

Development of Regional Product Database and Harmonization of National Product Registration Systems

A Regional Policy Roadmap

14 May 2020

Introduction

This product registration roadmap responds to directives made by the 37th ASEAN Ministers on Energy Meeting (AMEM) on the continued enhancement of an ASEAN Energy Database System and supports the strategic objectives of the ASEAN Plan of Action for Energy Cooperation (APAEC) towards achieving energy security and sustainability for the region.

A product registration system is a powerful tool used for policy making on energy efficiency. A well working product registration system allows effective Monitoring, Verification and Enforcement (MV&E) activities, which enable policymakers to manage the compliance of the products entering the market, establish the right policy decision and to monitor the products in the market. At the center of MV&E actions is a product registration system, which is a database that captures up-to-date information on the products in the market. An effective product registration system contributes ultimately to save electricity due to higher efficient products in the market, a less strained electricity grid which improves energy security and helps countries to meet international climate commitments. United for Efficiency (U4E) estimates that, with a transition to energy-efficient lighting, air conditioners and refrigerators, the ASEAN region could save up to 90 TWh, which is equivalent to 41 large power stations of 500 MW each, 62 Million tonnes of CO₂ and almost 10 Billion USD in reduced electricity bills.¹

As of March 2020, six ASEAN member states, i.e., Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam, have developed product registration systems to support the implementation of their MEPS and labeling programs. These product registration systems vary in their design, function and product coverages, depending on the scope of the MEPS and labeling program in each country, and they are operationalized as only paper-based (Philippines), paper and web-based (Thailand, Vietnam) and only web-based systems (Indonesia, Malaysia, Singapore). Other countries have started the process and are at different stages in the implementation phase, as follows:

- Countries that are in an advanced planning process (Lao PDR);
- Countries that are currently implementing a regulation framework and aim to develop a product registration system thereafter (Brunei Darussalam, Cambodia);
- Countries that expressed general interest in developing a product registration system (Myanmar).

Adopting a regionally coordinated approach for product registration in ASEAN brings significant benefits and has a much larger impact than having different systems within one region. The leveraging effect of a regional harmonization enables governments to reduce costs for product registry activities significantly and enhance the enforcement of the regulations in place.

¹ Access [here](#) for more details on the U4E Country Saving Assessments


Objective and Scope

The objective of this roadmap is to provide a framework for the activities which are necessary to harmonize product registration activities in the ASEAN region for energy-efficient air conditioners, refrigerators and lighting.

There are different levels of harmonization of product registration activities that are possible. The levels reach from using one system in the region that is centrally managed to individual systems in the countries with similar frameworks and data storage in the countries. Step 1 of the roadmap mentions all four options, an external annex to this roadmap ('Options to harmonize Product Registration Systems in the ASEAN region') explains the options more in detail, including advantages, disadvantages and cost implications for each possibility.

Recommended Actions



 Call to inform or consults EE&C-SSN representatives

The graph above provides an overview of the recommended actions to achieve a harmonization of product registration activities in the ASEAN region. The proposed activities presented in detail below, including a summary of the required action, objective, responsibilities and timeline.

1. Formal Regional Database Model Selection and Adoption of the Roadmap

In the first step, a decision should be taken by the ASEAN region on which type of harmonization of product registration activities will be carried forward. The options that have been identified are the following:

- A. All countries stay with individual systems and develop a web application programming interface (Web API) to enable communication and data exchange between each individual system and the regional database. **The countries are responsible for developing this Web API within their existing systems.** The set of data points for the regional database will be provided in due course. Basic product data (e.g. energy efficiency data of products) from the regional database will then be available to the other countries for monitoring, verification and enforcement activities. Read access to the regional database may be restricted to member countries only through a secure interface, or open to the public and applicants, data access rights and levels to be decided by the EE&C-SSN representatives.
- B. The countries which currently do not have a product registration system (e.g. Lao PDR, Brunei Darussalam, Cambodia, Myanmar) may adopt a master product registration framework as their national system, which is then independently maintained by the country. The countries, which already have an existing product registration system in place, may stay with their systems and build a Web API or data transfer interface to allow access to the regional database. Basic product data from the regional database will then be available to the other countries for monitoring, verification and enforcement activities, as above this may be a read access level to member countries only, or open to the public and applicants.
- C. One master product registration framework is adopted as national product registration system by all countries that wish to do so. In this case the software and data is still stored in each country, but the maintenance and updates are performed by a regional team. The countries that wish to keep their existing product registration system build a data transfer interface to the regional

database. Basic product data from the regional database will then be available to the other countries for monitoring, verification and enforcement activities.

- D. One single product registration system in the region that is centrally managed and where all data is shared between countries.

The ASEAN Energy Efficiency and Conservation Sub Sector Network (EE&C-SSN) focal points together with the ASEAN Centre for Energy (ACE) as the Secretariat have been given the ownership for the implementation of the APAEC and should be therefore responsible for in-country communication and final decision on the regional level.

