

Prototype Product Registration System

Prototype for Air Conditioners and Refrigerators



For more information about this document or other energy-efficient appliances topics, contact:

UN Environment - United for Efficiency

Economy Division

Energy and Climate Branch

1 Rue Miollis, Building VII

75015, Paris

FRANCE

Tel: +33 (0)1 44 37 14 50

Fax: +33 (0)1 44 37 14 74

E-mail: u4e@unep.org

<http://united4efficiency.org/>

Introduction

THIS PROTOTYPE IS PART OF A SERIES OF TOOLS OF UNITED FOR EFFICIENCY ON PRODUCT REGISTRATION SYSTEMS.

OTHER TOOLS IN THIS SERIES INCLUDE:



PROTOTYPE



GUIDANCE NOTES

This document provides a Prototype Product Registration System for cooling products developed by the UN Environment United for Efficiency (U4E) initiative.

The prototype evolved from a previous version on lighting that was developed in 2017 within the en.lighten initiative Southeast Asia and the Pacific Monitoring, Verification and Enforcement Project. The current U4E initiative arose from the en.lighten initiative and broadens the scope of targeted products from only lighting to four other appliances, including air conditioners and refrigerators.

The ready to use prototype is targeted at policymakers who are considering a framework to transition to cooling products that have higher energy efficiency and use lower global warming potential (GWP) refrigerants. The system is based on global best practices and contains the essential elements of a registration system, including user input forms, data tables and output reports. The scope of the prototype is air conditioners, refrigerators, refrigerator-freezers, and freezers used commonly in residential and commercial applications. Policymakers may consider to use this prototype as a whole or in part for the development of their Product Registration System.

This prototype has been based on:

Refrigerators/Freezers: Model regulations developed as a supplement to the U4E Refrigerator Policy Guide, “Accelerating the Global Adoption of Energy-Efficient and Climate-Friendly Refrigerators.”

Air Conditioners: Model regulations developed as a supplement to the U4E Air Conditioner Policy Guide, “Accelerating the Global Adoption of Energy-Efficient and Climate-Friendly Air Conditioners.”

More information on the development of a Product Registration System is moreover provided by a series of guidance notes explaining in detail how to plan, set up and implement such a system. The annex of this document provides besides an information on Product Registration Systems in other countries.

Structure of the Prototype

The prototype provides forms for both air conditioners and refrigerator/freezers following the same structure.

The application is initiated first by specifying the product category to be registered and the applicable regulatory standard that may apply. In the following, six different sections have to be completed by the applicant:

- Details of the applicant
- Details of the product
- Key test details and results
- Performance claims
- Facility to upload documents
- Fees payable (if any) and an applicant declaration

A schematic of the process is shown in Figure 1 below:

