suit the aspects of EE projects and a lack of pipelines of bankable energy efficiency projects[5].

Dedicated credit lines are an instrument under which governments or donors provide low-interest loans to local financing institutions to encourage them to offer sub-loans to developers of EE projects. These credit lines created by a public entity to enable funding of EE projects by a private-sector organisation (bank or financial institution) are most implementable when the commercial financial market is less mature and local financial institutions are reluctant to undertaking the financing of EE projects, due to a knowledge gap and a lack of understanding of the characteristics and benefits of EE projects and/or limited liquidity[6].

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>•Schemes recycle funds and attract significant private sector cofunding to funds offered at preferential rates by development institutions or governments.</li></ul>	<ul style="list-style-type: none"><li>•Funds grow market for energy efficiency and enable implementation of other Government energy efficiency policies.</li></ul>	<ul style="list-style-type: none"><li>•These policies respond to governments' need to grow energy efficiency delivery capability, while maintaining public budget.</li></ul>	<ul style="list-style-type: none"><li>•Loans are delivered via commercial relationships and marketing efforts of retail banks, developers and ESCOs.</li></ul>

### Examples

#### **Prince Edward Island, Canada - Energy Efficiency Loan Program**

The Energy Efficiency Loan Program (EELP) provides financing for Prince Edward Island home-owners who are approved applicants under either of 'efficiency PEIs' Energy Efficient Equipment Rebate and Home Insulation Rebate programs. This will assist with the up-front costs associated with the purchase and installation of products and/or building envelope upgrades that will improve the energy efficiency of the home-owner's existing primary year-round residence.

<https://www.princeedwardisland.ca/en/information/finance-pei/energy-efficiency-loan-program>

#### **The Seychelles Energy-Efficiency and Renewable Energy Programme (SEEREP)**

The SEEREP made available a loan facility from commercial banks and the Seychelles Credit union which is open to all households, initially around SCR 100.000 (approx. USD 7.400) per household and recently revised to 150.000 SCR (approx. USD 11.100). The loan is used exclusively for purchase and installation of renewable energy systems, energy efficient appliances and energy saving devices. The loan duration is for a period of 1-5 years with 5% interest rate per year. The contribution of the beneficiary shall not exceed 2.5% of the loan amount and normal loan processing fees will be waived under this scheme. The programme targeted 8.800 out of the 25.000 households to have adopted either renewable energy or energy efficiency technologies or both. There was no target in terms of total renewable energy that will be mobilized or energy efficiency to be gained through this programme.

<https://vetivertech.com/wp-content/uploads/2016/03/SEEREP-leaflet.pdf>

## 2. Public-Private Finance including Energy Service Companies (ESCOs)

Public-private financing is a structure that utilises regulations, public policies or funding to leverage private-sector financing for EE projects. While a government can develop a framework of instruments to overcome the barriers to and the scaling-up of investments in EE projects, project development and commercial financing are required to uphold the scaling up of EE investments. The active participation of commercial banks and financial institutions is required for the long-term growth and development of the market for delivering EE financing and implementation services. This can be done under the form of Energy Saving Performance Contracts (ESPCs) which are public-sector initiatives, in the form of legislation or regulation, established by one or more public authorities to facilitate the roll-out by ESCOs of performance-based contracts using private-sector financing[6]. An ESCO is a business that provides a broad range of energy solutions including designs and implementation of energy savings projects. They can finance or arrange financing for the operation and their remuneration is directly tied to the energy savings achieved. An ESCO can enter into an agreement with a public authority to provide services, with payments contingent on demonstrated performance

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• A financed implementation package with guaranteed returns overcomes key barriers to implementation and scale.</li></ul>	<ul style="list-style-type: none"><li>• By integrating technical and financial risks, discontinuities between consumers, service providers and financiers are removed.</li></ul>	<ul style="list-style-type: none"><li>• The ability to leverage private funds is a key to maintaining low public budgets while enabling sound energy efficiency investments.</li></ul>	<ul style="list-style-type: none"><li>• <u>ESCOs often face unfamiliarity from clients about the nature of the contracts used to guarantee returns, manage assets and risks.</u></li></ul>

### Examples

#### Vantaa, Finland - ESCO

The municipality of Vantaa uses ESCOs to improve the energy efficiency of 26 of its public buildings, in a way that does not entail any costs for the municipality as the expenses will be covered with the savings produced by the efficiency gains.

<https://eumayors.eu/news-and-events/news/1512-new-case-study-vantaa,-finland-escoprocurement-for-energy-renovation-of-municipal-buildings.html>

## 3. Tax incentives and rebates

Tax incentives generally provide exemptions from, or a refund of, tax related with the procurement of or energy efficiency equipment. They can include

- (i) personal tax credits, which lower personal income tax by an amount related to the amount spent on the acquisition and installation,
- (ii) property tax incentives, which foresee that the added value of a energy efficiency equipment is excluded from taxation,
- (iii) import duty waivers,
- (iv) sales/VAT tax incentives, which provide an discharge from, or refund of, a sales/VAT tax for the purchase of a the energy efficient equipment.

Another often used instrument is an energy tax credit. This is available to homeowners or business who make their homes or buildings respectively more energy-efficient by installing certain equipment[7].

<p>Energy demand reductions and multiple benefits</p>	<p>Complementarity, synergies and integration attributes</p>	<p>Political alignment, governance and accountability attributes</p>	<p>Marketability and market impact</p>
<ul style="list-style-type: none"> <li>• It is difficult to discern direct impacts of tax incentives from other policy instruments and free rider effects, particularly where multiple fiscal instruments exist.</li> </ul>	<ul style="list-style-type: none"> <li>• Good design of fiscal incentives can ensure synergies between the different policy priorities in a country</li> </ul>	<ul style="list-style-type: none"> <li>• This can be a reliable way of motivating change where governments have a preference for centrally motivating desired actions by fiscal incentives</li> </ul>	<ul style="list-style-type: none"> <li>• Market players receive tangible monetary tax and incentive signals.</li> </ul>

## Examples

### Guadeloupe (France) - Energy Transition Tax Credit

The Energy Transition Tax Credit allowed the deduction from income tax (or refund for non-taxable households) of part of the expenses incurred for equipment and devices for energy savings (insulation, solar water heaters, etc.). In 2016 and 2017, the budgetary cost of the *Crédit d'impôt pour la transition énergétique* (CITE) amounted to EUR 1.700.000000 per year, a significant increase compared to the period 2013-2014, with tax credit rates between 15 and 25% before September 2014. Expenditure (for work completed in 2015 and 2016) mainly concerns insulation (for 73%). Replacement of heating systems and investments in renewable energy represent 11% and 16% respectively. CITE reduced energy consumption and CO<sub>2</sub> emissions by about 0.9 TWh and 0.12 MtCO<sub>2</sub> per year in 2015 and 2016 respectively. This represents 0.3% of the energy consumed for heating and 0.3% of the CO<sub>2</sub> emitted by the housing sector in 2015 and 2016.

These effects persist for several years: over the period 2015-2050, emissions of 2.9 MtCO<sub>2</sub> and energy consumption of 43 TWh have been avoided. The cumulative quantities of CO<sub>2</sub> not emitted over the period 2015-2050 thanks to the additional investments made in 2015 correspond to 7% of the CO<sub>2</sub> emitted by the housing sector that same year. The collective gains linked to the reduction of pollution externalities amount to around 200 EUR/tCO<sub>2</sub>, which, when deducted from the cost of abatement of CO<sub>2</sub> emissions, results in a reduction of the abatement cost to 40 EUR/tCO<sub>2</sub>.

[https://www.aft.gouv.fr/files/medias-](https://www.aft.gouv.fr/files/medias-aft/3_Dette/3.2_OATMLT/3.2.2_OATVerte/FR_rapport%20d'impact%20CITE.pdf)

[aft/3\\_Dette/3.2\\_OATMLT/3.2.2\\_OATVerte/FR\\_rapport%20d'impact%20CITE.pdf](https://www.aft.gouv.fr/files/medias-aft/3_Dette/3.2_OATMLT/3.2.2_OATVerte/FR_rapport%20d'impact%20CITE.pdf)

<https://www.guadeloupe.ademe.fr/particuliers-et-eco-citoyens/logement-acheter-construire-renover/renover-mon-logement>

<https://www.impots.gouv.fr/portail/particulier/depenses-eligibles-au-cite>

### Seychelles – VAT exemption

Authorities in Seychelles are working on legislation to facilitate the adoption of energy efficiency measures and technologies in an effort to reduce energy consumption. As an incentive, all imported electrical appliances certified energy efficient by the commission will be exempted from the Value Added Tax (VAT).

