

EEPLIANT3

PUBLISHABLE REPORT



What do the results tell us about
product compliance with EU
ecodesign and energy labelling
legislation?

Energy Efficiency Compliant Products 2018
EU-funded Concerted Action



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Watch the EEPLIANT3 movie on YouTube:
https://www.youtube.com/watch?v=I_4EJ4-ZOW8

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DISCLAIMER

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ABBREVIATIONS

ADCO	Administrative Cooperation Group
AI	Artificial Intelligence
CE	European Conformity (Conformité Européenne)
CINEA	European Climate, Infrastructure and Environment Executive Agency
DG	Directorate-General of the European Commission
DG ENER	Directorate-General for Energy
EC	European Commission
EEA	European Economic Area
EEl	Energy Efficiency Index
EEPLIANT1	Energy Efficiency Compliant Products 2014
EEPLIANT2	Energy Efficiency Compliant Products 2016
EEPLIANT3	Energy Efficiency Compliant Products 2018
EEPLIANT4	Energy Efficiency Compliant Products 2023
EN	European Standards
EPREL	European Product Registry for Energy Labels
EU	European Union
GA	Grant Agreement
H2020	Horizon 2020 EU Framework Programme for Research and Innovation
ICSMS	Information and Communication System for Market Surveillance
LED	Light-emitting diode
LHS	Local space heaters
IT	Information Technology
MS	Member State
MSA	Market Surveillance Authority
NGO	Non-Governmental Organisation
OJ	Official Journal of the European Union
RAF	Rapid Advice Forum
RVU(s)	Residential Ventilation Units
SEC	Specific Energy Consumption
SPI	Specific Power Input
TWh	Terawatt hour
WP(s)	Work Package(s)

GLOSSARY¹

CE MARKING: CE stands for "Conformité Européenne", the French term for "European Conformity". The CE mark means that the manufacturer takes responsibility and declares that a product sold in the European Economic Area (EEA) has been assessed to meet all applicable safety, health, performance, and environmental requirements.

EU DECLARATION OF CONFORMITY: At the end of the conformity assessment process the manufacturer confirms compliance by drawing up an EU Declaration of Conformity (or 'Declaration of Conformity' or 'DoC') and affixing the CE marking on the product. The EU declaration of conformity is a mandatory document signed by the manufacturer or authorised representative of a product to declare that the product complies with all applicable safety, health, performance, and environmental requirements. The EU Declaration of Conformity must be issued before the product is placed on the EU market.

ECODESIGN REQUIREMENTS: any requirement in line with the Ecodesign Directive 2009/125/EC for improving the environmental performance or for the supply of information on environmental aspects of energy-related products, such as household appliances, information and communication technologies. The directive establishes a framework for determining ecodesign requirements for these products.

ECONOMIC OPERATOR: the manufacturer, authorised representative, importer, distributor, fulfilment service provider, or any other natural or legal person who is subject to obligations in relation to the manufacture of products, making them available on the market or putting them into service in accordance with the relevant Union legislation.

ENERGY LABEL: graphic diagram affixed to products sold in the EU, either in printed or

electronic form, including a closed scale using letters from A to G, each letter representing a class and each class corresponding to energy efficiency levels, in seven different colours from dark green to red, in order to inform customers about energy efficiency and energy consumption.

ENERGY-RELATED PRODUCT: a product with an impact on energy consumption during use which is placed on the market or put into service, including parts.

CORRECTIVE ACTION: any action/measure taken by an economic operator to bring any non-compliance to an end where required by a market surveillance authority or on the economic operator's own initiative.

EPREL DATABASE: The European Product Registry for Energy Labels (EPREL - eprel.ec.europa.eu/screen/home) is an EU-wide database set up and operated by the European Commission that enables consumers to compare the energy efficiency class and other properties of different product models.

HARMONISED STANDARD: a European standard developed by a recognised European Standardisation Organisation defining the technical specifications used to assess/verify that a product complies with the mandatory ecodesign and energy labelling requirements.

ICSMS DATABASE: The Information and Communication System on Market Surveillance (ICSMS - webgate.ec.europa.eu/icsms/) is an IT platform set up and managed by the European Commission which enables the exchange of information between EU-27 market surveillance authorities on non-food product inspections and their results. ICSMS has an internal and a public area. Consumers can access ICSMS' public area to check whether a product model has been inspected and if it is compliant.

INSPECTION: any market surveillance activity aimed at verifying the compliance of products

¹ Primarily based on Regulation (EU) 2017/1369, Directive 2009/125/EC, Regulation (EU) 2019/1020, the PROSAFE Book of Best Practices

(https://prosafe.org/images/publications/EMARS_Book_of_Best_Practices_Annexes.pdf), and the EEPLIANT3 Glossary of Terms used In Ecodesign and Energy Labelling Market Surveillance.

against the requirements and conditions as defined in the legislation and standards.

LABORATORY VERIFICATION TESTING: testing of products in a laboratory according to the verification procedure set out in the product specific Regulations and following the applicable harmonised standards, transitional methods, or testing conditions described in the Regulations.

MARKET SURVEILLANCE: the activities carried out and measures taken by market surveillance authorities to ensure that products comply with the requirements set out in Union legislation.

MARKET SURVEILLANCE AUTHORITY: an authority designated by an EU Member State as responsible for carrying out market surveillance in the territory of that Member State.

MODEL: a version of a product of which all units share the same technical characteristics relevant for the label and the product information sheet and the same model identifier.

NON-COMPLIANCE: any failure to comply with any requirement under the Union legislation.

PRODUCT: a type or sub-type of a product within a product group/class. For example, electric or gas-fuelled local space heaters are sub-types of the local space heaters family product group.

PRODUCT DOCUMENTATION: any type of (mandatory and/or non-mandatory) documentation made available in any form by the manufacturer/supplier of a product model and accompanying that model.