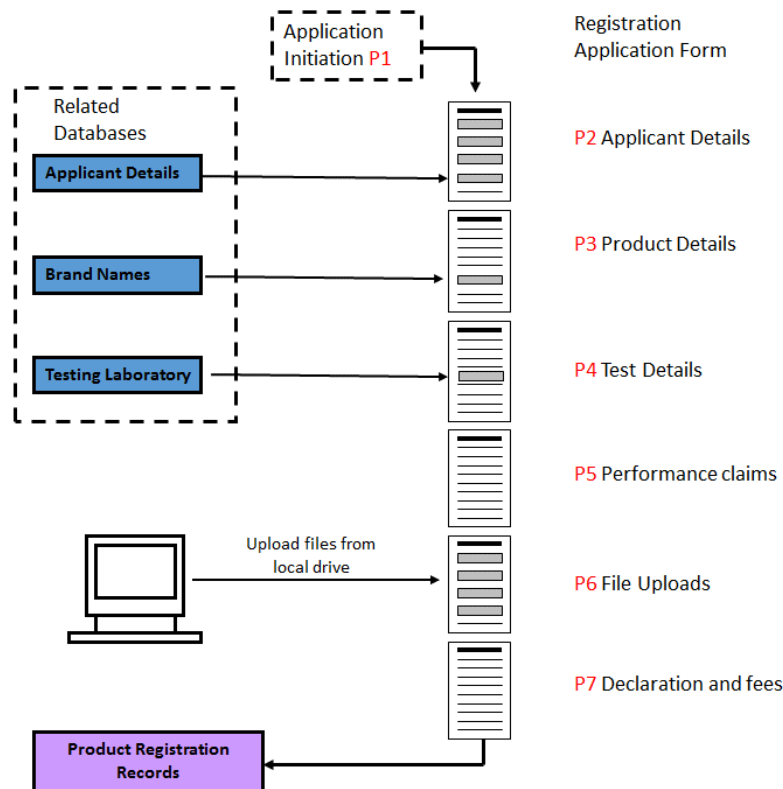
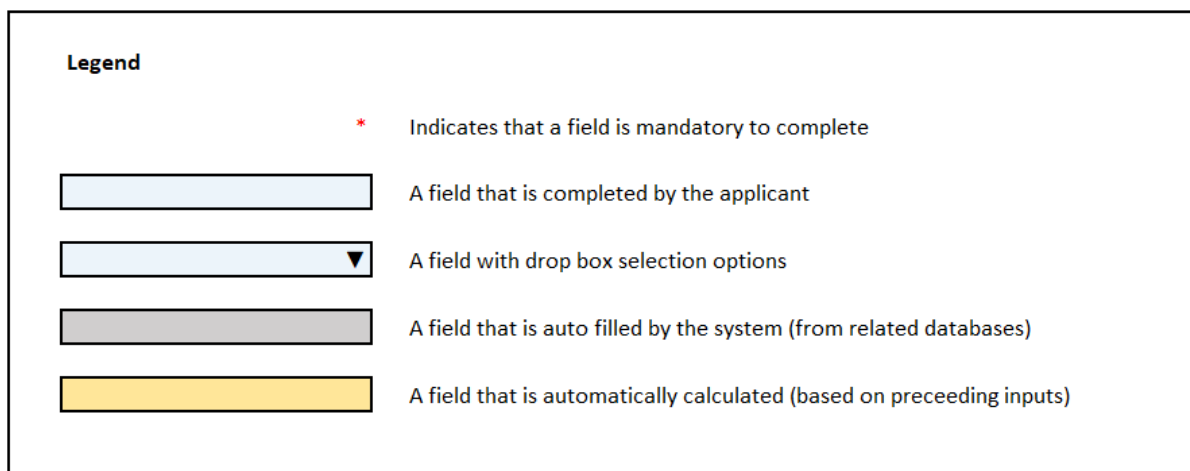


Figure 1: Schematic of Prototype Product Registration Form

During the completion in a live system many of the fields which have to be completed in the above mentioned forms would be auto-completed or auto-calculated by the system or would provide the user with a tailored set of options to choose from (picklist). Such features save the applicant time and improves consistency and accuracy of applications.

In the forms hereafter the following scheme is used:



Note: The fields with a red star are mandatory fields.

Prototype

The following two sections in this document present the proposed prototype product registration application forms.

The initiation page for both products is the same and would appear as shown below in Figure 2.

U4E United for Efficiency

Sample Product Registration Form

[Logout >](#)

Home > Registrations > Initiation

Product Registration Initiation

Initiation

Country where applicant is applying for registration *

Select the type of product you wish to register *

Energy performance standard

[Save and Continue >>](#)

An Initiative of UN Environment Privacy Copyright Site Map

Figure 2: Product Registration Initiation Page (Page 1)

The following sections are set up individually for refrigerators and air conditioners.

Refrigerators and Freezers


Below is page 2 of the application form for refrigerators which requires the applicant to provide administrative and contact information. The fields are generally auto completed based on stored data relating to the applicant's details (which had been provided by the applicant when they created their account).

The screenshot displays the 'Sample Product Registration Form - Refrigerators' interface. At the top left is the U4E logo with the tagline 'United for Efficiency'. The main title is 'Sample Product Registration Form - Refrigerators', and a 'Logout >' button is in the top right. A breadcrumb trail reads 'Home > Registrations > Application forms > Refrigerators', and the 'Record ID: PR000022' is shown on the right. The 'Applicant Details' section is the main focus, featuring a 'Form Navigation' sidebar with steps 1-6. Step 1, 'Applicant Details', is active. The form fields include: 'Company name*' (text input), 'Role of the applicant*' (dropdown menu), 'Contact persons name*' (text input), 'Contact persons title' (text input), 'Postal address*' (text input), 'Town/City*' (text input), 'State/Province' (text input), 'Country*' (text input), 'Postal code' (text input), 'Contact phone*' (text input), 'Contact mobile*' (text input), 'Contact fax' (text input), and 'Contact Email*' (text input). At the bottom, there are three buttons: '<<Previous Page', 'Save and Continue >>', and 'Save and Exit'. The footer contains 'An Initiative of UN Environment', 'Privacy', 'Copyright', and 'Site Map' links.

