

CLASP policy database – an appliance energy efficiency tool for collaboration and innovation

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Abstract

CLASP created the Policy Database (clasp.ngo/policies) over 15 years ago to provide a searchable listing of every energy efficiency policy covering appliances and equipment worldwide. This tool allows practitioners to both examine individual policies closely and consider them in aggregate to ascertain trends. Today, over 100 economies have implemented or are developing standards and labelling programmes for a wide range of equipment, from lighting and air conditioners to off-grid solar products. As standards and labelling programmes have evolved and expanded, so has the Policy Database.

Ensuring the Policy Database stays current, relevant, and useful to a wide range of stakeholders – in particular energy efficiency policymakers, researchers, and other practitioners – is crucial. With added features and the inclusion of emerging technologies, such as off-grid appliances and equipment, the CLASP Policy Database has the potential to support tracking, benchmarking, and alignment of comprehensive appliance policy development at various levels – globally, regionally, and nationally.

This paper and the accompanying display highlight the functionality, use cases, and potential outputs of the Policy Database, demonstrating the wealth of policies worldwide, where there are opportunities to do more, and regional collaboration opportunities to align policies and ultimately reduce energy use through the promotion of energy efficient appliances.

Introduction

CLASP aims to serve as the leading international voice and resource for product energy efficiency policies and market acceleration initiatives.¹ The Policy Database was one of the first tools developed by CLASP over 15 years ago, to provide a fundamental S&L resource for policymakers and practitioners, thereby advancing CLASP's early mission to promulgate energy efficiency policy in the developing world. Originally named the Standards and Labels (S&L) database, the Policy Database is well known by the global S&L community of practice. Working in concert with CLASP's tracking and monitoring tools, communications and insights, the Economy Finder, and the Guidebook,² the Policy Database supports a holistic understanding of the state of policies globally, regionally, and in specific economies.

Over time, the Database has grown as S&L programmes around the world developed and evolved. More economies are realizing the importance of minimum energy performance standards (MEPS) and labelling programmes to shift markets toward more energy efficient products. The number of economies with S&L programmes grew from 50 in 2004 to 81 by 2013 (EES 2014). CLASP estimates that today over 100 economies around the world have S&L programmes in place or are actively working to develop their programmes and implement their

1. CLASP's "Who We Are" page: clasp.ngo/who-we-are.

2. CLASP's Economy Finder (clasp.ngo/economies) provides an index of appliance energy efficiency information by economy. It links to the Policy Database and additional information including analysis and insights. The Guidebook (clasp.ngo/guidebook) is a step-by-step manual for developing, implementing, and maintaining energy efficiency labelling and performance standards for appliances, lighting, and equipment. CLASP, the Copenhagen Center for Energy Efficiency, and our partners are drafting the third edition of the Guidebook to capture global advances in best practice, technology, and policy development.

first appliance S&L policies. A 2015 IEA global assessment of energy efficiency standards and labelling (EESL) programmes determined that “the national benefits outweighed the additional costs by a ratio of at least 3 to 1, i.e. EESL programmes deliver energy and CO₂ reductions while also reducing total costs” (IEA 4E 2015). S&L measures that push the market to deploy the most energy efficient products are among the most cost-effective activities that governments can use to transform markets, as strategic appliance and equipment energy efficiency policies and programmes are significantly cheaper than building new electricity generation to meet increasing demand (LBNL 2017).

Overview of the CLASP policy database

The CLASP Policy Database is a web-based searchable tool for research into and comparison of energy efficiency performance standards, labelling, and quality standards for appliances and equipment around the world. The Database can support a variety of functions, from a simple search to find which economies have a specific product policy, to a data download to support analysis and tracking of policy adoption regionally or globally. The Policy Database is the only publicly available tool that allows anyone to search and compare policies for 114 different on- and off-grid products in more than 90 economies around the world. The CLASP Policy Database informs policy development and prioritization, enables monitoring and tracking of appliance policies at the global, regional, or national level, and increases the awareness of energy efficiency product policies around the world.