PRODUCT INFORMATION SHEET: a standard document containing relevant information relating to a product, in printed or electronic form.

PRODUCT PAGE: a product page is a page on a retailer or manufacturer website where potential customers learn about a product's features, pricing, and other product-related information, and through which they can buy the product.

RISK-BASED APPROACH/SAMPLING: the most common approach among market surveillance authorities, used to focus/optimize their limited

resources on those products and models considered as presenting a higher risk with respect to the public interests protected by the legislation (e.g., the environment).

SAMPLES: Different units of the same (or equivalent) model. For example, in order to verify the compliance of a model, market surveillance authorities can test three (3) samples/units belonging to that model in a laboratory (what is known as “triple-testing”).

TECHNICAL DOCUMENTATION: mandatory documentation compiled by the manufacturer that enables market surveillance authorities to assess the conformity of a product with the applicable ecodesign and energy labelling requirements. A technical documentation file contains specific product information including, for example, a description of the product and its intended use, the results of relevant environmental assessment studies carried out by the manufacturer, information and elements of the product design specification relating to environmental design aspects of the product, the results of measurements on the ecodesign requirements carried out.

TRIPLE TESTING: the testing of three additional samples/units of the same product model, if the testing of the first unit has revealed a suspected non-compliance.

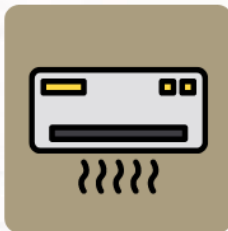
EXECUTIVE SUMMARY

PROJECT SCOPE

The European Union's (EU) ecodesign and energy labelling rules are now recognised as powerful tools in the EU's commitment to meeting its energy and climate targets.

The EU-funded EEPLIANT3 Concerted Action (www.eepliant.eu) helped deliver the intended economic and environmental benefits of these regulations by verifying the energy performance and compliance of six product categories with a high energy saving potential: **air-conditioners and comfort fans, tumble dryers, water heaters and storage tanks, ventilation units, lighting sources, and local space heaters.**

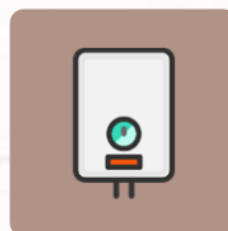
Air conditioners & comfort fans



Tumble dryers



Hot water heaters & storage tanks



Residential ventilation units

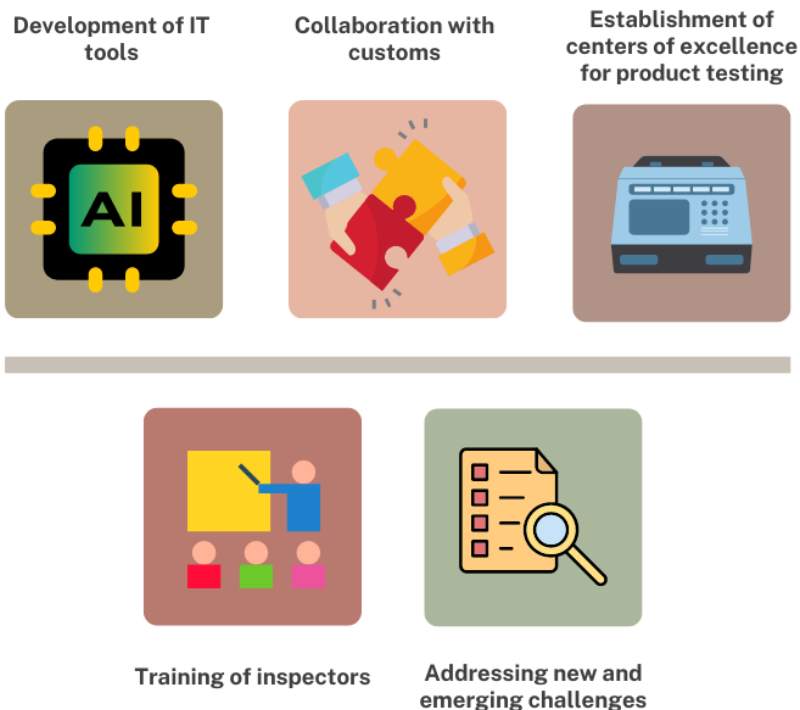


Light sources



Local space heaters

Furthermore, a cluster of five (5) capacity-building activities helped national market surveillance authorities (MSAs) build new skills and expertise, improve collaboration, and harmonise their working practices.



METHODOLOGY

To verify compliance with the EU ecodesign and energy labelling rules, the participating market surveillance authorities carried out a risk-based product sampling and inspected a statistically non-representative sample of product models placed on the EU market, from the six focus product groups of the project.

These product groups were pre-selected following a priority-setting exercise among EU/EEA market surveillance authorities. The goal was to target product sectors with the greatest energy saving potential, with little or no coverage in previous market verification and monitoring activities, complex products, and products covered by new ecodesign and/or energy labelling regulatory requirements.

Checks involved the examination of the product documentation, energy label, Product Information Sheet (PIS), product registration in the European Product Registry for Energy Labelling (EPREL)², and the inspection of retailer and manufacturer websites.