Figure 3: Applicant Details – Refrigerators (Page 2)

In a third step, information about the product itself is asked (figure 4). General details such as the brand name and model number need to be provided manually which then creates automatically a QR code in the yellow field below. Additionally, further information about the appliance specific details (e.g. the category of refrigerating appliance, whether it is built –in or not, whether it is frost-free, ...) need to be

selected by a drop-down box system or filled in manually. The available selections included in the drop-down box system will depend to some degree on the testing standard preselected at the beginning of the process. According to the data input by the user in relation to individual compartment volumes, the total frozen and fresh food volumes of a refrigerator will be calculated automatically (yellow fields).



Sample Product Registration Form - Refrigerators

[Logout >](#)

Home > Registrations > Application forms > Refrigerators
Record ID: PR000022

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ Declaration and Fees

Product Details

General Details

Brand name*	<input type="text"/>	
(Select from dropdown list - if your brand does not appear in the dropdown list then select "Add Another Brand")		
	Add Another Brand	
Model number/s*	<input type="text"/>	Add >
Global trade item number	<input type="text"/>	
Manufacturers name*	<input type="text"/>	
Country/s of manufacture*	<input type="text"/>	Add >
Date of product availability*	<input type="text"/>	
Website address for further product information	<input type="text"/>	
QR code		

Appliance Specific Details

Applicable climate class of refrigerator*	<input type="text" value="Temperate (N)"/>	
Type of refrigerating appliance*	<input type="text"/>	▼
Is the refrigerating appliance frost free?	<input type="text" value="Yes"/>	▼
Is the appliance a built-in type?*	<input type="text"/>	▼
Category of refrigerator*	<input type="text"/>	▼
Appliance width*	<input type="text"/>	mm
Total number of compartments*	<input type="text"/>	
Compartment Details*	<input type="text" value="Compartment 1"/>	Add >
Compartment type	<input type="text"/>	▼
Design operating temperature	<input type="text"/>	C
Net storage volume	<input type="text"/>	(lLitres)
Total fresh food volume	<input type="text"/>	(lLitres)
Total frozen food volume	<input type="text"/>	(lLitres)
Adaptive defrost?*	<input type="text"/>	▼
Automatic Icemaker?*	<input type="text"/>	▼

<<Previous Page


Save and Continue >>

Save and Exit

An Initiative of UN Environment
Privacy
Copyright
Site Map

Figure 4: Product Details – Refrigerators (Page 3)

In the fourth step the applicant is required to provide information regarding the test details (which must be commensurate with the relevant countries regulations) followed by the key test results for the product. Generally, at a given time there is only a single approved test method permitted by regulators and therefore this value can be preloaded into the form.



Sample Product Registration Form - Refrigerators

Logout >

Home > Registrations > Application forms > Refrigerators
Record ID: PR000022

Test Details

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ Declaration and Fees

Testing Details

Test method*

Test laboratory*
 (Select from dropdown list - if your lab. does not appear in the dropdown list then select "Add Another Laboratory") Add Another Laboratory

Test laboratory accreditation*

Test Report or CAR

	Report No 1
Test Report/Certificate Number/s	<input style="width: 100%;" type="text"/>
Test Report Date/s	<input style="width: 100%;" type="text"/>
Serial Number of Test Unit/s	<input style="width: 100%;" type="text"/>

Add >

Test Results

Adjusted volume (AV)* Litres

24 hour energy consumption (16C)* Wh/24hours

24 hour energy consumption (32C)* Wh/24hours

Weighted energy consumption* Wh/24hours

Annual energy consumption* kWh/year

<<Previous Page
Save and Continue >>
Save and Exit

An Initiative of UN Environment
Privacy
Copyright
Site Map

Figure 5: Test Details – Refrigerators (Page 4)

Where more than one test method is permitted then the user would need to select the one they used from a drop-down box. Subsequently, in the test results section fields such as the adjusted volume, weighted


and annual energy consumption are calculated automatically. (More information on testing can be found in the guidance note 2.)