[http://www.seychellesnewsagency.com/articles/10688/Pro-](http://www.seychellesnewsagency.com/articles/10688/Pro-environment+legislation+in+Seychelles+will+demand+energy+efficient+appliances+and+buildings)

[environment+legislation+in+Seychelles+will+demand+energy+efficient+appliances+and+buildings](http://www.seychellesnewsagency.com/articles/10688/Pro-environment+legislation+in+Seychelles+will+demand+energy+efficient+appliances+and+buildings)

### Prince Edward Island - Solar Electric Rebate Program

The solar program makes solar power more affordable by providing financial incentive for Island homeowners, farms and businesses to install solar PV panels. Homes can receive for USD 1.000/kWp installed, up to 40% of installed costs, to a maximum of USD 10.000. Businesses and farms can receive for USD 350/kWp installed, up to 40% of installed costs, to a maximum of USD 10.000.

<https://www.princeedwardisland.ca/en/information/transportation-infrastructure-and-energy/solar-electric-rebate-program>

#### 4. Government grants or subsidies

Capital Subsidies, Grants, and Rebates are typically payments by a utility, government agency, or government-owned bank to cover a percentage of the capital cost of an investment in an energy efficiency technology. The objective is to redirect consumption to alternative consumables which use less energy or pollute less. This could be alternative sources of cleaner energy (green energy or from renewable sources) or energy-efficient products (efficient appliances). The set of subsidy types a policy maker can choose from are [8]:

- Input cost or investment subsidies such as a subsidy for wall insulation;
- Grants to cover losses (e.g. money provided by the government to loss-making companies producing energy efficiency products);
- Favourable terms for loans to cover costs (e.g. a reduced rate of interest on loans for companies producing energy efficiency products).

Several countries have established numerous subsidy schemes to overcome the barrier of high upfront costs of energy efficiency investments. These measures often focus on retrofitting existing buildings or dwellings that are not covered by Energy Building Codes[9]. With government grants households or businesses who invests in energy-saving measures can request financial support. This may involve, for example, providing households with a financial contribution for insulating their homes. Companies can receive funding for the installation of solar boilers and heat pumps or for energy-efficient adaptation of lighting installations.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• <u>Typically grants are best applied to demonstrate, leverage funds, or initiate market transformation programmes. Ideally grants will have a defined exit strategy so they do not displace private funds, or designed to crowd-in loan funding over time.</u></li></ul>	<ul style="list-style-type: none"><li>• Good design of grants can ensure synergies between the different policy priorities in a country. Grants can be tailored to needs and phased in and out to balance and synergize with other policy priorities.</li></ul>	<ul style="list-style-type: none"><li>• Grants are perceived by consumers as a tangible signal and are usually a welcome offer from government.</li></ul>	<ul style="list-style-type: none"><li>• Consumers and market players receive tangible monetary tax and incentive signals.</li></ul>

#### Examples

##### UK Warm Front.

From 2002 to 2013 the United Kingdom government offered grants for thermal insulation to tackle energy poverty under its Warm Front Scheme. 1.7 million United Kingdom households took up grants resulting in a reduction of heating energy intensity of 35% from 63 GJ/m<sup>2</sup> in 2001 to 0.41 GJ/m<sup>2</sup> in 2011. (IEA 2014a)

[http://www.iea.org/W/bookshop/475Capturing the Multiple Benefits of Energy Efficiency](http://www.iea.org/W/bookshop/475Capturing%20the%20Multiple%20Benefits%20of%20Energy%20Efficiency)

##### Canary Islands – Grant for improvement of energy efficiency

In 2019 the Canary Islands announced grants for the improvement of energy efficiency and the use of renewable energy in public infrastructures, including public buildings, co-financed with FEDER in the scope of the Operational Program of the Canary Islands. For example in the case of energy audits, 50% of the cost of the study will be subsidized, with a maximum of EUR 25.000.

<http://www.gobiernodecanarias.org/boc/2018/247/015.html>

## 5. International Climate Finance and Carbon Finance

Climate finance refers to local, national or transnational financing, sourced from public, private and alternative bases, seeking to support mitigation and adaptation actions that will address climate change [10]. The Convention, the Kyoto Protocol and the Paris Agreement call for financial assistance from Parties with more financial resources to those that are less endowed and more vulnerable. Carbon finance is a branch of environmental finance that covers financial tools such as carbon emission trading to reduce the impact of greenhouse gases (GHG) on the environment by giving carbon emissions a price. Financial risks and opportunities impact corporate balance sheets, and market-based instruments are capable of transferring environmental risk and achieving environmental objectives. Issues regarding climate change and GHG emissions must be addressed as part of strategic management decision-making. The general term is applied to investments in GHG emission reduction projects and the creation (origination) of financial instruments that are tradeable on the carbon market.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"> <li>Given the large role for EE in minimizing GHG emissions it should be expected that the large climate fund initiatives would be keen to fund energy efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>Linking carbon funds and energy efficiency financing makes sense as energy efficiency makes the single largest contribution to GHG mitigation.</li> </ul>	<ul style="list-style-type: none"> <li>Governments may see this as an effective way to recycle carbon revenues, and gain extra GHG reductions.</li> </ul>	<ul style="list-style-type: none"> <li><u>Uncertainty over global carbon prices means that markets cannot expect durable flow of carbon finance.</u></li> </ul>

### Examples

#### Estonia Assigned Amount Units

Estonia has "earmarked" revenues of the sales of "unspent" Joint Implementation (JI) quotas of Assigned Amount Units (AAUs) for energy efficiency. Amounts in the order of several EUR 100.000.000 are invested in building programmes, in the residential and in the public sector. This included significant amounts also from the Austrian government. (Energy Efficiency Watch 2012)

[http://www.energy-efficiencywatch.org/fileadmin/eew\\_documents/EEW2/EEW\\_Survey\\_Report.pdf](http://www.energy-efficiencywatch.org/fileadmin/eew_documents/EEW2/EEW_Survey_Report.pdf)

#### Marshall Islands - Sustainable Energy Development Project

In June 2018, the World Bank and the Government of the Republic of the Marshall Islands this week launched two climate change related projects that will increase investments in renewable energy, promote energy efficiency, and enhance the country's resilience to the impacts of climate change. The Sustainable Energy Development Project aims to support the efforts of the Marshall Islands to increase renewable power generation, and to improve energy efficiency, through technical assistance that will identify further renewable energy options in Ebeye and the outer islands.

<https://projects.worldbank.org/en/projects-operations/project-detail/P160910?lang=en>

## Utility Focus

### 1. Cost reflective pricing and energy price subsidy reform

Cost reflective pricing is a pricing principle grounded on the idea that the most efficient allocation of resources occurs when consumers pay the full cost of the goods or services that they use. Energy pricing policy requires assessments to be made on where the economic efficiencies and the societal benefits intersect.

Energy price subsidies are measures that keep prices for consumers below market levels or for producers above market levels. These instruments can be direct such as monetary transfers to producers, consumers, or related bodies, as well as indirect such as tax exemptions and rebates, price controls, trade restrictions, and limits on market access.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• Shifting energy subsidies to motivate more rational investments reduces demand on public budgets and also enables investment in more economic alternatives like energy efficiency across the entire market.</li></ul>	<ul style="list-style-type: none"><li>• There is no more effective motivator for economic investments in EE, renewable energy and conventional supply-side investments than dynamic cost reflective prices.</li></ul>	<ul style="list-style-type: none"><li>• Governments need to choose to reduce complexity and allow price to allocate resources. Governments can decide to reallocate subsidies to targeted social measures.</li></ul>	<ul style="list-style-type: none"><li>• The impact of cost reflective pricing is universal.</li></ul>

## Examples

### Germany – Phase out Coal support

Until 1999 Germany was a domestic hard coal producer with support of EUR 5.000.000.000 (0.3% of GDP). As production is uneconomic, the government decided to phase out the subsidy by 2018. In 2011 EUR 2 billion of public funds were 'saved' as the phase-out progressed. (IEA 2014a) [http://www.iea.org/W/bookshop/475Capturing the Multiple Benefits of Energy Efficiency](http://www.iea.org/W/bookshop/475Capturing%20the%20Multiple%20Benefits%20of%20Energy%20Efficiency)

### Pacific Islands – Fossil fuel phase out

At the 2016 annual leaders' summit of the Pacific Islands Development Forum (PIDF), the heads of state of 14 archipelagos plus Australia and New Zealand have outlined a plan that would bind each state to not approve any new coal or fossil fuel mines and not support companies and activities promoting fossil fuels.