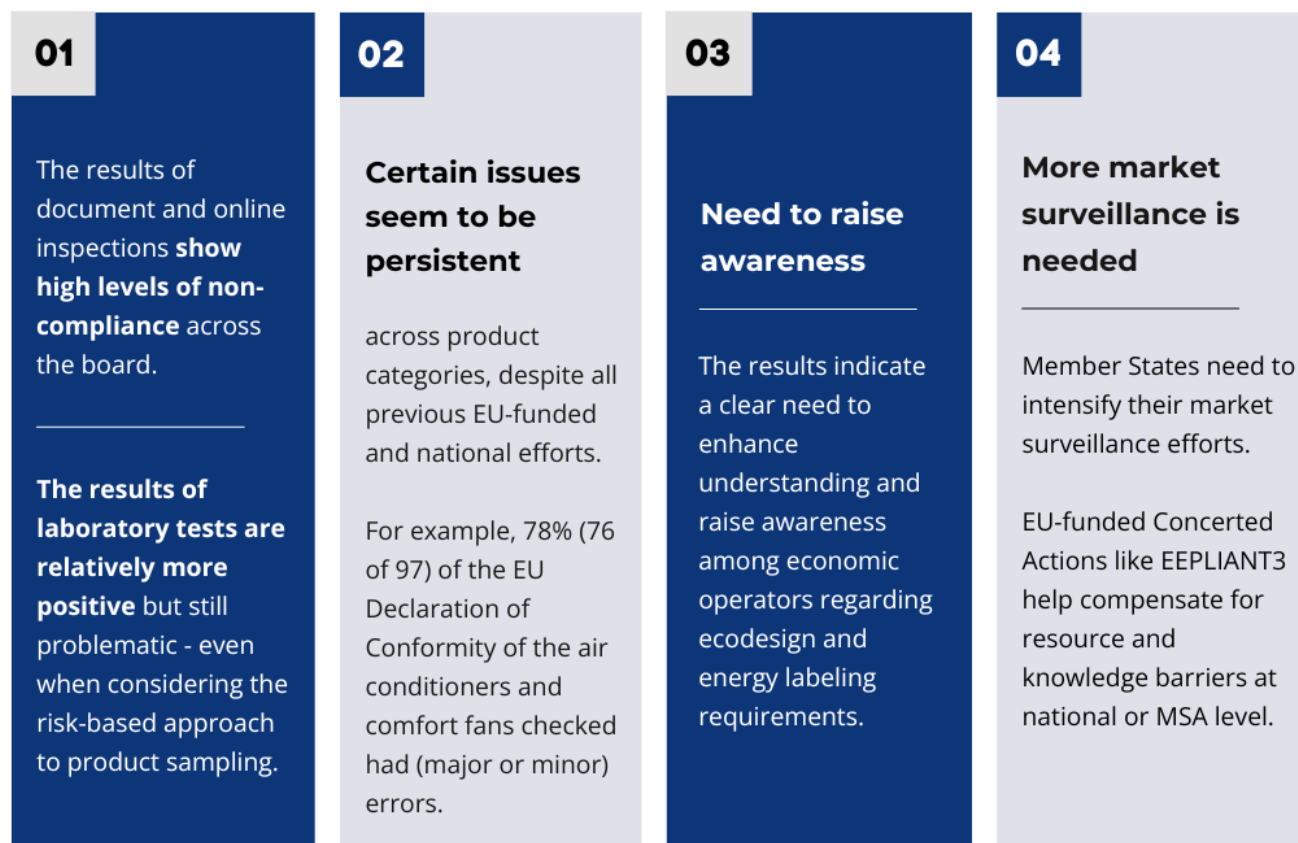
A number of product models that failed document inspections and were deemed to have a high probability of technical non-compliance, were subsequently sent for laboratory testing. The testing was carried out by accredited test bodies in accordance with the applicable harmonised standards.

National market surveillance authorities took appropriate enforcement measures to address all cases of non-compliance revealed through EEPLIANT3's inspections and

² <https://eprel.ec.europa.eu/screen/home>

testing. Enforcement involved an array of measures, from informal contacts, information letters, and warnings to sales bans, withdrawals, fines, and (voluntary) cease of production.

HIGHLIGHTS AND KEY FINDINGS



Below is an overview of the inspection and test results for every product category under investigation.

The total number of inspected or tested product models or web shops is shown in the centre column of each chart. The red bars indicate the observed levels of non-compliance or suspected non-compliance (to confirm suspected non-compliance, three units of a product must be tested). Blue bars, on the other hand, show cases where market surveillance authorities have not found non-conformities.

EELPIANT3 Results

Overview of the EELPIANT3 inspection and testing results for all six product-specific activities.