In the fifth step, the applicant is asked to provide information on performance claims (see figure 6 below). Firstly the annual energy consumption is inserted. Based on this value, the system then determines if the product is compliant or non-compliant with the regulations taking into account other factors previously input such as the type and volume of the refrigerator. (Note: The fields on energy efficiency index and rating are only applicable if the product is to be energy labelled.) Next, the applicant has to confirm if the storage temperature of the product complies with the requirements in the standard.

Further, performance details regarding the refrigerant are asked. The system calculates automatically the global warming potential (GWP) and ozone depleting substances (ODS) on the basis of the refrigerant type and the blowing agent nominated by the applicant (e.g. HC 600a, R32, cyclopentane, etc.) and defines if the refrigerant/blowing agent meets the performance requirements.

In the sixth step (figure 7), files can be attached to the application. An upload of the test report is usually mandatory, whereas other documents such as a letter of the authority, company certificates, images of energy rating labels or the product itself, etc may be either mandatory or voluntary to upload.

Finally (figure 8), the application must be reviewed and a declaration statement has to be confirmed. If any fees are applicable, then details of their payment must also be included in this final step (alternatively an online payment system could be used).



Sample Product Registration Form - Refrigerators

Logout >

Home > Registrations > Application forms > RefrigeratorsRecord ID: PR000022

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ Declaration and Fees

Performance Claims

Energy Performance

Claimed annual energy consumption* kWh/year

Maximum permitted annual energy consumption* kWh/year

Does this product meet the min. energy performance requirements?*

Does this product meet the top performance tier requirements?*

Energy efficiency index*

Energy efficiency rating*

Does this product comply with the storage temperature test requirements within the standard?

Refrigerant Performance

Refrigerant type*

Refrigerant GWP*

Refrigerant ODP*

Does the refrigerant meet the min. performance requirements?*

Blowing Agent Performance

Blowing agent type*

Blowing agent GWP*

Blowing agent ODP*

Does the blowing agent meet the min. performance requirements?*

<<Previous PageSave and Continue >>Save and Exit

An Initiative of UN EnvironmentPrivacyCopyrightSite Map

Figure 6: Performance Claims - Refrigerators (Page 5)



Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ **File Uploads**
- ⑥ Declaration and Fees

File Uploads

Applicants must upload copies of documents as noted below. Simply click on the "Browse" button below each item. Locate and upload the applicable document/s.

Test Report *

File Name	File Size	Note	
			View Delete

[Browse](#)

Letter of Authority

File Name	File Size	Note	
			View Delete

[Browse](#)

Other Uploads (optional)

File Name	File Size	Note	
			View Delete


[Browse](#)

[<<Previous Page](#)

[Save and Continue >>](#)

[Save and Exit](#)

Figure 7: File Uploads – Refrigerators (Page 6)



Sample Product Registration Form - Refrigerators

Logout >

Home > Registrations > Application forms > Refrigerators Record ID: PR000022

Declaration and Fees

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ Declaration and Fees

Fees

The following fee is applicable

NOTE:
To pay this fee electronically left mouse click on the "Pay Fee" Button below. If you intend to, or have already paid the required fee directly to the finance section of the department insert the receipt number issued to you in the field below.

[Pay Fee>>](#)

Receipt Number (if applicable)

Declaration

At the time of making this application I declare that I:

- am the Authorised Officer for the entity submitting the application;
- am authorised by the applicant to make this application, to deal with all aspects of the registration process for the application and to bind the applicant accordingly;
- take full responsibility for the accuracy and completeness of the material that I have provided as part of this application;
- understand that is an offence to provide false or misleading information in this application;
- understand that by submitting this application that I make this declaration.

By ticking the checkbox below you confirm this declaration:

[<<Previous Page](#) [Save and Exit >>](#) [Submit Application >>](#)

An Initiative of UN Environment Privacy Copyright Site Map

Figure 8: Declaration and Fees – Refrigerators (Page 7)

Air Conditioners

As for the refrigerators, the forms for air conditioners follow the same format and principles.