The four options above had been presented to the EE&C-SSN focal points and other country representatives during the 'U4E-ACE Inception Meeting on Product Registration Systems and Lighting' in February 2020 in Bangkok, Thailand and during an online follow-up meeting in May 2020. During both meetings, the country representatives have expressed their interest in options A and B. Therefore, it is expected that the formal decision will fall on these options, depending on the interest of countries without existing product registration systems to adopt the master framework as the basis for their national system.

To aid the decision-making process, Annex 1 summarizes the product registration database, which would be developed if a mix of options A and B would be applied. It should be noted that the countries will be divided into two groups, as follows: (1) countries which aim to implement the master product registration framework that will be developed by U4E (depending on the interest expressed by the countries, e.g. Myanmar, Lao PDR, Cambodia and Brunei Darussalam) and (2) countries which aim to keep their existing own product registration system and connect it to the regional database (Indonesia, Malaysia, Singapore, Philippines, Thailand and Vietnam).

The regional database will be built upon the master framework and will serve as an umbrella to both groups of countries, facilitating information sharing platform and MV&E activities in the region.

This roadmap takes the countries expected formal decision for options A and B into account and outlines the steps that are needed in this context.

Action: Formal decision on the regional database options and adoption of the roadmap

Objective: Decide on the degree of harmonization of product registration activities and way forward

Responsible: EE&C-SSN with support from ACE

When: 24th EE&C-SSN meeting (Mid-July 2020)

2. Call with EE&C-SSN Representatives

Once the formal decision on the options and the roadmap has been made, an online meeting will be held by ACE and U4E to discuss with the country officials the technical implications and involvement needs of the next steps. The online meeting will be divided into the two groups and aims to inform the country officials on the following points:

- Group 1: Alignment of master PRS framework to national legislation: product categories, data points, registration process, user access, language requirements, country IT infrastructure, etc.
- Changes required to the framework and funding options.

Implementation steps of the framework into the prototype national product registration database.
Group 2:

- Need for data delivery.

Both groups:

- Details of the software development for the master product registration framework.
- Maintenance of the various systems.

- Implementation of the framework into the regional database. Data access interface to regional database.

In summary, at this step practical activities will be discussed and open questions will be addressed. The objective of the call will be to ensure that software development and setting up database can be supported by this project. The call will also serve as preliminary identification of country wise gaps from the establishment of regional database, e.g. the readiness of national PRS.

Action: Call with the country officials to inform and discuss the practical next steps

Objective: Ensure that the software development can be undertaken smoothly

Responsible: ACE and U4E

When: End of July/Beginning of August 2020

3. Development of Technical Details

U4E will work on the technical details of the master product registration framework, e.g. data requirements, database architecture. This step will also involve the active participation by the countries in two groups:

- Development of the technical details for the master PRS framework and implementation into prototype PRS for countries that do not have a product registration system
- Construction of the technical details for the connection of the countries which have their own product registration system with an application programming interface (API)

In parallel to those points also the technical details for the development of the regional database will be developed. The regional database will be based upon the master framework and will connect the above databases as an umbrella for MV&E activities in the region. The success of this step will depend on the active participation by the countries and will be coordinated by ACE.

Action: Develop the technical specifications for setting up the databases

Objective: Obtain consensus on the technical elements for the development of the framework, prototype national PRS, the API connections and the regional database.

Responsible: ACE and U4E in coordination with the country officials

When: Mid-August 2020

4. Call with EE&C-SSN Representatives to Inform about the Final Technical Details

As soon as the development of the technical details has been finalized, ACE and U4E will present the final technical details during a call once more to the country officials. The aim of this call is to assure the mutual understanding of the countries before the prototype itself is developed. It is expected that the countries would commit to support the development and adoption of the framework and prototype.

Action: Call with the country officials to inform about the final technical details

Objective: Ensure consensus on the technical details and timelines for the development of the framework, prototype national PRS, the API connections and the regional database.

Responsible: ACE and U4E

When: Mid-August 2020

5. Development of the Master Framework, National PRS Prototype and the Regional Database

Based on the development of the technical details above, U4E will develop together with IIEC the actual Master Product Registration Framework that will serve the basis for the National PRS Prototype and Regional Database. The software will be developed with a focus on energy-efficient room air conditioners, residential refrigerators and lighting as those are part of the U4E focus products. Once developed, the framework can easily be expanded to other products during implementation into a National PRS.

Subsequently, the regional database which will be a simplified version of the PRS prototype and which will gather the data from all national databases, will also be developed.

At this point all countries which keep their existing systems shall provide the application programming interface (API) credentials to connect the regional database to the country's product data.

Action: Development of the master product registration framework, national product registration prototype and the regional product registration database

Objective: Development of the databases

Responsible: U4E and IIEC with support from ACE for the master framework, national PRS prototype and regional database. Each country for their own systems' API credentials.