Document checks

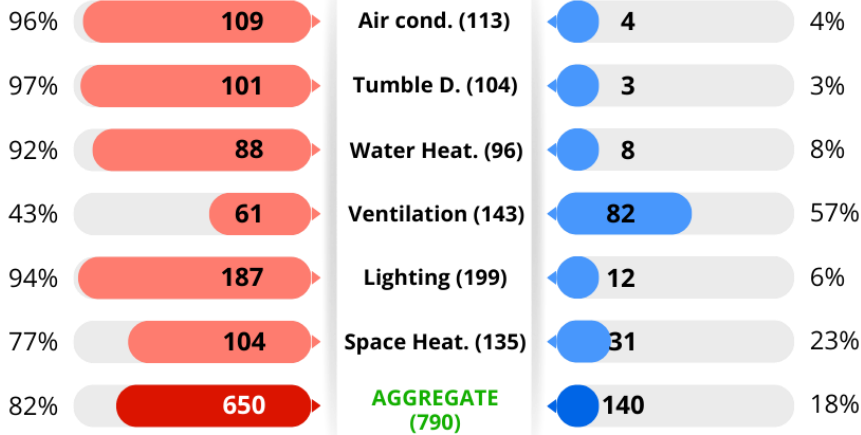
Non-compliant



VS



No errors detected



Web shops

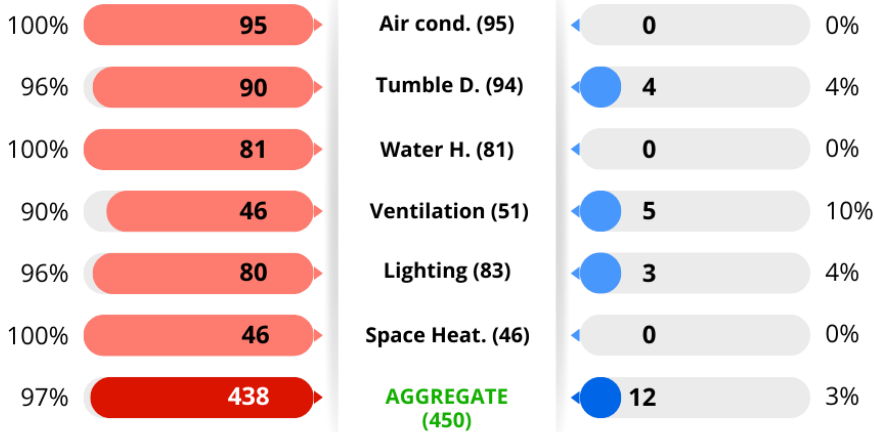
Non-compliant



VS



No issues detected



Laboratory testing

Suspected non-compliance

(failure rate after single testing)



VS

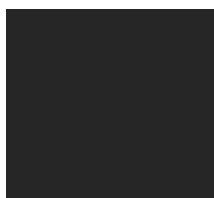
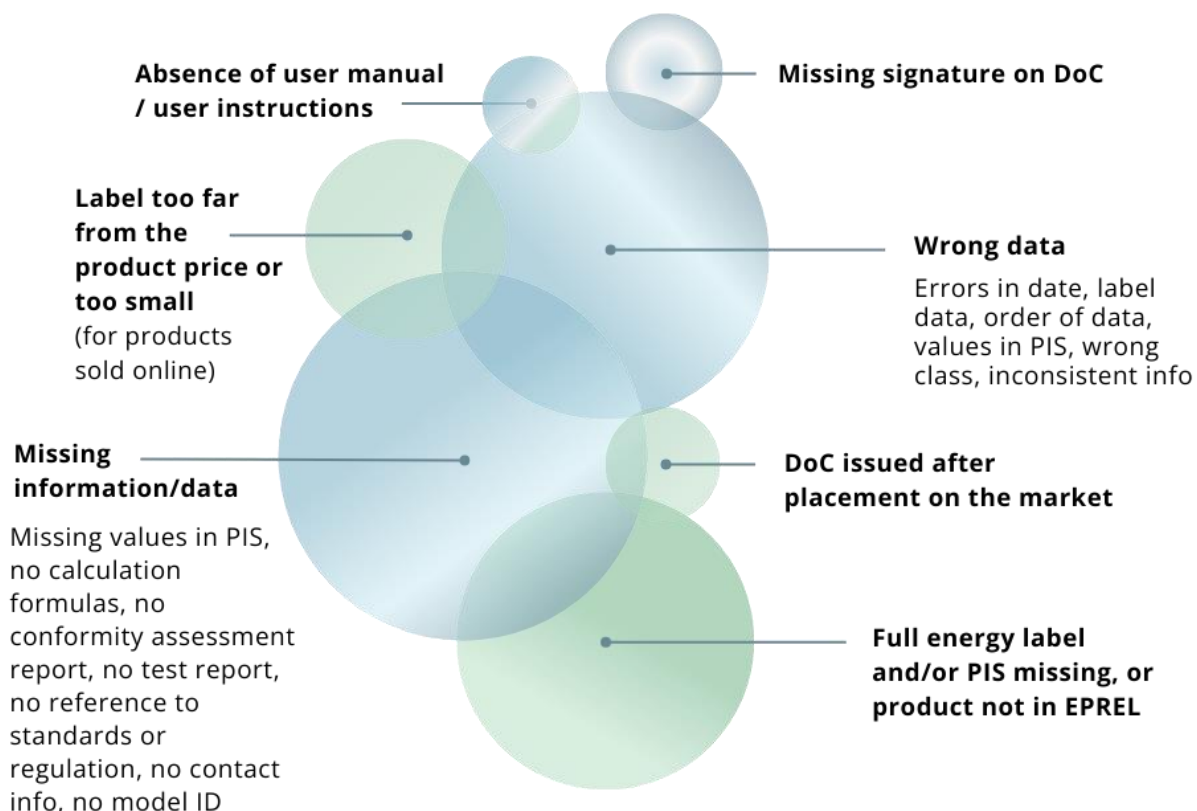


No issues detected



Checks on product documentation and retailer websites revealed many and different issues, some of which were deemed serious by the market surveillance authorities that carried out these controls.

The typology of the non-conformities found during these checks and their relative magnitude (in terms of frequency, shown in the size of the bubbles) are depicted in the graph below.



CAUTION!

The results presented in this report are based on products that were sampled from the European market by experienced market surveillance inspectors using a risk-based approach. As in any routine market surveillance activity, the results represent the targeted efforts that authorities undertake to identify suspicious/non-compliant products. As a result, they do not give a statistically valid picture of the market situation. The samples were tested at accredited test bodies.



1. Introduction

A BRIEF HISTORY OF THE EEPLIANT CONCERTED ACTIONS

The European Commission has a long track record in financing and supporting coordinated market surveillance actions in the fields of ecodesign and energy labelling.

The first EU-funded EEPLIANT action, the EEPLIANT-1 (Energy Efficiency Compliant Products 2014), kick-started in 2015 as the successor of the “European Ecodesign Compliance Project (ECOPLIANT)”. The project targeted LED lamps, imaging equipment (printers), space and combination heaters³.

It was followed by EEPLIANT-2 in 2017 that built on the work of its predecessor to measure the energy consumption and verify the compliance of household refrigerating appliances, professional refrigerated storage cabinets, and appliances/equipment on network standby (e.g., coffee machines, kettles, electric ovens, game consoles, wireless speakers, notebook computers, media streaming devices, and more).