### 2. ESCOs

Energy service companies (ESCOs) can help energy consumers go forward with energy efficiency investments by providing them with energy related services and financing, with a guaranteed result. An ESCO generally offers a complete set of services ranging from audit, identification of possible savings and recommended measures, arranging financing, designing and installing (or overseeing installation) of measures, procurement of equipment/energy, training of staff, operation and maintenance, monitoring, evaluation, and guarantee of savings. The basis for the relations between the ESCO and the customer is usually an Energy Performance Contract[9]. This is a mechanism for organising the EE financing: The ESCO takes the upfront investments, and the remuneration of the ESCO depends on the achievement of the in the contract guaranteed energy savings. The ESCO stays involved in the measurement and verification process for the energy savings in the repayment period[11].

In the context of deregulation and unbundling, many utilities have developed non-regulated operations that provide services to customers. They either acquired stand-alone ESCOs or started their own ESCO operations.

In a monopolistic situation on the other hand utilities are governed to some extent by a supervision body appointed by state or local governments. While this regulation can hinder investment returns, it permits for lower investment risk, as regulators virtually guarantee returns based on energy demand projections. In this context, there is a long history of utilities offering EE services for regulatory reasons, usually with prescribed spending limits. However, utilities are ever more searching for EE services as a profit-center distinct from their main business of supplying energy to customers.

The electric utility for Curaçao is the Curaçao Water and Power Company, more commonly referred to as Aqualectra. The utility is the island's only provider of water and electricity production and could be incentivised to develop energy efficiency services to the consumers. The advantage of working with a regulated utility is that they operate with a maximum profit margin, in contrast to private ESCOs. Hence, given the lower margin a utility ESCO is incentivised to increase energy savings and thus increase its profit. In that sense working with a regulated utility ESCO could increase overall energy efficiency compared to private ESCOs.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"> <li>•The ESCO reduction effect increases over time with the long-run effect exceeding 20 percent. <u>ESCOs effectively reduce energy use in high-income countries but raise energy use in low-income countries.</u></li> </ul>	<ul style="list-style-type: none"> <li>•ESCO programmes are often integrated in state utility regulatory systems.</li> </ul>	<ul style="list-style-type: none"> <li>•Some governments prefer development of energy efficiency industry capacity.</li> </ul>	<ul style="list-style-type: none"> <li>•Combination of utility marketing, customer relationship and entrepreneurial ESCO behavior seems to work.</li> <li>•This policy tool will provide a strong signal from the public sector about its intention to reduce energy use</li> </ul>

## Examples

### Fiji - Renewable Energy Service Company

The RESCO program in Fiji is an example of a policy instrument that achieved mixed results. The program has proven very popular given low fees and upfront costs. However, a small survey of households participating in the program in 2009 found that on average, technical problems resulted in power outages for 32 percent of the time over a two-year period [10]. This can be explained by poor design of the program rather than a fundamental problem with the ESCO model. The ESCO was paid by the Department of Energy regardless of whether rural households paid their monthly fee, thereby removing the commercial incentive of the ESCO to ensure systems functioned. Penalties levied on the ESCO where systems did not function were also ineffective, given that system performance across a large geographical area was beyond the capacity of the Department of Energy to monitor.

[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2067856](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2067856)

### Mauritius - ESCO

In its Long-Term Energy Strategy Mauritius Stated to Promote the establishment of ESCOs specialised in energy efficiency that will assist consumers to save energy as an economically viable option.

<https://sustainabledevelopment.un.org/content/documents/1245mauritiusEnergy%20Strategy.pdf>



### 3. White certificates

To encourage energy efficiency investments and accomplish national energy savings targets, policy makers can introduce energy savings obligations on certain types of market players coupled with tradable certificates for energy savings, or 'white certificates'. This is an instrument issued by a public authority guaranteeing that a certain amount of energy savings has been achieved. Each certificate is a unique and traceable asset that carries a property right over a certain amount of additional savings and guarantees that the benefit of these savings has not been accounted for elsewhere [12].

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• <u>It is difficult to discern impacts of white certificates from other policy instruments, and free-rider effects.</u></li></ul>	<ul style="list-style-type: none"><li>• Are expected to initiate diverse operational outcomes depending on cost effective potentials</li></ul>	<ul style="list-style-type: none"><li>• Can fit the political desire to motivate utilities to deliver energy efficiency when no other incentives exist</li></ul>	<ul style="list-style-type: none"><li>• <u>Variable implementations as these schemes rely on utilities being motivated to step beyond their traditional roles.</u></li></ul>

#### Examples

##### Italy - Titoli di Efficienza Energetica

The white certificate system in Italy, known as the Titoli di Efficienza Energetica (TEE) has delivered substantial savings in electricity and heat use across many sectors. The primary energy savings certified in 2017 amounted to about 1.92 Mtoe, of which more than 55% was achieved through the reduction of natural gas consumption and 26% from savings in electricity consumption.

<https://es.catapult.org.uk/wp-content/uploads/2018/10/Italy-White-Certificate-Scheme-Case-Study-FINAL.pdf>

##### France – White certificates

The French Energy Policy Law (POPE Law), passed on July 13th 2005, sets quantified energy efficiency targets, such as: final energy intensity reduction by 2 %/year until 2015, and then by 2.5 %/year until 2030, final energy savings: 54 TWh cumac1 3-year target (2006– 2009), Development of renewable thermal energies (+50 % by 2010),a And energy savings must contribute to the target of CO<sub>2</sub> emissions reduction by 3 %/year. The implementation in 2006 of the White Certificates Scheme has been one of the main regulatory instruments to reach these objectives in France. It is based on the obligatory compliance for energy suppliers with energy savings objectives, which are related to their position on the market. "Negawatt-hour cost" estimates reach EUR 0.037 per kWh saved in France, which compares favourably to energy prices in those countries. Moreover, the benefits of reduced energy bills and CO<sub>2</sub> emissions saved exceed the costs, thus white certificate schemes pay for themselves. Overall, the policy instrument is cost-effective and economically efficient.

<https://hal.archives-ouvertes.fr/hal-00866420/document>

#### 4. Loan finance for Energy Efficiency

Loan finance or on-bill financing programmes is the contractual arrangement in which a utility or a lender pairs loan repayment with monthly energy bills so that households and companies can invest more easily in energy efficiency improvements for their properties. Generally, two types of on-bill financing programs can be distinguished. With on-bill *financing*, the utility provides its own funds to complete the energy efficiency upgrades, and the customer repays the utility through their monthly energy bill. With on-bill *repayments*, a third-party lender provides the funds, but the customer can still repay the loan through its utility bill.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>•The ability for utilities to implement widespread investment across their customer bases makes them an ideal delivery agent for EE policies and financiers.</li></ul>	<ul style="list-style-type: none"><li>•Utilities can optimize the application of energy efficiency policies to address the range of pressures on an energy delivery system.</li></ul>	<ul style="list-style-type: none"><li>•Can fit the political desire to motivate utilities to deliver energy efficiency when no other incentives exist.</li></ul>	<ul style="list-style-type: none"><li>•Utility marketing and customer relationships overcome a number of barriers that slow investment in energy efficiency</li></ul>

#### Examples

##### Switzerland Prokilowatt

Prokilowatt is a tender based funding programme based on a levy on transmission charges. CHF 15.000.000 was granted to 67 projects and 9 programmes following the third round of calls for tenders in 2012 with cost effectiveness of 2,4 Swiss centimes per kilowatt-hour for programmes, and 3,2 Swiss centimes per kilowatt-hour for projects, well below the long run marginal cost of new supply. From 2013 onwards, the maximum level of available funding is CHF 25.000.000. Within the framework of "Energy Strategy 2050", it is planned to extend financial support to projects and programmes in the areas of electricity production and distribution and to raise the level of funding to a maximum of CHF 50.000.000 per annum by 2020.