KNOWLEDGE RESOURCE

The Policy Database serves as a key global resource for appliance energy efficiency policies,³ supporting a number of functions that enable users to gather the data necessary for a variety of research questions and to monitor and track policies throughout the world. Users can search policies contained in the Database by location, product, or policy type – and any combination of these variables. Users can also download the entire database or specific search results as a comma-separated values (spreadsheet) file – which enables users to sort, compare, or analyse the data in a variety of ways. The downloaded file contains additional information, including sector, fuel type, whether the policy is mandatory or voluntary, and more – enabling in-depth analysis of policies in an economy, region, or worldwide. Furthermore, the Policy Database provides links to the primary policy sources on the implementing organizations’ websites when available. Related programme information and CLASP publications, analysis, or insights are also available through the Economy Finder.

Policymakers use the Database to support decision-making and product prioritization. Industry uses it to understand where policies are in place and to look for upcoming policy de-

velopments to help plan their energy efficiency improvements and innovations. Researchers use the Database to better understand the impact of energy efficiency policies around the world by tracking where high-impact product policies are implemented.⁴ The Policy Database is a key part of CLASP’s larger portfolio available on clasp.ngo – complemented by the Economy Finder, Publication Library,⁵ Guidebook, Cooling Magazine,⁶ and more. Together, these tools provide a key knowledge resource and holistic view of energy efficiency policies, including global best practices for standards implementation.

EVOLUTION OF THE DATABASE

As the Policy Database continues to grow, its services and uses have expanded beyond its initial purpose as a fundamental resource for policymakers and S&L practitioners. Forthcoming improvements to the Database will enable users to see when policies were first implemented, providing an understanding of the change in number of policies over time. Another upcoming improvement will provide automatic generation of data visual(s), based on users’ search queries, to provide visualizations of policy penetration regionally or worldwide, such as the demonstrative maps in Figure 1. These data visuals will be driven by need and interest, largely stemming from users and stakeholders of the Policy Database, as well as CLASP’s papers, proposals, presentations, communications, and more – which are enhanced by data visuals including maps, graphs, charts, policy summaries or counts, and more.

CLASP regularly updates the Policy Database with the most up-to-date information on S&L policies in economies, while also adding relevant information such as label images or compliance programme details to our suite of resources. User input and stakeholder surveys in 2019 will be a key part of determining what we add and improve or streamline to ensure these tools continue to be relevant and valuable to the S&L community.

Analysis from the policy database

As a key knowledge resource, the Policy Database supplies the information needed to develop and support a variety of policy analyses. Including, but not limited to, the following examples:

- Identify product groups most often included in S&L programmes, so that policymakers considering new regulations can prioritise efforts based on international experience.
- Identify economies or regions that lack policies for relevant products or equipment, in order to target assistance efforts by the international community.
- Explore opportunities for regional collaboration or harmonized policies between multiple economies.

3. CLASP’s Policy Database is cited and referenced by many recognized leaders in the energy efficiency and climate mitigating fields, including, but not limited to: the World Bank’s Regulatory Indicators for Sustainable Energy (RISE 2018, rise.worldbank.org); the World Bank publication, “Decarbonizing Development: Three Steps to a Zero-Carbon Future”; the Copenhagen Center on Energy Efficiency; the Climate Technology Centre & Network (CTCN); the 2017 Routledge publication, “Sustainable Development Policy: A European Perspective”; and more.

4. User information gathered by CLASP in interviews and an internal evaluation of the Policy Database in 2016.

5. The CLASP Publication Library (clasp.ngo/publib) provides a searchable source for CLASP and partner analysis on products, markets, and policies.

6. CLASP has identified and analysed major trends in room AC markets in Africa, South America, and South and Southeast Asia. The inaugural issue “Cooling in a Warming World: Global Markets & Policy Trends”, published January 2019, illustrates how timely delivery of technical expertise and policy advisory services can result in significant impacts. (<https://clasp.ngo/updates/2019/clasp-launches-cooling-in-a-warming-world>).



Figure 1. Two world maps identifying economies with energy efficiency policies in place or under development for room air conditioners (left map) or motors (right map).