The EEPLIANT3 Concerted Action was the third action in the EEPLIANT series. It started in June 2019 and was completed in March 2024. The Project Coordinator was PROSAFE (www.prosafe.org), supported by the Austrian Energy Agency (www.energyagency.at) and Vores Bureau (www.voresbureau.dk). Stakeholders were involved in the action implementation through their participation in the project’s Advisory Board and in Work Package meetings.

EEPLIANT3 OBJECTIVE AND ACTIVITIES

In line with the EU’s energy and climate policies and targets,⁴ EEPLIANT3’s core objective was to strengthen the enforcement of ecodesign and energy labelling legislation and continue the transformation of EU market surveillance in these fields.

This was achieved through two independent yet interrelated work streams of product-specific and capacity development activities. Six product sectors were prioritised and investigated in individual activity groups:

1. Air conditioners and comfort fans
2. Household tumble dryers
3. Water heaters and hot water storage tanks
4. Residential ventilation units
5. Light sources
6. Local space heaters.

To test new alternative approaches to product screening and selection, the project also conducted a small laboratory testing pilot on wine storage appliances, televisions, and washing machines.

The development of new methods, tools, and competencies that can optimise the way inspectors perform their tasks was at the core of five cross-cutting project activities:

1. Development of digital/IT tools for ecodesign and energy labelling market surveillance
2. Collaboration with customs authorities
3. Establishment of centres of excellence for product testing
4. Training actions, including study visits
5. New and arising issues posing challenges to ecodesign and energy labelling market surveillance.

³ <https://eepliant.eu/index.php/new-about-eepliant/about-eepliant-1>

⁴ The European Green Deal - European Commission, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

GEOGRAPHICAL SCOPE

Enforcement of the ecodesign and energy labelling legislation is the sole competence of the EU-27 Member States and their designated authorities. The huge size of the EU market and the relatively small impact of any independent MSA inspection campaign demonstrate how crucial it is for market surveillance authorities to work together in coordinated ways.

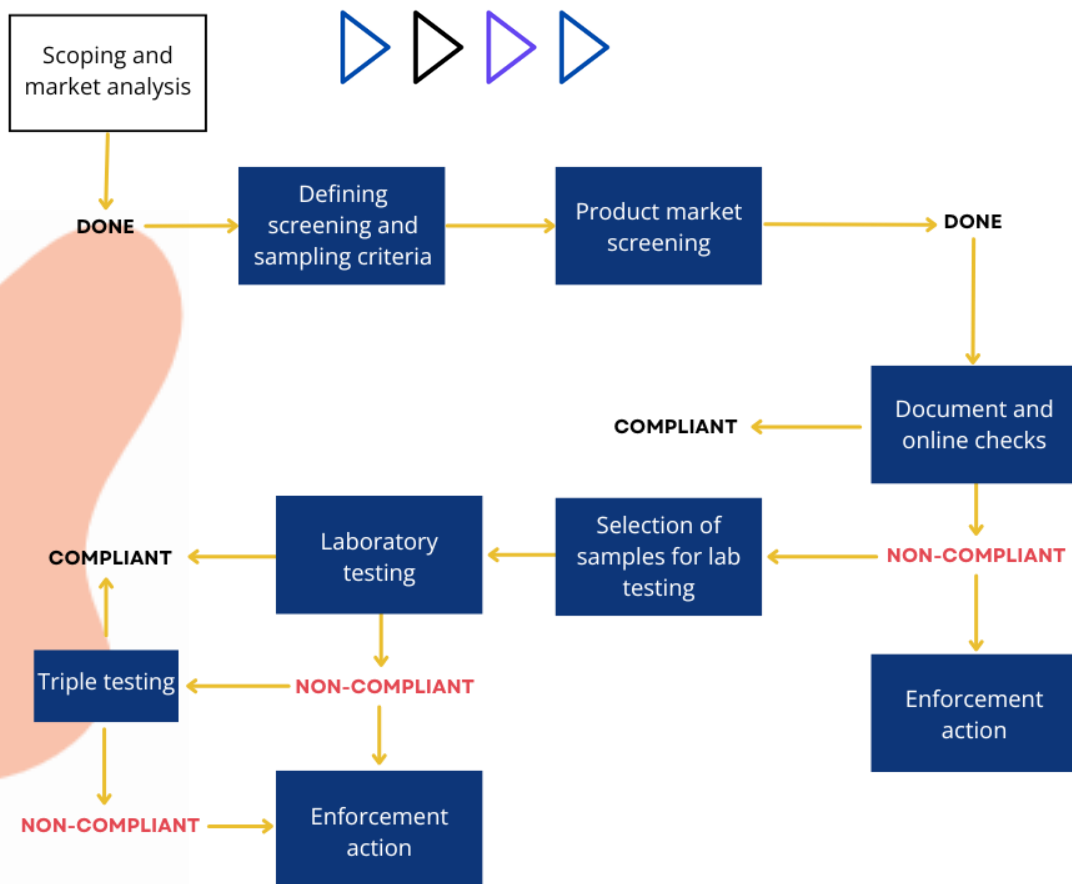
EEPLIANT3 was the largest coordinated pan-European action of its kind. The project consisted of 5 organisations and 24 market surveillance authorities with varying degrees of prior experience in similar coordinated actions.

They came from 20 EU Member States and Turkey, thus securing a good representation of the EU/EEA market in terms of size, population, and purchasing patterns/consumer behaviour:

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, France, Germany, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovenia, Spain, and Sweden, plus Turkey.