After having completed the application initiation page, administrative and contact information about the applicant has to be provided (figure 9). The fields are generally auto completed based on stored data relating to the applicant's details.

The screenshot displays a web form titled "Sample Product Registration Form - Air-conditioners". At the top left is the U4E logo (United for Efficiency) and the title. At the top right is a "Logout >" button. Below the title is a breadcrumb trail: "Home > Registrations > Application forms > Refrigerators" and a "Record ID: PR000022".

The main content area is titled "Applicant Details". On the left is a "Form Navigation" sidebar with six items: 1 Applicant Details (highlighted), 2 Product Details, 3 Test Details, 4 Performance Claims, 5 File Uploads, and 6 Declaration and Fees.

The "Applicant Details" section contains the following fields:

- Company name* (text input)
- Role of the applicant* (dropdown menu)
- Contact persons name* (text input)
- Contact persons title (text input)
- Postal address* (text input)
- Town/City* (text input)
- State/Province (text input)
- Country* (text input)
- Postal code (text input)
- Contact phone* (text input)
- Contact mobile* (text input)
- Contact fax (text input)
- Contact Email* (text input)

At the bottom of the form are three buttons: "<<Previous Page", "Save and Continue >>", and "Save and Exit".


The footer contains the text "An Initiative of UN Environment" on the left, and "Privacy", "Copyright", and "Site Map" on the right.

Figure 9: Applicant Details – Air Conditioners (Page 2)

Next, an information about the product itself is asked (figure 10). General details such as the brand name and model number need to be provided manually which then creates automatically a QR code in the yellow field below. Additionally, further information about the appliance specific details (e.g. type of unit, available operating modes, rated input power, rated output capacity etc.) need to be selected by

a drop-down box system or filled in manually. The available selections included in the drop-down box system will depend to some degree on the testing standard preselected at the beginning of the process.

Fourth (figure 11), the applicant is required to provide information regarding the test details (which must be commensurate with the relevant countries regulations) followed by the key test results for the product. The test results section for air conditioners is more extensive than the one for refrigerators as details on both cooling and heating (if applicable) have to be provided. (More information on testing can be found in the guidance note 2.)



Sample Product Registration Form - Air-conditioners

[Logout >](#)

Home > Registrations> Application forms> Refrigerators
Record ID: PR000022

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ Declaration and Fees

Product Details

General Details

Brand name*	<input type="text"/>	
(Select from dropdown list - if your brand does not appear in the dropdown list then select "Add Another Brand")		
	Add Another Brand	
Model number/s*	1 <input type="text"/>	Add >
(include both indoor and outdoor unit model numbers for split systems)		
Global trade item number	<input type="text"/>	
Manufacturers name*	<input type="text"/>	
Country/s of manufacture*	1 <input type="text"/>	Add >
Date of product availability*	<input type="text"/>	
Website address for further product information	<input type="text"/>	
QR code	<input style="background-color: #FFD700;" type="text"/>	


Appliance Specific Details

Applicable climate class of air-con.*	<input type="text" value="Group 1: 2A Hot Humid"/>	▼
Available operating modes *	<input type="text" value="Cooling and Heating"/>	▼
Type of unit *	<input type="text" value="Single split heat pump"/>	▼
Condenser cooling medium? *	<input type="text" value="Air"/>	▼
Does the air-conditioner have variable output capacity (inverter driven)? *	<input type="text" value="Yes"/>	▼
COOLING MODE		
Rated Input Power - Cooling *	<input type="text"/>	kW
Rated Output Capacity - Cooling *	<input type="text"/>	kW
Rated EER *	<input type="text"/>	kW/kW
HEATING MODE		
Rated Input Power - Heating *	<input type="text"/>	kW
Rated Output Capacity - Heating *	<input type="text"/>	kW
Rated COP *	<input type="text"/>	kW/kW

[<<Previous Page](#)
[Save and Continue >>](#)
[Save and Exit](#)

An Initiative of UN Environment
Privacy
Copyright
Site Map

Figure 10: Product Details - Air Conditioners (Page 3)