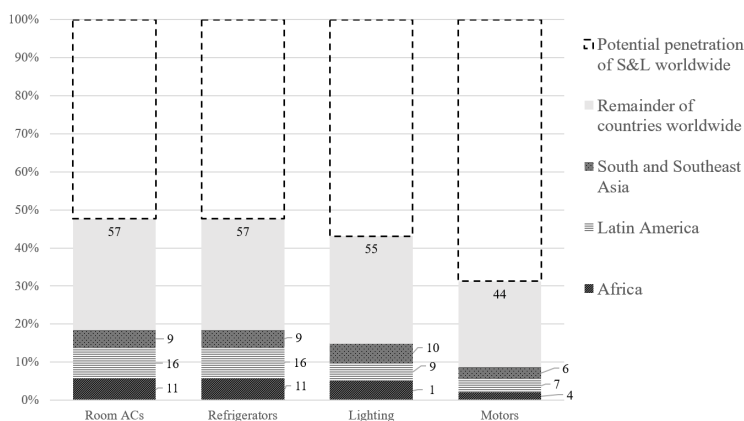


Figure 2. Summary of economies with policies in place or under development for select high-impact products, with regional breakdown on Latin America, Africa, and South/Southeast Asia. At the time of this publication, worldwide, 93 economies have Room Air Conditioner policies, 93 have Refrigerator policies, 84 have Lighting policies, and 61 have Motors policies.

S&L practitioners should consider the Policy Database as a central resource for global appliance and equipment energy efficiency policy information. The following sections explain how the Policy Database contributes to these policy analyses.

EXPLORING S&L POLICIES WORLDWIDE

The CLASP Policy Database currently includes information on the S&L policies of over 90 economies, including those in the European Union.⁷ Economies and policies are regularly added to the Database to develop a more complete picture of the status of appliance policies around the world. As described above, users can download the database, or results of search queries, to conduct in-depth analyses or develop figures and tables such as those demonstrated in this paper.

Figure 2 was created by counting the number of economies in each region with S&L policies currently in place or under development for the products of interest. It shows the number of economies with policies for four high-impact products, with

economies grouped by region to emphasize Latin America, Africa, and South and Southeast Asia, where there is a focus to develop or improve policies. The figure also shows the potential for 100 % global coverage of S&L policies worldwide, as a simple percentage of the number of economies with policies as compared to the number of economies that have not yet developed policies.

Further analysis of this data may combine the number of economies with policies with national or regional data on GDP levels, population, or total electricity consumption (as in Figure 4), in order to more accurately understand the weight of each economy’s impact at the global scale, or the potential impact of specific economies that are developing their S&L programmes for the first time.

In addition to showing the number of economies with specific product policies, the Policy Database will be capable of displaying increases over time in both the number of economies with S&L programmes and the number of unique product policies worldwide. The year of first implementation for many of the policies in the database has been collected, but is not yet available for all economies in the publicly accessible Policy Database. Figure 3 shows the information that CLASP has gathered thus far, which displays a steady growth trend in

7. For ease of data collection and summary, the Policy Database tracks all policies developed by the European Union as a single economy. For the purposes of this paper, each EU Member and the additional members of the Schengen border-free area are counted as individual economies.