A COMMON METHODOLOGY

Inspections and testing followed the same approach across all six product-specific activities. This involved the following steps:



Every market verification and monitoring activity requires market surveillance authorities to make a choice on where to allocate their resources to obtain maximum results and ensure effective market surveillance. After the start of the project, the first task for the participating market surveillance authorities was to review their national markets, with input, where possible, from the industry, in order to prioritise the sub-categories of products (e.g., electric, electric radiant, gas-fuelled, or solid fuel local space heaters) within each pre-selected product sector.

When done, market surveillance authorities developed a set of screening and sampling criteria which served as the basis for selecting a number of product models for investigation, taking into account cost and resource constraints and the characteristics of each national market.

For maximum impact, EEPLIANT3 applied a risk-based approach. This means that market surveillance authorities used risk factors to target products that seemed suspicious or had a high probability of non-compliance based on empirical evidence and available historical data from past investigations. That said, to ensure good market coverage, the sampling criteria applied by EEPLIANT3 also included product models and brands with high market penetration, private label products, and models from new brands and manufacturers (EU and non-EU-based).

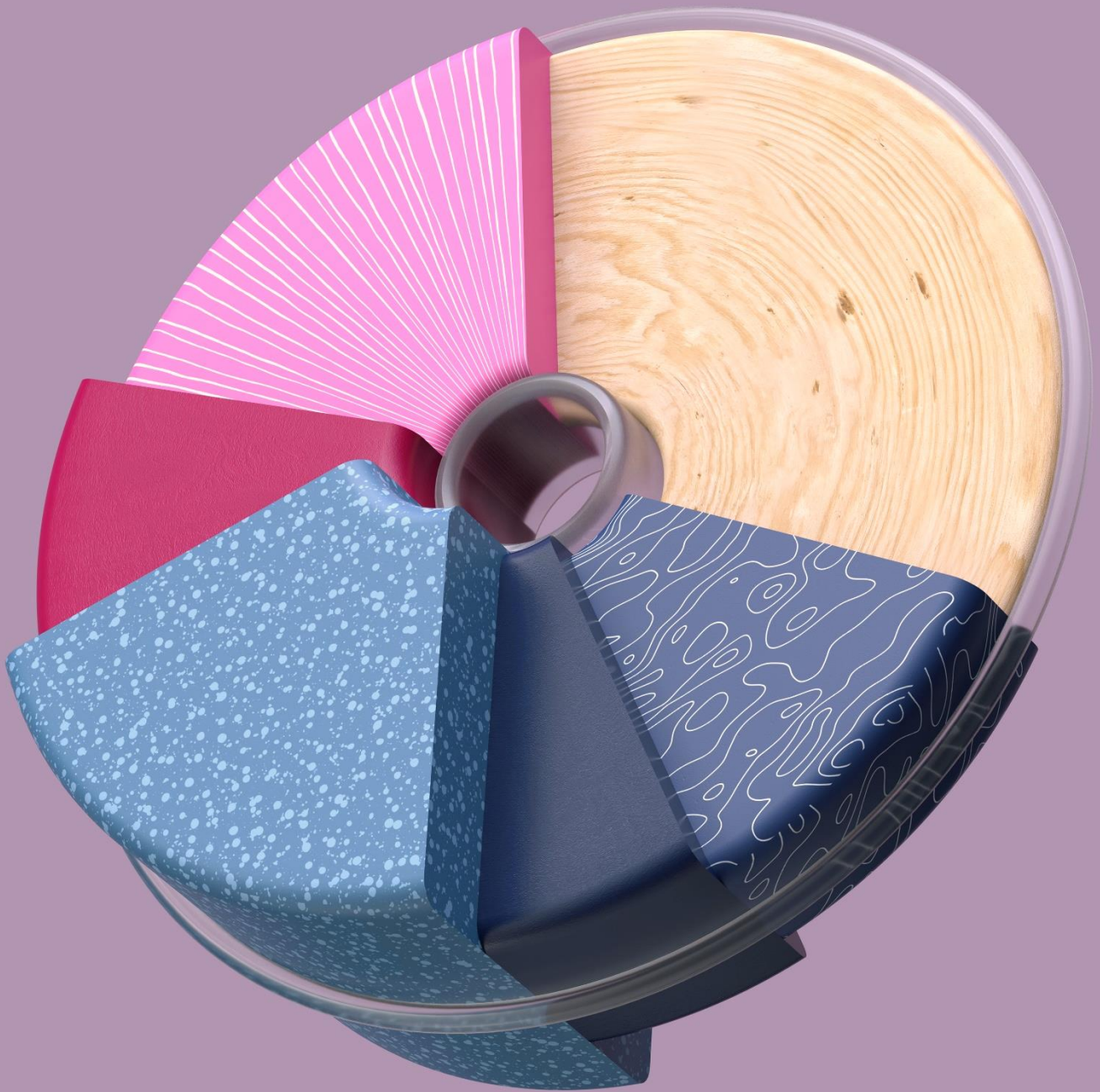
Product screening was done using the criteria defined and adopted in the previous step, also taking into account the peculiarities of the markets of the focus countries. The outcome was a list of product models that were going to be part of the inspection programme of each product-specific activity.

Checks started with the examination of various elements of the product documentation (e.g., EU declaration of conformity, ecodesign mandatory information, test report or similar technical evidence, energy label, PIS), retailer/manufacturer websites, and EPREL entries.

Economic operators of products and web shops that failed to comply with the applicable ecodesign and energy labelling requirements were informed about the found violation(s) and measures were imposed proportionately to the gravity of the observed non-conformity, according to the judgment of the responsible market surveillance authority and national enforcement rules.

A number of product models that failed document inspection was selected for further in-depth investigations. These were sampled and sent to accredited laboratories for testing against the applicable standards. To maximise cost efficiency, tests focused on those compliance verification parameters that have the largest impact on energy consumption. When tests revealed a suspected non-compliance and the manufacturer did not accept the test results, market surveillance authorities could decide to obtain and test three additional units of the same product model to confirm or not the suspected non-compliance.