Sample Product Registration Form - Air-conditioners

Logout >

Home > Registrations> Application forms> Refrigerators
Record ID: PR000022

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ Declaration and Fees

Test Details

Testing Details

Test method*	ISO 16358:2013
Test laboratory* <small>(Select from dropdown list - if your lab. does not appear in the dropdown list then select "Add Another Laboratory")</small>	▼
	Add Another Laboratory
Test laboratory accreditation*	▼
Test Report or CAR	Report No 1
Test Report/Certificate Number/s	Add >
Test Report Date/s	
Serial Number of Test Unit/s	

Test Results

COOLING MODE

Tested Input Power - Cooling Mode *		kW
Tested Capacity - Cooling Mode *		kW
Tested EER *		kW/kW
Cooling seasonal energy consumption (CSEC) *		Wh
Cooling seasonal total load (CSTL) *		Wh

HEATING MODE

Tested Input Power - Heating Mode *		kW
Tested Capacity - Heating Mode *		kW
Tested COP *		kW/kW
Heating seasonal energy consumption (HSEC) *		Wh
Heating seasonal total load (HSTL) *		Wh
Annual performance factor		

<<Previous Page
Save and Continue >>
Save and Exit

An Initiative of UN Environment
Privacy
Copyright
Site Map

Figure 11: Test Detail- Air Conditioners (Page 4)

In a next step information on performance claims is to be provided.

Firstly the annual performance factor (as for example SEER, ESEER or IPLV, depending on the standard which is selected previously) is inserted. Based on this value, the system then determines if the product is compliant or non-compliant with the regulations taking into account other factors previously input such as the type and output capacity of the air-conditioner (Note: The fields on the energy efficiency index and rating are only applicable if the product is to be energy labelled.)

U4E **Sample Product Registration Form - Air-conditioners** [Logout >](#)

Home > Registrations > Application forms > Refrigerators Record ID: PR000022

Performance Claims

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ Declaration and Fees

Energy Performance

Claimed annual performance factor* kW/kW

Maximum permitted annual performance factor* kW/kW

Does this product meet the min. energy performance requirements?* Yes

Does this product meet the top performance tier requirements?* No

Energy efficiency index*

Energy efficiency rating*

Refrigerant Performance

Refrigerant type* ▼

Refrigerant GWP*

Refrigerant ODP*

Does the refrigerant meet the min. performance requirements?* Yes


[<<Previous Page](#)
[Save and Continue >>](#)
[Save and Exit](#)

An Initiative of UN Environment Privacy Copyright Site Map

Figure 12: Performance Claims – Air Conditioners (Page 5)

Further, performance details regarding the refrigerant are asked. The system calculates automatically the global warming potential (GWP) and ozone depleting substances (ODS) on the basis of the refrigerant type nominated by the applicant (e.g. HC 600a, R32, etc.) and if the refrigerant meets the performance requirements.

In the sixth step (figure 13), files can be attached to the application. Upload of the test report is usually mandatory, whereas other documents such as a letter of the authority, company certificates, images of energy rating labels or the product itself, etc may be either mandatory or voluntary to upload.



Sample Product Registration Form - Air-conditioners

[Logout >](#)

Home > Registrations > Application forms > Refrigerators Record ID: PR000022

Form Navigation

- 1 Applicant Details
- 2 Product Details
- 3 Test Details
- 4 Performance Claims
- 5 File Uploads**
- 6 Declaration and Fees

File Uploads

Applicants must upload copies of documents as noted below. Simply click on the "Browse" button below each item, then use the file browser. Locate and upload the applicable document/s.

Test Report *

File Name	File Size	Note	
			View Delete

[Browse](#)

Letter of Authority

File Name	File Size	Note	
			View Delete

[Browse](#)

Other Uploads (optional)

File Name	File Size	Note	
			View Delete


[Browse](#)

[<<Previous Page](#) [Save and Continue >>](#) [Save and Exit](#)

An Initiative of UN Environment Privacy Copyright Site Map

Figure 13: File Uploads – Air Conditioners (Page 6)

Finally (figure 14), the application must be reviewed, and a declaration statement has to be confirmed. If any fees are applicable, then details of their payment must also be included in this final step (alternatively an online payment system could be used).