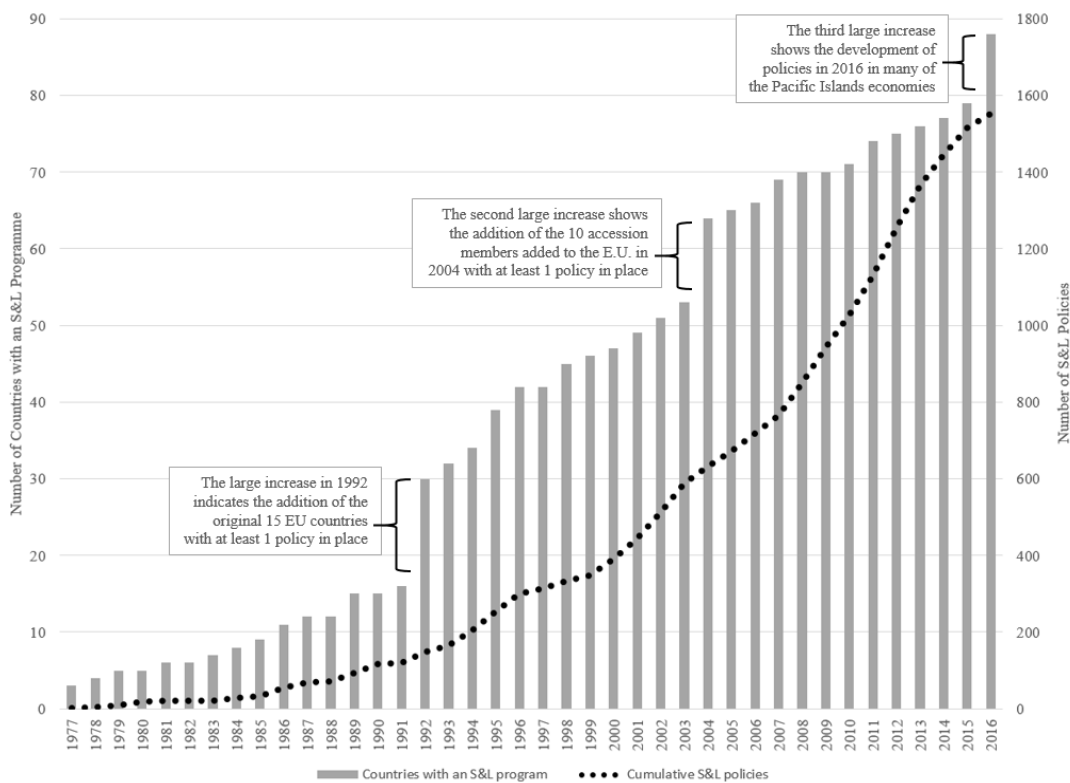


Figure 3. This graph displays the upward trend of both cumulative number of policies worldwide, and the number of economies with an S&L programme, from 1977 to 2016. First implementation date for all policies and economies in the database, as well as information from 2017 and 2018 are forthcoming.

both data sets – the bars show the number of economies with S&L programmes, and the dotted line indicates the number of implemented policies captured in the Policy Database. This information is useful to understand the landscape of policy development worldwide.

GAPS ASSESSMENTS TO DEVELOP OR IMPROVE S&L POLICIES

The CLASP Policy Database supports gaps analysis in S&L programmes by identifying which economies do not have energy efficiency policies for products of interest. Economies may use this to compare their S&L programmes against their neighbours or trade partners, and to prioritize the development of new policies in order to maintain a robust national energy efficiency strategy. By conducting gaps analyses, researchers can review the penetration of product policies worldwide and regionally, allowing them to easily identify where policies could be developed. CLASP conducted a high-level gaps analysis in 2013 by combining the Policy Database tool with the Bottom-up Energy Analysis System (BUENAS),⁸ using end-use energy consumption by product and economy to provide a framework for prioritizing opportunities for energy savings through the

implementation of product policies in the commercial and industrial sectors and in economies with large anticipated growth rates in energy use (Humphrey and Karpay 2013).

As alluded to in the description for Figure 2, information from the Policy Database can be combined with data such as total electricity consumption (IEA 2018) in order to weigh the impact of policies each economy or region. Figure 4 takes the same base information from Figure 2, and displays it with the economies weighted based on total electricity consumption from 2016.

It is also important to note that while gaps analyses can provide a basis for prioritization of new product policies or projects in new or emerging economies, the needs and interests of each economy must also be carefully considered. For example, countries in colder climates are less likely to prioritize policies for air conditioning products due to a lack of need or demand. CLASP plans to explore additional ways of weighing economies to support more robust gaps analyses and develop policy recommendations.

The Policy Database can also help compare mandatory and voluntary programmes and policies, and allow practitioners to assess approaches globally or regionally. Some economies choose to start their S&L programmes with voluntary policies and then transition to mandatory, allowing manufacturers and importers to adhere to the policies in stages. Other economies have only voluntary policies with no plans to transition to mandatory.

Table 1 shows the status of MEPS in South and Southeast Asia economies for five high-impact product groups. In addition,

8. Released in 2012, the Bottom-up Energy Analysis System (BUENAS) supplied end use energy demand projection models for Humphrey and Karpay 2013. BUENAS was developed by Lawrence Berkeley National Laboratory with support from CLASP, the International Copper Association, and the United States Department of Energy. For more information about BUENAS visit <https://clasp.ngo/publications/bottom-up-energy-analysis-system-buenas-methodology-and-results>.

tion to showing which economies have voluntary standards, the blank cells indicate that there is no standard in place nor under development – showing where these economies could consider developing new MEPS for these products. This could be particularly beneficial for economies operating in or working towards the establishment of free trade zones, such as the ASEAN Free Trade Area (AFTA), or seeking to build regional compliance frameworks and product registration databases. Differences in the S&L policies of participating member economies will likely hinder the free flow of products within the region and increase the burden on importers of energy efficient products.