The market surveillance cycle ends with the assessment of the laboratory test results and follow-up actions against (suspected) non-compliant cases. The type of measures that can be imposed and how depends on the legislation of each Member State and the intervention policies and practices of the market surveillance authorities.



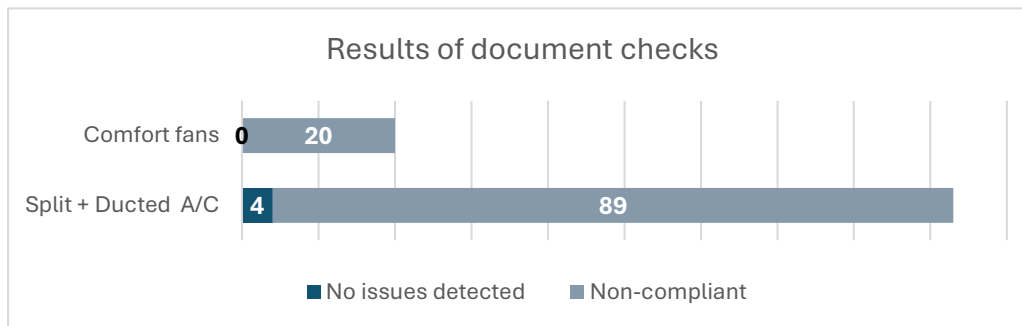
2. Product Inspection & Testing Results

■ Air conditioners and comfort fans

The project examined two main sub-categories of air conditioners: i) split air conditioners; and ii) ducted air conditioners. Furthermore, 20 comfort fan models were selected but only for document inspections.

DOCUMENT CHECKS

Ten market surveillance authorities reviewed the documentation (i.e., CE declaration, energy label, ecodesign information, PIS, technical documentation) of 113 air conditioner (93) and comfort fan (20) models. Of these, 96% (109 of 113) were either missing documentation altogether or had (major or minor) errors. Some of these issues included missing references to the applicable standards or regulation, missing, incorrect or contradictory data, missing test reports supporting the declared by the manufacturer values, or missing user/instruction manuals.



The economic operators of these products were informed about the results and asked by the responsible authorities to take the necessary corrective measures. After this contact, a follow-up assessment revealed a 21% improvement in product compliance, i.e., a decrease in the non-compliance rate from 96% to 75%.

For products for which the economic operator failed to take corrective action, the market surveillance authorities took appropriate enforcement measures including sanctions. Details on the follow-up measures are provided below.

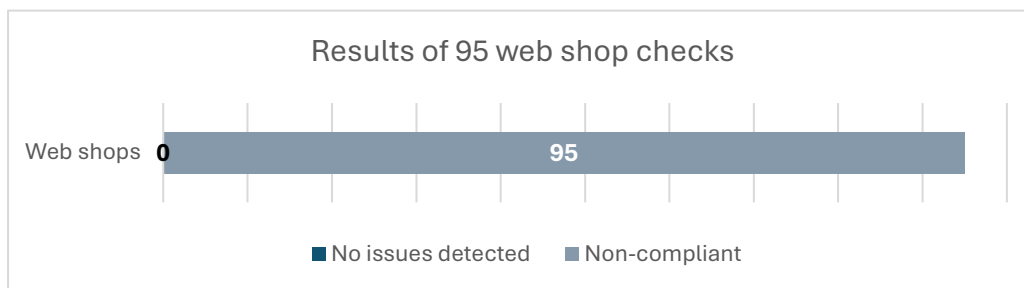
WEB SHOP CHECKS

In 2023, 70% of people aged 16 to 74 in the EU had bought or ordered goods or services online, including energy-related products.⁵ Ensuring high levels of compliance with EU energy labelling product rules in retailer websites is thus becoming increasingly important for both consumer and manufacturers. Consumers get equipped with information that empowers them to choose more energy efficient and sustainable products. And manufacturers of more energy efficient products can benefit from a level playing field, exploiting their competitive advantage.

The project verified 95 retailer websites and a total of 274 products (product pages) in 10 small, medium, and large EU markets. All 95 web shops (so 100%) and 99% (271 of 274) product pages checked were non-compliant. During the second follow-up

⁵ E-commerce statistics, Eurostat 2024, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=E-commerce_statistics_for_individuals

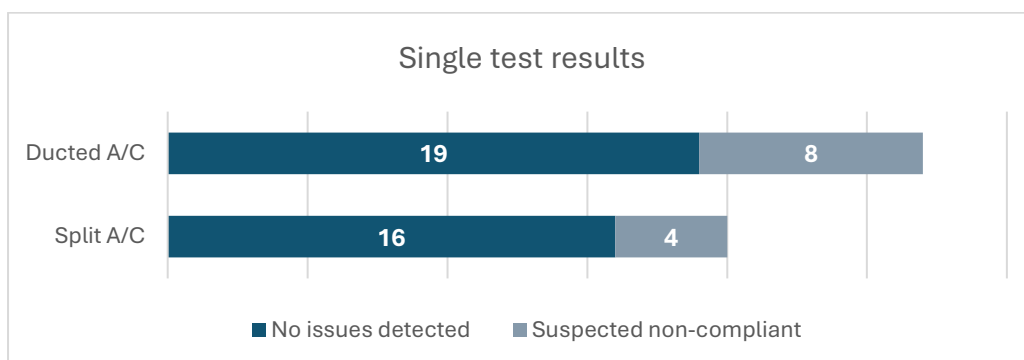
examination, 55 of the 95 online stores displayed improvements. Enforcement action was taken against the websites that were still in violation.