[www.prokilowatt.ch](http://www.prokilowatt.ch)

##### Hawaii - Green Energy Money Saver

Hawaii recently launched an on-bill financing program to expand clean energy access for homeowners, renters, small businesses and non-profit organizations. To qualify for the so-called Green Energy Money Saver (GEM\$) program, Hawaiian Electric customers must not have had a disconnection notice over the past 12 months. Estimated utility bill savings of the clean energy equipment must be at least 10% after the installation, including the repayment, according to a statement. The program has been in the works since late 2016 and is expected to accelerate the state's progress in achieving 100%renewable energy by 2045

<https://www.hawaiielectric.com/billing-and-payment/payment-assistance/low-income-programs/gems-on-bill-money-saver-program>

## 5. Voluntary Energy Efficiency Programmes (including reductions in transmission and distribution losses)

For the design and roll-out of effective energy efficiency programs for homeowners and businesses governments can cooperate with energy utilities and other parties such as third-party efficiency program administrators, state energy offices, regional energy efficiency alliances.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• The ability for utilities to implement widespread investment across their customer bases makes them an ideal delivery agent for energy efficiency policies and financiers. Utility profitability can be significantly enhanced.</li></ul>	<ul style="list-style-type: none"><li>• Utilities can apply a range of advisory, financial, installation, and procurement techniques including on-bill financing to suit their situation</li></ul>	<ul style="list-style-type: none"><li>• When facing system constraints utilities can be highly motivated to offer low cost solutions to traditional supply-side investments by developing demand-side capacity.</li></ul>	<ul style="list-style-type: none"><li>• Utility marketing and customer relationships overcome a number of barriers that slow investment in energy efficiency.</li></ul>

### Examples

#### EU District Heating

Article 14 of the EU Energy Efficiency Directive 2012/27/EU issues comprehensive guidance on: identifying and implementing adequate measures for efficient district heating and cooling infrastructure, the development of high-efficiency cogeneration, the use of heating and cooling from waste heat and renewable energy sources, where benefits exceed the costs. Procedures for operators of electricity generation installations, industrial installations and district heating and cooling installations to ensure that they carry out an installation-level cost-benefit analysis on high-efficiency cogeneration and/or the utilization of waste heat and/or connection to a district heating and cooling network when they plan to build or refurbish capacities above 20 MW thermal input or when they plan a new district heating and cooling network.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52013SC0449:EN:NOT>

## Household focus

### 1. Existing homes insulation / weatherproofing through a wide array of technologies

Weatherproofing is the process of protecting a building from the elements, particularly from sunlight, rain, and wind. It is also the modification of a building to decrease its energy consumption and enhance its energy efficiency. Existing homes insulation / weatherproofing programs allow low-income homeowners to lower their energy bills by improving the energy efficiency of their homes. Accessible financing is required to advance the energy performance of households in need, and the most advanced technologies and testing procedures available in the housing industry should be used. Building energy performance regulations often require owners to comply with a certain level of thermal insulation for buildings where work, such as the reconstruction or transformation work requiring an urban planning permit, is being carried out. Many governments resort to fiscal policies (discussed above) to encourage homeowners to insulate their houses. Insulation or weatherproofing is also encouraged by means of an obligation to provide an Energy Performance Certificate (EPC) (discussed in more detail in the next section) when selling or renting a house.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• Heating is 40% of household energy. Health benefits in programmes at up to 4:1 benefit-cost ratio significantly exceed energy cost reductions providing strong returns to government.</li></ul>	<ul style="list-style-type: none"><li>• Energy efficiency policies can deliver a range of wellbeing, social and health outcomes, including addressing energy poverty.</li></ul>	<ul style="list-style-type: none"><li>• Opportunity to offer direct social benefit. Can be used to redirect energy subsidies for improved social outcomes, and offers a delivery path for diverse government priorities.</li></ul>	<ul style="list-style-type: none"><li>• Can develop new product and supplier activities as well as delivering diverse new services.</li></ul>

### Examples

#### Prince Edward Island - Home Insulation Rebates

The program 'efficiencyPEI' offers grants for the installation of insulation, air sealing improvements as well as ENERGY STAR® windows and doors. Upgrades to the shell of a house (known as a building envelope) protects it from the elements and can yield big savings on heating costs. Upgrades will also make your home more comfortable and environmentally friendly.

<https://www.princeedwardisland.ca/en/information/transportation-infrastructure-and-energy/home-insulation-rebates>

#### The Netherlands - Voluntary Energy Saving agreement & Energiesprong

Netherlands. The government has committed EUR 150.000.000 to a EUR 600.000.000 revolving fund, EUR 400.000.000 in grants for rental houses and funds for local government implementation of housing energy efficiency. The Voluntary Energy Saving agreement for the rental housing sector targets 1.000.000.000 n retrofits by 2020 with energy savings of 21 PJ. Energiesprong is a related market development programme working with owners, financiers and industry to refurbish 111.000 social housing units to near zero energy levels with a 30 year energy performance contract funded from long term energy savings.

<http://energiesprong.nl/transitionzero/>

## PEEREA

Cogeneration and District Heating – Best Practices in Municipalities, addresses the role of local authorities in promoting cogeneration and district heating, which are used in many Energy Charter member countries but often not to their full potential. Successful programmes are contingent upon the capacity of local authorities to implement measures that meet local needs.

[http://www.encharter.org/fileadmin/user\\_upload/document/Energy Efficiency Cogeneration and District Heating - 2006 - ENG.pdf](http://www.encharter.org/fileadmin/user_upload/document/Energy_Efficiency_Cogeneration_and_District_Heating_-_2006_-_ENG.pdf)

### 2. Minimum Energy Performance Standards (MEPS) & Energy Performance Certificates (EPC) of buildings

One of the most commonly used policy options to improve the energy efficiency of **new** buildings is the creation of a set of standards and codes, in particular, minimum energy performance standards (MEPS). They are often used as strategies to ensure that only highly efficient building products and equipment are manufactured, sold, and installed. The main instrument used for this is an 'Energy Building Code' which impose energy efficiency requirements for new buildings whether they are set in (general) building codes, specific standards or other ways[13]. This policy option delivers the best results when they are combined with information campaigns and financial incentives. As newly constructed buildings only form a small part of the building stock<sup>2</sup>, these MEPS are often also imposed for **existing** buildings where work, such as the reconstruction or transformation work requiring an urban planning permit, is being carried out. In addition, many governments also use Energy Performance Certificates (EPC) to improve the energy efficiency of existing buildings. As soon as a property is put up for sale or rent, the owner or the intermediary in charge of the transaction (real estate office, notary, ...) is obliged to have an EPC for the property in question. The EPC certificate provides standardised and objective information on which prospective buyers or tenants can base their assessment of the energy performance of the property visited and compare it with that of other properties with the same (residential or non-residential) purpose. This encourages potential sellers or landlords to invest in the energy efficiency of the home.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• Heating is 40% of household energy. Health benefits in programmes at up to 4:1 benefit-cost ratio significantly exceed energy cost reductions providing strong returns to government.</li><li>• Widespread application of certification labels can have significant impact on consumer purchase behavior.</li></ul>	<ul style="list-style-type: none"><li>• Energy efficiency policies can deliver a range of wellbeing, social and health outcomes, including addressing energy poverty.</li><li>• Can be integrated with rental quality or environmental programmes to address persisting information gaps.</li></ul>	<ul style="list-style-type: none"><li>• Opportunity to offer direct social benefit. Can be used to redirect energy subsidies for improved social outcomes, and offers a delivery path for diverse government priorities.</li><li>• Ideal where governments wish to motivate consumers to demand and grow the market for energy efficient homes.</li></ul>	<ul style="list-style-type: none"><li>• Can develop new product and supplier activities as well as delivering diverse new services.</li><li>• Offers consumers and suppliers confidence in market offerings.</li></ul>

<sup>2</sup> Generally the total number of dwellings completed in the year, as a percentage of the total existing housing stock lies around 1%. <https://www.oecd.org/els/family/HM1-1-Housing-stock-and-construction.pdf>

## Examples

### The Netherlands - Energy Performance Certificate

The Netherlands is one of the first countries who implemented minimum requirements for the energy performance of new buildings in 1995. A compulsory certification for the energy performance of the existing building stock was implemented in 2008. The energy performance standard, established in 1995 is replaced in 2012 by a new standard, the energy performance standard for buildings (NEN7120). This energy performance standard for buildings combines both the residential and non-residential sector and the existing and new buildings stock. The Dutch buildings code sets an integral requirement for the energy efficiency of new buildings and major renovations of existing buildings. Furthermore, the energy performance standard for buildings includes a calculation for the energy performance of a building. This calculation takes the current levels of insulation and installations into account. The energy performance requirements of buildings are evaluated yearly and if possible tightened.

An energy performance certificate in the Netherlands assigns an energy performance indicator to buildings and thereby list individually tailored cost-effective measures for improving their energy performance. The Dutch energy performance certificate consists of three pages. On the first page the energy performance indicator shows the energy performance class of the building. The energy performance classes run from A++ to G. A label A++ means a lot of energy saving measures are taken and a label of G means a lot of energy saving measures possible. When a building has at least an energy performance of A the building meets the standards of a new building. Furthermore, the energy performance certificate shows the standardized annual primary energy use, including a subdivision into different energy carriers as: Electricity, gas and heat.

In 2016 more than 3.5 million EPCs (> 50% of the total building stock) have been registered.