Sample Product Registration Form - Air-conditioners

[Logout >](#)

Home > Registrations > Application forms > Refrigerators Record ID: PR000022

Declaration and Fees

Form Navigation

- ① Applicant Details
- ② Product Details
- ③ Test Details
- ④ Performance Claims
- ⑤ File Uploads
- ⑥ **Declaration and Fees**

Fees

The following fee is applicable

NOTE:
To pay this fee electronically left mouse click on the "Pay Fee" Button below. If you intend to, or have already paid the required fee directly to the finance section of the department insert the receipt number issued to you in the field below.

[Pay Fee >>](#)

Receipt Number (if applicable)

Declaration

At the time of making this application I declare that I:

- am the Authorised Officer for the entity submitting the application;
- am authorised by the applicant to make this application, to deal with all aspects of the registration process for the application and to bind the applicant accordingly;
- take full responsibility for the accuracy and completeness of the material that I have provided as part of this application;
- understand that is an offence to provide false or misleading information in this application;
- understand that by submitting this application that I make this declaration.

By ticking the checkbox below you confirm this declaration:

[<<Previous Page](#) [Save and Exit >>](#) [Submit Application >>](#)

An Initiative of UN Environment [Privacy](#) [Copyright](#) [Site Map](#)

Figure 14: Declaration and Fees – Air Conditioners (Page 7)

Annex

Comparison of Product Registration Systems in Selected Countries

As mentioned in the beginning of this document the prototype is based on global best practices of existing product registration systems around the world. Product registration systems have been developed by many countries and vary in both their design and function. They range from a database for managing a basic list of policy-compliant products to complex systems that enable online application, data management and payment functions, as well as driving searchable online product listings and third party mobile phone applications. In this regard, U4E compared several existing system in six countries and three regions, namely:

Country	Product Registration System
Australia and New Zealand (NZ)	E3 Energy Rating Registration Database
Canada	Energy Star
China	Energy Label Product Database
European Union	European product database for energy labelling
IECEE CB Scheme	IEC System of Conformity Assessment Scheme – Online Database
India	Star Label Product Database (more info)
Indonesia	Energi Label / MEMR certification database
South Africa	South African Energy Efficiency Label
The Pacific Community (PIC)	Pacific Appliance Database
Vietnam	Viet Energy Star

The countries and regions were selected based on the following criteria:

- Regional distribution: Coverage includes countries from the EU, North America, Asia, Oceania, India, and Africa, as well as the IECEE CB Scheme.
- Existence of a mature registration system; and
- Availability of information

Apart from the product registration systems in the different countries, the comparison includes also the International Electrotechnical Commission System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE scheme) which intends to cover LED lamps.

The focus of the comparison lies however as the prototype on cooling products (primarily refrigerators and air-conditioners). The comparison includes elements which are common in the product registration systems reviewed, and highlight differences found both in terms of what data is collected and how the registration systems function. The mapping was elaborated along two types of categories, the data collected by the systems (table 1) and the functionality of the different product registration systems (table 2). Both tables include a short description of each of the categories and sub-categories.

Table 1: Categories of data which is collected in the studied product registration systems

Category	Sub-Category	Description
Product ID Code	Unique database record ID Code	Key identifier for a product in the database.
Registration Type	Performance standard/scheme	The system may be applicable to one or more energy efficiency programs or labelling schemes.
	Product type/sub-type	Several different types of products or sub-type of one product can be included.
	Country of registration	Can be set up to accept products tested and approved only within the host country or accept products registered in multiple jurisdictions.
Administrative Details	Applicant/Manufacturer details	For the process or registration the applicant and the manufacturer may be different entities. Records for the company name, contact name and details of the applicant/manufacturer are required.
	Product details	Information about the product, as brand and model name, number, EAN/UPC or QR code, country of manufacture, date of manufacture, technology used (for example motor type), a product photo, annual import/manufacture figures, retail price.
	AC Refrigerant used	Information about the cooling refrigerant used.
	Approved test organisations	Information about the testing laboratory which tested the product.
Product Performance	Testing details	Details on the test standard used, testing conditions and date.
	Test result	The product performance as determined through testing and information on performance data, compliance/non-compliance, and star rating or equivalent.
	Test documentation	Many jurisdictions require documentary evidence to be provided of the testing and associated performance claims made.
	Statement of declaration	The manufacturer is usually required to provide a legal statement that warrants that the product meets all of the requirements of the applicable standards and legislation.