FINDING COLLABORATION AND HARMONISATION OPPORTUNITIES FOR S&L POLICIES

Regionally harmonized standards remove trade barriers, open up markets, and enable governments to share market and product compliance data, thereby reducing overall programme costs and supporting aligned compliance and enforcement activities. Collaboration between economies can permit emerging S&L programmes to learn from their partners’ experiences and more easily implement energy efficiency policies.

The Policy Database lists policies implemented at the national level by each economy. However, it can also capture policies implemented in different regions or trade zones, such as the European Union (EU). For the EU, the Database tracks both the regionally applicable Ecodesign and Energy Labelling Directives, and showcases complementary national and often voluntary policies that push for greater ambition. This could be used to demonstrate how many member states have introduced more ambitious policies, identify collaboration or alignment opportunities for those policies, and potentially inform future revisions to the EU Directives. This allows users, such as importers or suppliers, to understand whether they can sell their products in one economy or across a region without having to conduct multiple tests and meet different requirements.

Regional approaches to EESL are growing, for example in the Pacific Islands, ECOWAS, and the Caribbean Community (CARICOM), where they are facilitating free-trade areas with no or new harmonised EESL programmes. The Policy Database can inform which products they should develop policies for, as well as help identify collaboration opportunities in these regions. For example, the tool can list the economies within one

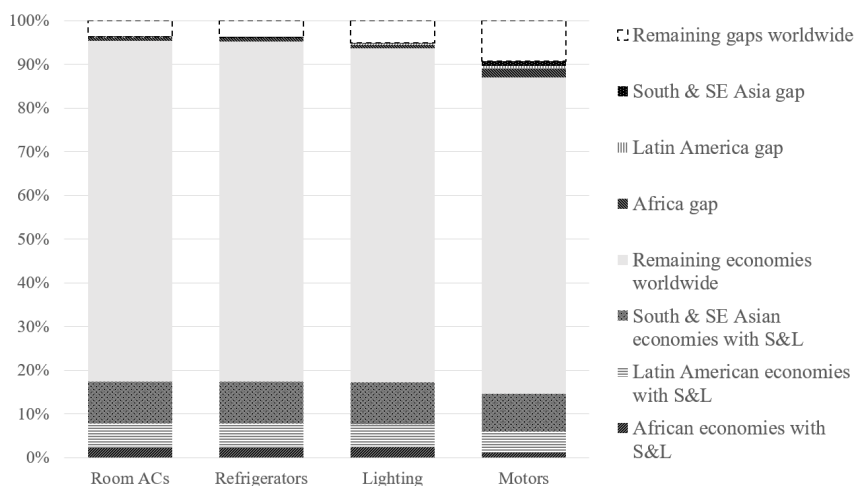


Figure 4. Weighted summary of economies with policies in place or under development for select high-impact products. To create Figure 4, the same data used in Figure 2 was weighted based on each economy’s 2016 total electricity consumption data, sourced from IEA 2018. The weighting allows us to visually see that South and Southeast Asian countries have a greater global impact despite having a similar number of economies with S&L policies as Africa and Latin America.

Table 1. Minimum energy performance standards in a selection of Asian economies that are members of the ASEAN Free Trade Area.

	Room AC MEPS	Refrigerator MEPS	Motors MEPS	Transformer MEPS	Lighting MEPS
Indonesia	Mandatory	Mandatory	*		**
Malaysia	Mandatory	Mandatory			Mandatory
Philippines	Mandatory				Mandatory
Singapore	Mandatory	Mandatory			Mandatory
Thailand	Voluntary	Voluntary	Voluntary		Voluntary
Vietnam	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory

*Under development at the time of CLASP’s most recent update
 **Under consideration for development at the time of CLASP’s most recent update

Table 2. Status of cooling and lighting policies in ECOWAS member states.