<http://epbd-ca.eu/wp-content/uploads/2018/08/CA-EPBD-IV-The-Netherlands-2018.pdf>

### Guadeloupe, France - Thermal Regulations for Guadeloupe

In 2013 Guadeloupe adopted The Thermal Regulations for Guadeloupe (RTG) aim to improve the energy efficiency of buildings by taking into account the local specificities. The RTG Construction brings together a set of technical rules to be applied to new buildings and new parts of buildings, air-conditioned and non-air-conditioned, for residential, office or commercial use. It uses a standardize thermal comfort indicator and energy needs indicator. During the legislative procedure local specificities were considered during consultation workshops. It was carried out on various technical points, such as taking into account the microclimates of Guadeloupe. This modulation was strongly requested by the building industry and allows a better consideration of ventilation conditions according to geographical areas.

<https://www.guadeloupe-energie.gp/portail-rtg-reglementation-thermique/batiment/rtg-construction/>

[https://www.guadeloupe-energie.gp/wp-content/uploads/2011/07/RTG\\_construcion\\_guide.pdf](https://www.guadeloupe-energie.gp/wp-content/uploads/2011/07/RTG_construcion_guide.pdf)

### 3. [Standards and labelling of household appliances](#)

Energy efficiency standards are a policy measure that foresees a set of procedures and regulations that establish the minimum energy performance of certain products. Energy efficiency labels are the labels attached to these products explaining the products' energy performance and efficiency in an informative manner. These labels also allow for comparison between similar products or they endorse the products' use. Energy efficiency Standards and labels are mainly used as a complementary policy instrument required for the promotion of

sustainability in various sectors[14]. They are key instruments to promote energy efficiency, particularly in relation to household appliances.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"> <li>• Standards and Labelling programmes have had widespread global impact, and have more than halved the energy consumption of some appliances.</li> </ul>	<ul style="list-style-type: none"> <li>• Use of international standardization ensures alignment and access to global appliance markets for local industry.</li> </ul>	<ul style="list-style-type: none"> <li>• Regulatory action is measurable and deliberate. Programmes have been assessed at providing up to 17:1 return on government investments.</li> </ul>	<ul style="list-style-type: none"> <li>• A regulated 'level playing field' offers consumers and suppliers confidence to invest in higher efficiency products.</li> </ul>

### Examples

#### Seychelles – Energy efficiency standards

In an effort to reduce energy use in the country, the government has set energy efficiency standards for bulbs, freezers and refrigerators, air conditioners, electric water heaters and washing machines entering Seychelles. These appliances were chosen following a baseline study held by the commission that involved 200 households as they are the common types of equipment found in homes and they consume energy the most.

<http://www.meecc.gov.sc/index.php/press-release/>

#### Jamaica - Energy Efficiency Testing and Labelling Programme

Jamaica has recently revamped its Energy Efficiency Testing and Labelling Programme, which requires importers, distributors and retailers of refrigerators and freezers to submit these items for energy efficiency tests by the BSI laboratories or other accredited laboratories. The programme has been revamped as a direct result of the improved testing facilities, completed under a World Bank-funded project. The programme has also been broadened to include room air conditioners.

<http://www.ncra.org.jm/energy-efficiency-labelling-programme>

#### EU directive 92/75/EEC

The EU labelling scheme and minimum energy performance standards (MEPS) began in 1992 and now covers the main household appliances and some other products and are implemented in the 27 EU Member States and seven other Energy Charter countries (Iceland, Norway, Switzerland, Liechtenstein, Croatia, Turkey and Macedonia). EU energy efficiency standards & labelling have seen significant changes in the market. For example, the energy performance of washing machines has improved from on average 0.30 kWh/kg (class C/D) in 1993 to 0.24 kWh/kg (class B) in 1998, and further to 0.18 kWh/kg (class A/A+) in 2006, representing in total a 40% reduction in the specific energy consumption. For refrigerators, the energy efficiency index improved from an average of 102 (class E) in 1992 to 79 (class C) in 1999, and further down to 42 (class A+) in 2006, representing in total an almost 60% reduction in specific energy consumption.

<http://www.come-on-labels.eu/download-library/policies-that-work-introducing-energy-efficiency-standards-and-labels-for-appliances-and-equipment>

#### EU Eco-design Directive

16 of the most energy intensive household products are regulated to minimize energy costs and environmental impacts over their respective life cycles. (EU)

<http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/>

#### 4. Efficient lighting

Curaçao aims to shift for 100% to energy efficient lighting. From international practice it is clear that effective policies are required to guarantee the smooth implementation of EE standards and regulations related to lighting products, and to achieve a broad public acceptance. Well-designed and implemented energy efficiency policies are the government's enabling tools to reduce electricity demand for lighting by up to 40 – 60%. These envisaged energy consumption reductions require an extensive transition from conventional technologies like incandescent, halogen and fluorescent lighting to light-emitting diodes (LEDs). As energy-efficient lighting typically has a higher up-front to the consumer, the latter must be convinced that the cost of this investment is paid back through savings on its electricity bill. The payback time varies depending on equipment and electricity costs. It ranges from less than one year to two to three years for a complete lighting system refurbishment since this requires higher investments but will render higher annual electricity bill savings in return [15].

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• Lighting is 15% of global electricity demand and can be reduced to 10% of current demand.</li></ul>	<ul style="list-style-type: none"><li>• The en.lighten initiative integrates the phase-out of incandescent lamps with the promotion of efficient lighting. The global lighting industry is already involved.</li></ul>	<ul style="list-style-type: none"><li>• Strong support by many (over 60) governments and industry.</li></ul>	<ul style="list-style-type: none"><li>• Programme works in sync with strong industry marketing of efficient lighting technology. Rapid market uptake in Thai and Japanese markets over 5 years demonstrates high effectiveness.</li></ul>

#### Examples

##### UNEP – en.lighten

The United Nations Environment Programme (UNEP) - Global Environment Facility (GEF) en.lighten initiative is a public-private partnership created to accelerate a global market transformation to environmentally sustainable lighting technologies. UNEP en.lighten has developed a coordinated global strategy for the phase-out of inefficient lighting with a focus on providing technical and policy support to developing countries. In doing so, it aims to strengthen capacities among governments, private sector and civil society to lead successful lighting market transformation programmes.

The Global Efficient Lighting Partnership Programme members will save over USD 7.500.000.000 and 35.000.000 tonnes of CO<sub>2</sub> annually. UNEP estimates that replacing all inefficient on-grid lighting globally would result in 939 TWh of electricity savings annually, which is equivalent to approximately USD 100.000.000.000 in avoided electricity bills and approximately 490.000.000 tonnes of CO<sub>2</sub> savings annually.

<http://www.enlighten-initiative.org/>

##### Caribbean Energy Efficiency Lighting Project



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The CEELP sought to catalyse the transition to low carbon economies and sustainable energy sectors through the provision of energy efficient lighting to communities in the Eastern Caribbean. The project assisted countries in removing the policy, capacity and investment barriers to energy efficient lighting. The project goals were aligned with the SIDS DOCK objective to increase energy efficiency by at least 25%, and the Sustainable Energy for All (SE4All) objective of doubling the rate of improvement in energy efficiency. The private sector was engaged for technical capacity building and support and technology transfer. The project delivered clear, measurable results. The technical evaluation report indicated that due to the retrofits of a series of public buildings and public streetlights, partner governments would realise savings of between 30 and 60% of the related energy costs.

<https://info.undp.org/docs/pdc/Documents/BRB/Caribbean%20Energy%20Efficiency%20Light%20Project%20FINAL%20REPORT%20-%20Oct%202016.pdf>

#### **CARICOM - Phase-out of incandescent bulbs**

In 2018 CARICOM (Caribbean Community) Energy Ministers, adopted a plan for the phase-out of incandescent bulbs. This plan included a roadmap to reduce the import and sale of incandescent light bulbs within the Region and will guide and support countries in the establishment of regulations and actions for the phasing out exercise. The Dominican Republic as one of the first to act and has called for a ban on imports of fluorescent lamp.

<https://www.unenvironment.org/news-and-stories/story/dominican-republic-leapfrogs-energy-efficient-lighting>

<https://caricom.org/documents-and-publications/? page=2>

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## Business sector focus

### 1. Energy audits, Energy management ISO 50001 & Energy management capacity building

ISO 50001 is the international standard for Energy Management Systems, created by the International Organization for Standardization (ISO). This standard lays down the criteria for the establishment, implementation, maintenance and improvement of an energy management system, which has the purpose of enabling a business or organization to follow a systematic approach in achieving continual improvement of energy performance, including energy efficiency, energy security and consumption.

An energy audit is an inspection survey and an analysis of energy flows for energy conservation in a building. Energy audits, are ranked first with 74% of experts rating this policy measure as either partly or very effective[3].