Table 2: Categories of functionality in the studied product registration systems

Category	Sub-Category	Description
Administration	Record management	Functionality to create/manage/track information related to the applicant, manufacturer, product, product testing, testing results, registration status, and any fees and payment details.
	Automated data validation	Automation of the validation of data entered and the approval process.
	Automated communication	For example automated communications on response notifications, action required or reminder emails.

	Payment	Sometimes a fee for registration or label creation is required, here the database tracks associated billing and payment.
Data Output	Consumer information website	A sub-set of database information which is provided publicly to the consumer, it may provide search or filter options and product comparisons.
	Connection of database to mobile/3rd party applications	In some cases the use of configured database information is permitted to be accessed by third parties, this has led to the development of mobile and computer applications that extend the amount and accessibility of consumer information.
	Energy label generation portal	A web portal that enables applicants to print energy labels to place on their products.
	Market surveillance and compliance portal	A separate web portal which is provided as part of the registration system to enable surveillance agents to access records as well record any non-compliance instances identified.
	Regulatory program impact assessment	Information on product benchmarking, analysis of trends, and assessment policy performance and impact.
Data Input	Linkages to other external databases	Potential for data to be sourced from alternative data sources, for example data from other nations or sales and pricing data from retailers.
System Design	Security arrangements	Arrangements for security and confidentiality of the data, which generally follows local legislation or government policies.
	Language support	Functionality to translate the information displayed

The details and results of this study are shown in the table 3 below. A green check mark means that this type of category is included in the product registration system of the country/region whereas a red cross means that the specific category is not included. If a category has none of the symbols or has the note “n/a”, there has been no information available. For practical reasons in some lines several categories are classified together.

Details for each of the countries/regions are available upon request.

Table 3: Comparison of Product Registration Systems in Selected Countries

	Australia & NZ	Canada	China	EU	India	Indonesia	PIC	South Africa	Vietnam	U4E Prototype	IECEE CB Scheme
Unique database record ID code	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Registration type :											
<ul style="list-style-type: none"> Product Type/Subtype Performance Standard/Scheme 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<ul style="list-style-type: none"> Multiple Countries of Registration 	✓	✗	✗	✓	✗	✗	✓	✗	✗	✓	✗
Administrative Details											
<ul style="list-style-type: none"> Manufacturer/Applicant Product AC Refrigerant Test Organisation 	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note: No information for refrigerant as only for lamps.
Product Performance											
<ul style="list-style-type: none"> Testing details, results and documentation 	✓	✓ n/a testing documentation	✓	✓	✓	✓	✓ n/a testing details	✓	✓	✓	✓
<ul style="list-style-type: none"> Statement of declaration 	✓		✓			✓	✓	✓	✓	✓	✓
Administration											
<ul style="list-style-type: none"> Record Management 	✓		✓	✓	✓		✓	✓	✓	✓	✓

<ul style="list-style-type: none"> Automated data validation and communication 	✓		✓	✓ n/a communication	✓ n/a data validation		✓	✓	✓	✓	
<ul style="list-style-type: none"> Payment 	✓		✓		✓	✓	✓	✓		✓	
Data Output											
<ul style="list-style-type: none"> Consumer information website 	✓	✓	✓	✓	✓	✓	✓	✓	✓	In development	✗
<ul style="list-style-type: none"> Market surveillance and compliance portal 	✓		✓	✓	✓			✓		✓	✗
<ul style="list-style-type: none"> Regulatory program impact assessment 	✓			✓	✓		✓	✓	✓	✓	✓
<ul style="list-style-type: none"> Connection of database to mobile /3rd party applications 	✓	✗	✓	✗	✓		✗	✗	✗	In development	
<ul style="list-style-type: none"> Energy label generation portal 	✗	✗		✓	✗		✗	✗	✗	In development	✗
Data Input: Linkages to external databases	✗	✗		✗	✗		✓	✗		In development	
System design:											
<ul style="list-style-type: none"> Privacy/Security arrangements 	✓		✓	✓			✓	✓	✓	In development	✓
<ul style="list-style-type: none"> Language Support 	✓	✓		✓	✗		✗	✓	✓	✓	✗

*Empty cells n/a information