When: December 2020 for the master framework, national PRS prototype and API credentials. January 2020 for the regional product registration database

6. Testing of the National PRS Prototype and Regional Database

Once the software had been developed, it needs to be tested to ensure that the databases run smoothly once implemented. The testing includes elimination of potential bugs and refinement of database functions or other final user circumstances.

Action: Ensuring that the databases perform according to requirements, connection to existing PRS is functional and the national PRS prototype meets the needs of the country/ies.

Objective: Field-testing of the database

Responsible: U4E and IIEC in coordination with countries and with support from ACE

When: February 2021

7. Call with EE&C-SSN Representatives to Validate Databases

As soon as the final version of the prototype product registration database and the regional database had been completed, U4E and ACE will hold a call with the country representatives to validate both databases. Also, the countries which will keep their own product registration system should participate actively at this online meeting as they will have the possibility to access the regional database and verify the product data available.

Action: Validation of the databases

Objective: Ensuring consensus on the databases

Responsible: U4E and IIEC in coordination with countries and with support from ACE

When: March 2021

8. Implementation and Handover of the Prototype & Regional Database

As a final step, the countries will take over the responsibility for the developed databases, as follows:

- Countries that do not have a product registration system in place implement the prototype product registration databases in their preferred production environment and start maintenance activities.
- Countries that have their own product registration system may connect to the regional database via API to access regional product data.
- At the regional level, the regional database will be taken over by ACE.

Once the database has been implemented, additional questions may appear. To address those questions the in-country stakeholders should have access to additional training. This might be, for example, a webinar that can be held by U4E and ACE.

Action: Implementation of the above steps

Objective: Final handover of the databases and connection by all countries

Responsible: ACE with support from U4E

When: April 2021

Annex 1

Summary of the Proposed Product Registration Database Model

(a combination of options A and B)

The following section describes in more detail the final situation if option A and B would be applied along with the different software components indicated in the roadmap.

Master Product Registration Framework

The Master PRS Framework is a software source code that contains the core functionalities of an operational product registration database.

These include general data schema user roles, user management and access rights, reporting features and general business logic (product registration process, product life-cycle, MV&E activities, etc). It also includes a communication interface (API) to be able to submit product data to external applications.

The framework components are developed in a modular fashion, which allows the implementation into national PRS prototypes with limited effort. For example, the specific data requirements and product eligibility criteria for each product type will be defined around the concept of “Legislations”, which in turn are defined according to “Testing Standards”. For product types already defined in the framework, the adaptation to a country-specific product registration database means updating the respective data models, data entry forms and, if needed, the Testing Standards, while keeping most of the business logic intact.

The Master PRS Framework will be developed under a web application framework such as ASP.NET Core, JEE or a PHP framework. As such, it is readily usable by software developers but not the general public. At the finalization of the project, the source code will be available to the various countries under a permissive free software license. This means that the Master PRS Framework may be utilized by the relevant IT department or private software companies to develop customized solutions with very few licensing restrictions.

National Product Registration Database Prototype

The National Product Registration Database Prototype is an implementation of the Master Product Registration Framework to a specific country. The implementation takes into account specific legislation aspects such as product sub-categories, Minimum Energy Performance Standard thresholds, Label categories, etc.

The National PRS Prototype will use the already embedded communication interface to transmit product data to the Regional Database.

Once the prototype development is completed, it will be deployed in web-servers so it is in a usable format for the general public and the various user types (government officials, manufacturers/importers, etc). The exact infrastructure where it will be deployed (on-site or cloud based servers) will be decided together with the relevant department of the country. The operation and maintenance of the system after handover to the relevant country will be performed by the country itself.

Regional Database

The regional database is another implementation of the Master Product Registration Framework. The purpose of the regional database is to serve as a centralized repository with information of products registered in the ASEAN countries.

The availability of this data will support MV&E activities in the various countries, as it will include MV&E actions performed by the countries on registered products, product testing reports which may be used for cross-examination, etc. The communication interface (API) embedded in the Regional Database will also be available for the countries to access regional product data with their own PRS, if they wish to do so.

The regional database will consist of a heavily simplified version of the master product registration framework. It will keep the general data models, basic user roles and web forms. Functionalities such as new product registration, product lifecycle, etc will be disabled, as these activities will be performed by the individual countries in their respective national product registration databases.

It will include a limited number of additional features such as connection to external product registration systems for retrieval of data.

Once the regional database is developed, it will be deployed in web-servers so it is in a usable format for the ASEAN countries, including guidelines on how to manage the entire registration database process. The operation and maintenance of the database after handover to the relevant country will be performed by ACE.

Existing Country Product Registration Systems

The existing Product Registration Systems from the various countries will continue to operate as of today. The only update required from the countries is to develop a communication interface (API) so that the Regional Database is able to access country data in an automatic way and make it available to the other countries for MV&E activities. Due to the varied ecosystem of existing PRS and the previous relationship with the software developers, the development of these communication interfaces should be performed by the countries.

The chart below represents the interactions between the various systems as well as their development and operation & maintenance phases.