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• Particularly applicable to larger businesses and energy intensive processes.</li><li>• Developing the capability to identify and implement strategic and operation productivity changes in industry is key to unlocking the vast energy efficiency potential across heterogeneous industries.</li></ul>	<ul style="list-style-type: none"><li>• ISO 50001 encompasses a management approach to improving energy productivity in businesses enabling a range of operational challenges to be addressed in an integrated way.</li><li>• Other industry development and productivity policies are enhanced by an energy management capability</li></ul>	<ul style="list-style-type: none"><li>• This voluntary policy option can be offered as supporting measure minimizing the need for other regulatory and fiscal measures.</li><li>• Developing the capacity to assist industry develop its productivity is a politically acceptable intervention.</li></ul>	<ul style="list-style-type: none"><li>• Adoption of ISO 50001 is expanding globally and is particularly useful for businesses with global market operations.</li><li>• Productivity gains and the development of new skills and services industries is a valuable market stimulus</li></ul>

## Examples

### Ireland

73 companies of the 173 members of the Sustainable Energy Authority's Large Industry Energy Network have achieved or are working to ISO 50001 certification and are achieving a 10% reduction in energy demand. (IEA 2014a) [http://www.iea.org/W/bookshop/475-Capturing the Multiple Benefits of Energy Efficiency](http://www.iea.org/W/bookshop/475-Capturing%20the%20Multiple%20Benefits%20of%20Energy%20Efficiency)

### Swedish industrial efficiency programme

The Swedish industrial efficiency programme successfully introduced energy management schemes. Those undertaking a set of measures get a modest rebate on the energy tax. The comparatively small financial signal has unleashed investments that would have been profitable but were not taken so far. (Energy Efficiency Watch 2012) [http://www.energy-efficiencywatch.org/fileadmin/eew\\_documents/EEW2/EEW Survey Report.pdf](http://www.energy-efficiencywatch.org/fileadmin/eew_documents/EEW2/EEW_Survey_Report.pdf)

### EU - Energy Efficiency Directive

Article 8 of The 2012 Energy Efficiency Directive (2012/27/EU) imposed Member States to create a mechanism for large companies to conduct energy audits at least every four years It has proven to be a good catalyst for making large enterprises focus on their energy consumption, greenhouse gas emission footprint and the multiple benefits of energy efficiency. An estimated 80.000 audits will have been executed in the framework of this first round in the EU28, resulting in an extensive database of the energy consumption patterns in large enterprises. The regulation was enforced within a short timeframe, which had the advantage to speed-up the process. [https://www.cencenelec.eu/News/Brief News/Pages/TN-2017-024.aspx](https://www.cencenelec.eu/News/Brief%20News/Pages/TN-2017-024.aspx)

## 2. Commercial buildings energy-efficient investments

Policy instruments enabling investment in energy efficiency in commercial buildings must eliminate barriers that discourage stakeholders from pursuing energy efficiency. Next to the removal of barriers, proactive measures are required to give corporate consumers positive reasons to adopt efficient practices and behaviour. International practice has proven that the most commonly used and effective policy instruments for these objectives are the implementation of mandatory prescriptions such as Energy Building Codes, enrolling proactive structures to 'market' energy efficiency directly to consumers, and working with municipalities. Obviously, they deliver the best results when they are pursued in a thorough and adequate way and when combined with other information or financial activities in policy packages.[16]

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>• In the services and SME sectors building energy use can be reduced by focusing on the commissioning, operations and maintenance of energy intensive, lighting air conditioning and specialist systems.</li></ul>	<ul style="list-style-type: none"><li>• The strategies that apply to residential buildings and building codes, and Standards and Labeling policies overlap with commercial building opportunities, and are often supported by buildings labeling initiatives that disclose the energy efficiency characteristics of the buildings.</li></ul>	<ul style="list-style-type: none"><li>• As government operations occupy both offices and specialist facilities like hospitals and schools, a public sector focus on building energy is a good example of government leadership.</li></ul>	<ul style="list-style-type: none"><li>• Policies capitalize on the need for tenants and owners to understand the energy implications of purchase or lease of a commercial building. Analysis shows markets respond to energy efficient buildings with higher rentals and longer tenancies.</li></ul>

### Examples

#### Sweden - Energy Service Directive

Building owners are required to provide an energy performance certificate for their buildings. This measure introduced in connection with the Energy Service Directive (2006/32/EC) was amended in 2012. The energy performance certificate must be presented whenever a building is sold or leased. A certificate can only be obtained after an on-premises inspection by an authorized expert. In buildings frequented by the public, the certificate has to be disposed in a visible place. Energy performance certificates are valid for ten years. <http://www.boverket.se/>

#### Australia - Commercial Building Disclosure

The CBD-Program requires energy efficiency information to be provided when commercial office space over 2,000 m<sup>2</sup> is offered for sale or lease. The aim is to improve the energy efficiency of Australia's large office buildings and to ensure prospective buyers and tenants are informed. A Building Energy Efficiency Certificates (BEEC) must be provided to potential buyers or lessors when requested at the time of sale, lease or sublease and must be publicly accessible on the Building Energy Efficiency Register with the building's National Australian Building Energy Rating (NABERS) energy star rating and must also be included in any advertising material for the sale, lease or sublease

<http://www.cbd.gov.au>

### 3. Industry network

Energy Efficiency Networks (EENs) are a concept to stimulate energy efficiency transition in businesses. As common functions they have knowledge-sharing, capacity-building, consultation with experts, as well as uniting companies with a common interest. These networks can also help define and achieve voluntary goals for participating companies. Most of them share the common objective of increasing energy efficiency and reducing the environmental impact of their participating companies.[17]

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"><li>•An important policy area as SMEs provide greater employment and GDP growth potential than energy intensive industries.</li></ul>	<ul style="list-style-type: none"><li>•This policy is consistent with developing employment and entrepreneurial businesses.</li></ul>	<ul style="list-style-type: none"><li>•Potentially a useful economic development enhancement policy.</li></ul>	<ul style="list-style-type: none"><li>•Productivity gains and the development of new skills and services industries is a valuable market stimulus.</li></ul>

#### Examples

##### Germany - Learning Energy Efficiency Networks

Learning Energy Efficiency Networks (LEEN) support innovative companies increase energy efficiency and improve their competitive position. By learning from each other a multitude of companies cooperate in order to save energy in the most cost-effective way. The main starting points of the cooperation in the networks are efficiency improvements with respect to cross-cutting technologies (e.g. compressed air systems, combined heat and power systems, electrical drives). Evaluation of 30 networks in Germany showed 4.000 profitable measures with average IRR 35%. Companies cooperating in LEEN networks increase their efficiency twice as fast as the German industrial average. <http://leen.de/en/leen-netzwerke/>

##### Ireland - SME programme

Over 2007-2011 the Irish Sustainable Energy Authority SME programme has supported 1.470 SMEs with 130,000 employees. In 2012, 200 SMEs with 2,000 employees were supported, achieving cost reductions of EUR 2.000.000 from a total EUR 19.700.000 energy bill. (IEA 2014)

[http://www.iea.org/W/bookshop/463-Energy Efficiency Market Report 2014](http://www.iea.org/W/bookshop/463-Energy_Efficiency_Market_Report_2014)

#### 4. Voluntary Agreements

In several countries voluntary agreements between the government and the energy intensive industries have been concluded to increase energy efficiency[18]. It refers to a contract between the government and industry or negotiated targets with commitments and time schedules on the part of all participants. They are actions taken by firms, NGOs, and other actors that go beyond what is required by regulations. Voluntary agreements represent an evolution from traditional mandatory approaches based on conventional or economic regulations and intend to provide further flexibility to polluters. They are based on the idea that, under certain conditions, polluters can decide collectively to commit themselves to abatement instead of, or beyond the requirements of regulation.

Energy demand reductions and multiple benefits	Complementarity, synergies and integration attributes	Political alignment, governance and accountability attributes	Marketability and market impact
<ul style="list-style-type: none"> <li>•By focusing on large energy industry sectors (pulp and paper, refining etc.) governments can help industries learn with each other about ways in which productivity can be advanced.</li> </ul>	<ul style="list-style-type: none"> <li>•All industries have in common a range of managerial techniques, HR practices and process management skills that can be improved by benchmarking and management.</li> </ul>	<ul style="list-style-type: none"> <li>•Governments are creating a supportive environment for productivity gains, while leaving the means to improvement to industry experts. 'Voluntary but not without obligations'.</li> </ul>	<ul style="list-style-type: none"> <li>•Productivity gains and the development of new skills and services industries is a valuable market stimulus.</li> </ul>

#### Examples

##### **The Netherlands - Long tradition of voluntary agreements (VA)**

From 2001 to 2008, energy efficiency improvements by these Long-Term Agreement (LTA) members were 2.4% versus 1% for non-LTA industries. The paper sector achieved an 11.4% efficiency gain over 2010.