Economy	Room ACs	Refrigerators	Lighting
ECOWAS	MEPS [◄]	MEPS [◄]	MEPS [◄]
Benin	MEPS [◄]	MEPS ^{**}	MEPS [◄]
Cabo Verde	MEPS & Label [◄]	MEPS & Label [◄]	MEPS & Label [◄]
Cote d'Ivoire			MEPS & Label [◄]
Ghana	MEPS & Label	MEPS & Label	MEPS & Label
Liberia	MEPS ^{*◄}		
Nigeria	MEPS & Label	MEPS & Label	MEPS & Label [*]
Senegal	MEPS & Label [◄]	MEPS & Label	MEPS & Label [◄]
Burkina Faso, Gambia, Guinea, Guinea Bissau, Mali, Niger, Sierra Leone, and Togo	<i>Of the 15 ECOWAS Member States, 8 have not yet developed or implemented appliance energy efficiency S&L programmes</i>		
*Under development at the time of CLASP's most recent update.			
**Under consideration for development at the time of CLASP's most recent update.			
◄At the time of publication, CLASP is reviewing these policies, full information not yet available.			

region or free trade area and show which have existing product policies, as in Table 1 above. Those member economies that have not yet developed S&L programmes could easily review and then adopt their most ambitious neighbour's policies to move the region towards alignment and increase energy efficient products region-wide.

The experiences of more developed regional programmes, such as the European Union and the E3 Program in Australia and New Zealand can provide lessons learned and support future emerging collaborations or regional approaches to EESL. Users of the Policy Database can also read each economy's profile in the Economy Finder tool to better understand they have structured their S&L programmes.

Case study: How the policy database can support regional policy development in West Africa

Since 2013, the Economic Community of West African States (ECOWAS) has been working towards regional standards that will limit the import of inefficient products onto the regional market. The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) has developed several regional minimum energy performance standards (RMEPS) – for refrigerators, room air conditioners (ACs), and two lighting standards (on-grid and off-grid). In coordination with the 15 ECOWAS Member States, ECREEE has also developed a roadmap to speed up the implementation of these standards at the national level. Adoption and implementation of the regional standards has been slow as ECREEE and Member States develop the necessary guidelines and capacity. As of 2018, Nigeria is the only Member state that has adopted the ECOWAS RMEPS for refrigerators and room ACs, and several other Members have developed their own policies for a number of products, as seen in Table 2. ECREEE and other regional harmonization efforts around the world can use the Policy Database to first see which member states already have policies, and then consult these members and model the regional legislation after the most robust existing policies. This would allow the entire region to benefit from the expertise and lessons learned from those members with the most advanced S&L programmes. In addition, a simple analysis from the Policy Database of existing S&L policies and programmes in a region can support members who have yet to implement

programmes by supporting the identification of additional collaboration opportunities, such on compliance and enforcement efforts.

Conclusion and looking ahead

CLASP's Policy Database is a valuable tool for policymakers, researchers, industry, and other users to track, analyse, and align appliance energy efficiency policies. As this resource has changed and evolved over time, we have expanded and updated the database to meet stakeholders' needs, and we are embarking on a renewed effort to increase its utility and value through a user survey and the development of data visual(s).

Today, the Database permits users to track policies, develop benchmarking analyses, and identify opportunities and collaboration – supporting policy decision making, project proposals, and more. As explained in this paper and demonstrated by the figures and tables above, users can use the Database to:

- Achieve a holistic understanding of the status of policies globally, regionally, and in each economy.
- Identify gaps in product policies and analyse the potential impact of new policies.
- Identify potential collaboration and harmonization opportunities.
- And users will soon be able to see much of this information in dynamic web-based data visualizations.

Implementation of improvements and achievement of this vision will involve investment of resources, engagement with users and stakeholders, collaboration and communication efforts, and integration of new data for enhanced analyses. We envision that the Policy Database will contain a variety of functions supported by, and working in concert with, additional resources offered by CLASP and our partners. The value-add of the Policy Database and the planned updates go far beyond its original goal of providing a fundamental S&L resource. By integrating additional data, the database will also be able to support impacts analyses – providing further support for the investment of technical assistance and appliance energy efficiency policies.

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