<http://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/files/documents/events/nl - energy audits madrid 20032014.pdf>

## 5. Comparative Assessment

It is widely recognized that policies are most successful when they stimulate private sector investment in energy efficiency and that policies should deliver substantial social and economic benefits as well as substantial environmental outcomes. Policies can only be effective if they are fully applied in the local context, by focussing on the development needs, local conditions and priorities of the country[3].

Specifically for Small Island Developing States, energy systems present inherent characteristics including small size, remoteness, vulnerability to natural disaster and a power sectors that are characterized by small, inefficient generation plants which result in high energy prices. A defining feature of the national energy situations across these SIDS' is the highly inefficiency in the use of energy resources[19]. This leads to high electricity prices, heavy dependence on imported fuel and limited private sector participation in energy<sup>3</sup>.

The policy options discussed above are assessed in the table below in a high-level way based on these success factors and on their applicability on Small Island Developing States. However, Curaçao policy makers are encouraged to complement the best practice policies offered here by researching any policy or technology option that makes sense in the concrete legal and political context [3].

**Table 1 – High-level comparative assessment of policy options for energy efficiency in Curaçao**

Policy Option	Outcome / advantages / disadvantages				
	Social and economic benefits	Requires government funds	Stimulates Private sector investment	Substantial environmental impact	Proven applicability in SIDS
Government and International Financial Institutions (IFI) leveraged loans funding and Dedicated credit lines	✓	✓	✓	✓ +	✓
Public-Private Finance including Energy Service Companies (ESCOs)	✓	✓	✓	✓ +	✗
Tax incentives and rebates	✗	✓	✓	✓ +++	✓
Government grants or subsidies	✗	✓	✓	✓ +++	✓

<sup>3</sup> <https://islands.irena.org/>; <https://sidsdock.org>

Policy Option	Outcome / advantages / disadvantages				
	Social and economic benefits	Requires government funds	Stimulates Private sector investment	Substantial environmental impact	Proven applicability in SIDS
International Climate Finance and Carbon Finance	✗	✓	✗	✓ +	✓
Cost reflective pricing and energy price subsidy reform	✓	✓	✗	✓ +	✗
ESCO	✓	✗	✓	✓ +++	✓
White certificates	Unknown	✗	✓	✓ +	✗
Loan finance for energy efficiency	✓	✗	✓	✓ ++	✓
Voluntary Energy Efficiency Programmes	✗	✗	✓	✓ +	✗
Existing homes insulation / weatherproofing	✓	✓	✓	✓ ++	Unknown
Minimum Energy Performance Standards (MEPS) & Energy Performance Certificates (EPC) of buildings	✗	✗	✓	✓ +++	✓
Standards & labelling of household appliances	Unknown	✗	✓	✓ ++	✓
Efficient lighting	✓	✗	✓	✓ +++	✓
Energy audits, Energy management ISO 50001 & Energy management capacity building	Unknown	✗	✓	✓ ++	Unknown
Commercial buildings energy-efficient investments	Unknown	✗	✓	✓ ++	Unknown

Policy Option	Outcome / advantages / disadvantages				
	Social and economic benefits	Requires government funds	Stimulates Private sector investment	Substantial environmental impact	Proven applicability in SIDS
Industry networks	Unknown	✗	✓	✓ +	✗
Voluntary Agreements	✓	✗	✓	✓ +	✗

From this comparison the highest potential for success in Curaçao are:

- Minimum Energy Performance Standards (MEPS) & Energy Performance Certificates (EPC) of buildings
- ESCO
- Efficient lighting
- Fiscal policies



## 6. Recommendations

Based on the Policy Options Evaluation and the Comparative Assessment we recommend the following policy instruments to be investigated for implementation in Curacao. These policy instruments are high promising combinations of the above discussed Financial, Utility-focussed, Household-focussed or Business-sector-focussed policy options structured under four policy instruments that are suited for implementation in the local context of Curacao.

Minimum Energy Performance Standards (MEPS) & Energy Performance Certificates (EPC) of buildings  
The Curaçao Building and Housing Ordinance (*Bouw- en woningverordening Curaçao*) is the main legislation stipulating the rules governing the construction and design related aspects which are necessary in terms of safety and public health. This ordinance currently does not state minimum requirements for the energy use of buildings. Several options are thus available for the implementation of such requirements:

- The implementation of an energy building code and appropriate regulations and standards for the energy use of appliances and equipment will push energy efficiency in building designs, end-use technologies and services. Energy building codes have been key policy instrument for governments to limit buildings' pressure on the energy sector and environment while providing occupants with comfort and modern living conditions. Effective building energy codes consist of a set of mandatory requirements designed to reduce the energy consumption of buildings. Building energy codes are used as mandatory tools to stipulate desired energy efficiency characteristics for buildings. Their success depends mostly on the possibility of enforcing them and on the tools and activities that accompany their implementation[20]. The key elements of a successful building code are:
  - Stakeholder participation for the elaboration of the prescriptions: all building trades (architects, builders, developers, contractors, etc...) should be associated. This will concur to making the prescriptions more practical and well adapted to local practices and technologies as well as increase stakeholder appropriation of the prescriptions. The process must, however, be driven by government staff to promote a high level of improvement over business-as-usual performances;
  - Extensive testing to check and demonstrate that the prescriptions are adequate and can be met cost-effectively;
  - Acceptable costs resulting from thorough cost-analysis studies and supported by demonstration programmes;
  - Detailed enforcement plan, including compliance procedures, staffed and trained building code officials, and tools to help check compliance;
  - Supporting tools: training of construction professionals, compliance manuals, forms and software;
  - Plans and procedures for revisions in accordance with technology and market changes;
  - Regional exchanges and benchmarking. Regional similarities can help save time and money on code development by adapting codes, as long as local building characteristics and climatic conditions are well taken into account.
- The Curaçao Government could also issue an amendment to the building code to include energy efficiency requirements for buildings. These will entail schemes that involve the issuance of certificates for buildings and building technologies that meet the energy performance requirements and additional levels of certification for those

with superior performances. Similarly, the introduction of energy efficiency standards and labelling schemes for household and commercial appliances are necessary.

As from that implementation new buildings, both public and private, will have to be energy efficient in terms of the building design and plant and equipment to be used, as per the provisions of the new Regulation.

Given the European context of this project, reference must be made to the Energy Performance of Buildings Directive (EPBD). The EPBD combines provisions on minimum energy performance requirements with certifications, providing both a constraint and an incentive for buildings energy performance improvement. There is evidence of around 48.9 Mtoe additional final energy savings in 2014 compared to the 2007 baseline of the EPBD, and these savings have mainly happened within the scope of the Directive. Setting ambitious requirements and showing a clear direction of progressive tightening of energy performance develops markets for the building industry and investors, while stimulating technology development and innovation. More best practices can be found in chapter 2 of the report '[Good practice in energy efficiency](#)' published by the European Commission on April 27, 2017. This brochure presents examples of good practice from policy implementation, technology development and investment in energy efficiency across different sectors and throughout all 28 Member States.

As this policy option delivers the best results when they are combined with information campaigns and financial incentives. We advise to set-up a long-term information campaign and provide the financial incentives we mention as part of the policy instruments in this recommendation.

The Government of Curaçao should consider either the creation an energy building code and appropriate regulations and standards for the energy use of appliances and equipment or the issuing of an amendment to the building code to include energy efficiency requirements for buildings.

### **Energy performance contracting (ESCOs)**

Energy service companies (ESCOs) can help energy consumers go forward with energy efficiency investments by providing them with services and financing, and by guaranteeing results. An ESCO generally offers a complete range of services: audit, identification of possible savings and recommended measures, arranging financing, designing and installing (or overseeing installation) of measures, procurement of equipment/energy, training of staff, operation and maintenance, monitoring, evaluation, and guarantee of savings. They are by nature active advocates of energy efficiency. Relations with ESCOs usually rely on Energy Performance Contracts[20]. Energy performance contracting (EPC) is a mechanism for organising the energy efficiency financing. The EPC involves an Energy Service Company (ESCO) which provides various services, such as financing and guaranteed energy savings. The remuneration of the ESCO depends on the achievement of the guaranteed savings. The ESCO stays involved in the measurement and verification process for the energy savings in the repayment period.

At the moment, no company in Curacao is developing projects with the ESCO concept. However, this is a best practice because with this method the customer does not need to invest upfront while it does benefit from a substantial discount on the energy bill. This market can only develop if the necessary laws are in place. Conditions necessary for ESCOs include[20]:

- Available financing;
- Adapted legal framework and public procurement procedures to allow easy use of Energy Performance Contracts by public entities, as well as technical, legal, and financial assistance for public bodies willing to enter into this type of contract;
- Standard contract provisions and support for contracts;
- An accreditation system for ESCOs, to guarantee good quality of services;
- Standardised savings measurement and verification protocols to reduce disputes and improve trust in ESCOs, as well as reduce measurement costs for ESCOs and risks related to mistakes in estimates or measurements of savings.

A first step would be the creation of a framework for EPC in the Curaçao Energy Act. When drafting regulation on EPC the following criteria should be considered[21]:

- List of energy efficiency measures and budget
- The guaranteed energy savings
- Measurement and verification
- The term of the contract
- Remuneration of the provider
- Project financial impact
- General terms and condition to address subcontractors, documentation of project changes, changes in contract conditions, etc.
- The provider bears project's financial, technical and commercial risks

A second step would be the redaction of an EPC template as has been done by the Latvian Baltic Energy Efficient Facility an organisation aims to support energy service companies (ESCOs) that implement renovation measures in multifamily buildings based on energy performance contracting. The LABEEF facility works as an innovative platform to facilitate the EPC. More information can be found [here](#).

For the implementation of the National Energy Policy the government of Curaçao is currently in the adoption process on an overarching Energy Act which will offer an integrated codification of the energy, potable water and fuel policy. It will include the defined policy targets and detail the legal framework and applicable procedures. It will also provide a clear attribution of responsibilities to the utility companies for the respective infrastructures and for the appropriate Government institutions. The Energy Act will furthermore provide a framework for the development of secondary regulation such as ministerial decrees. **The Government of Curaçao should consider creating a specific chapter in the Energy Act containing high-level principles and objectives for EPC and ESCOs which then in turn will be worked out in secondary regulation. An accreditation system and standardised savings measurement and verification protocols can then be the subject of ministerial implementing decrees.**

### Efficient lighting Strategy

In line with other SIDS in the Caribbean region a profound Efficient Lighting Strategy for Curacao should be developed. This strategy should start with a stakeholder consultation bringing together different to develop a vision for the lighting market and identifies the resources and mechanisms needed to pursue it. This Efficient Lighting Strategy provides clarity for consumers, sellers and manufacturers on the current status and future trajectory of this sector. Externally, in this policy making process, Curaçao should consider regional harmonisation – with CARICOM for example - and share resources and experiences with other SIDS'. This should result in lower trade barriers and minimise the costs to implement their strategies

This integrated Efficient Lighting Strategy should include[22]:

- Mandatory minimum energy performance standards; this could be international standards such as those of the International Electrotechnical Commission (IEC) to put in place a minimum energy efficiency level for a product to be sold in the market.
- Labelling schemes and other market-based instruments that ensure that energy efficiency information is clearly and consistently conveyed.
- To reinforce the long-term effects of other these energy efficiency measures it is crucial to set up a long lasting communication campaign that will help people and businesses understand their role in contributing to market transformation, such as how to read and apply labelling information in their purchasing decisions and how changes in their habits can impact electricity use.
- Financing incentive mechanisms that help address the initial incremental costs such as through dedicated funds, electric utility on-bill financing, and pay-as-you-save schemes based on shared savings transactions through Energy Service Companies.
- Monitoring, verification and enforcement by a dedicated governmental institution since a successful market transition depends on effective monitoring (i.e. verify product efficiency), verification (i.e. verify declarations of conformance); and enforcement (i.e. actions taken against noncompliant suppliers) of the regulations (MEPS). This could be done for example by a (to be created) [Energy Efficiency Management Office](#).

For the implementation of the National Energy Policy the government of Curaçao is currently in the adoption process on an overarching Energy Act which will offer an integrated codification of the energy, potable water and fuel policy. It will include the defined policy targets and detail the legal framework and applicable procedures. It will also provide a clear attribution of responsibilities to the utility companies for the respective infrastructures and for the appropriate Government institutions. The Energy Act will furthermore provide a framework for the development of secondary regulation such as ministerial decrees. **The Government of Curaçao should consider creating a specific chapter in the Energy Act containing the high-level principles and objectives of the Efficient Lighting Strategy, which then in turn will be worked out in secondary regulation.**

### **Fiscal Policies: Tax incentives & rebates and government grants**

Fiscal mechanisms need to be developed to motivate stakeholders and consumers to adopt energy conservation and efficiency. Currently in Curacao import tariffs vary, in general, between 5% and 27%. There is a range of products that may be imported without import duties such as basic food products, books and computers[23]. Some technologies that support efficient energy use are currently supported through exemptions in duty and sales taxes in Curaçao, but it would be advisable to exempt them from import duties as well[19]. Another option would be to bring energy efficient, avoided generation and renewable energy technologies under a single VAT and duty exemption scheme.

It would also be recommended to create fiscal incentives, such as tax rebates for the achievement of verifiable energy efficiency performance, next to tax credits and incentives already existing such as the Foreign Tax Credit; Inward investment and capital investment incentive, Accelerated Depreciation and Tax Rollover Reserve.

To properly assess which fiscal measures to implement in Curaçao, it is advised to refer to established frameworks<sup>4</sup> for evaluating the energy savings associated with fiscal measures.

Specifically in the building sector, tax credits and deductions for households, accelerated depreciation for commercial buildings, reduced sales taxes or import duties, and higher taxes on energy consumption are proven measures to increase energy efficiency. Curaçao can use the existing taxation system to reach very large numbers of beneficiaries with limited administrative costs [8]. Several options are available to Curaçao. By instituting a Tax Credit the cost of energy-efficient materials and installation products could be decreased and hence reducing the price gap between these and regular products. This reduces the added investment and improves the payback of investments in building energy efficiency. For this Curaçao could find inspiration in the Energy Transition Tax Credit of Guadeloupe, which allowed the deduction from income tax (or refund for non-taxable households) of part of the expenses incurred for equipment and devices for energy savings (insulation, solar water heaters, etc.) and had significant results. Curacao could also lower sales and import taxes on energy efficient equipment and labour costs for building renovations. Alternatively, Curaçao could opt to internalise the negative externalities of energy consumption in the final prices of goods and services by creating an energy and carbon tax. In that way consumers are encouraged to reduce their energy consumption but left free to choose the means to do so.

### Other recommendations

The National Energy Policy of Curaçao stated that for the implementation of energy efficiency measures on Curacao three types of barriers are be identified: economic, institutional and behavioural barriers. Although the scope of this study is only related to policies to entail economical and behavioural impact, an institutional recommendation can be made:

In order to effectively implement these energy efficiency policies and monitor progress made, the Government organization in charge of energy must be strengthened. Cross-sectoral and coordinated actions must be taken to successfully develop policies that have the capability and capacity to deliver the desired outcomes in an economy. This can be achieved through the development of Energy Efficiency Operational Agencies, which undertake market analysis and design programmes that effectively motivate and transform markets to deliver energy efficiency outcomes. As defined in the Curacao National Energy Policy, a crucial part of the 'Energy policy cube' are the institutions required to facilitate the implementation of the energy policies.

Curaçao could set up an agency such as The Energy Efficiency Management Office (EEMO) in Mauritius.

The EEMO was established by the Ministry of Energy and Public Utilities under the assistance of the recently closed UNDP-implemented GEF-financed project, named 'Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings'. The office has been set up under Section 4 of the Energy Efficiency Act 2011 with the objectives of, among others, to establish links with regional and international institutions and for promoting awareness on the efficient use of energy as a means to reduce carbon emissions and protect the environment. Key achievements of EEMO in the space included the development of national guidelines for

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<sup>4</sup> [https://ec.europa.eu/energy/sites/ener/files/documents/final\\_report\\_on\\_fiscal\\_measures\\_used\\_under\\_article\\_7\\_eed\\_0.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/final_report_on_fiscal_measures_used_under_article_7_eed_0.pdf)

energy efficiency, voluntary agreements with the private sector and national energy efficiency awareness campaigns[24].


In Curaçao this Energy Management Office could be set up as a 'Tiger Team' of the Energy Office, as the Government of Curaçao envisages to install Tiger Teams to assist and advise the Energy Office. The Energy Office is a department within the Ministry of Economic Development, with the prime responsible for developing, implementing and monitoring the National Energy Policy from the side of the Government. These Tiger Teams will contribute to the development and implementation of specific policies. They will consist of one or more representatives from the stakeholders, one or more experts and are presided by a member from the Energy Office. It is expected that the small teams will be able to give a boost to the development of appropriate regulation.

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