LABORATORY TESTS

Based on the findings of the document checks, the involved market surveillance authorities selected 47 suspicious split (20) and ducted (27) air conditioner models and tested them at an accredited laboratory. Measurements were done on the energy efficiency rating, the cooling and heating capacity, noise levels, and energy consumption (off-mode, standby-mode).⁶

Tests revealed a suspected non-compliance rate of 26% (12 of 47).



The cause of all the suspected non-compliances was a deviation between the declared and determined values⁷ for test parameters exceeding the verification tolerance – e.g., indoor noise, Seasonal Energy Efficiency Ratio, energy consumption; the regulation do not specify any tolerance for heating and cooling capacity.⁸ No violations of the ecodesign limits were detected.

Six ducted air conditioner models underwent a triple test (i.e., test of three additional units of the same model). Some of the results of these additional tests showed notable – and puzzling – variations when compared to the findings of the initial test. Only one

⁶ Noise was tested for 5 split and 9 ducted air conditioners. Heating mode (Seasonal Coefficient Of Performance) was only tested for 3 split air conditioners.

⁷ Declared value means the value provided by the manufacturer of a product for the stated, calculated, or measured technical parameters in accordance with the relevant EU regulation(s), for the verification of compliance by market surveillance authorities. Determined value means the value of a parameter as measured in testing and the value calculated from this measurement by the responsible market surveillance authority.

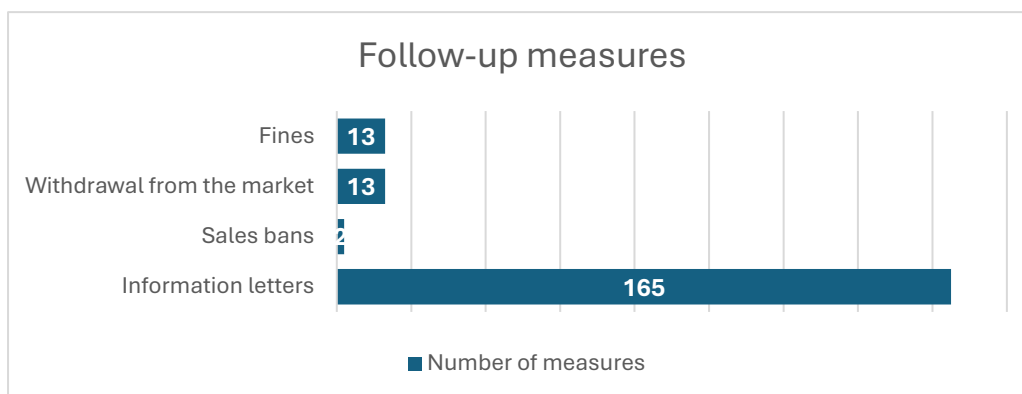
⁸ Regarding heating and cooling capacity, no tolerance is defined in the regulations. Therefore, verification tolerances were set according to the judgment of the responsible market surveillance authority.

of the six triple tests eventually resulted in a non-compliance. The product model in question was subsequently withdrawn from the market.

All-in-all, test results for split air conditioners showed considerable variances between the units' performance, when tested against the applicable test standard, and real-life use cases. This is because compliance verification testing of split air conditioners requires the activation of a certain configuration with manufacturer-specified compressor frequency settings, as per Annex I. 3(b) of the EU Ecodesign Regulation 206/2012. By comparison, when installed in a home, the appliance's compressor functions without such settings.

FOLLOW-UP MEASURES

The results of the EEPLIANT3 inspection and testing campaign on air conditioners and comfort fans led to various enforcement measures including 2 sales bans, 13 product withdrawals from the market, and 13 financial penalties of 46.600 EUR in value. The highest fine imposed in the context of this activity was 8.000 EUR.



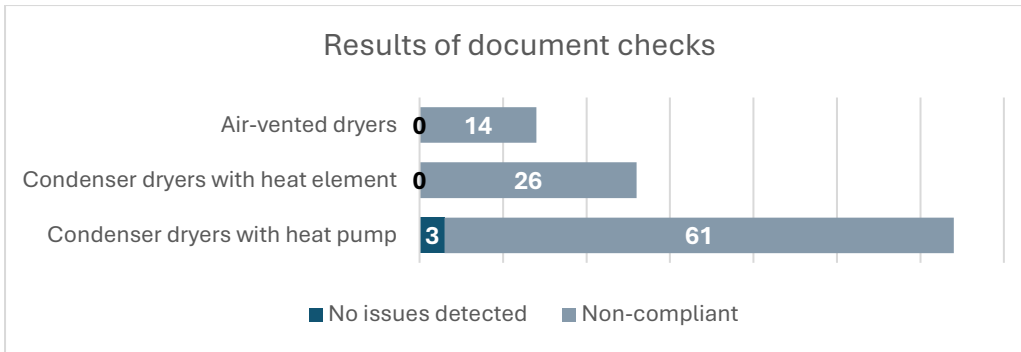
Household tumble dryers

Four types of tumble dryer appliances were targeted: i) condenser dryers with heat pump; ii) condenser dryers with heat element; iii) air-vented dryers; iv) gas-fired dryers.

DOCUMENT CHECKS

The results of the document inspections of tumble dryers were equally poor as those for air conditioners and comfort fans. For these checks, the nine market surveillance authorities that were involved in this joint campaign focussed on condenser dryers and particularly on heat pump condenser dryers. Air-vented dryers were given less consideration because of their small and rapidly shrinking market share.

97% (101 of 104) of the product documentation examined was either missing completely or had errors related to the CE declaration, the energy label, PIS, technical documentation, and/or the ecodesign product information. The results of the second follow-up assessment, after the inspectors have contacted the economic operators concerned, showed a marginal 8% improvement (from a 97% to 89% non-compliance rate). Appropriate corrective actions were taken for any outstanding non-conformities - see below.



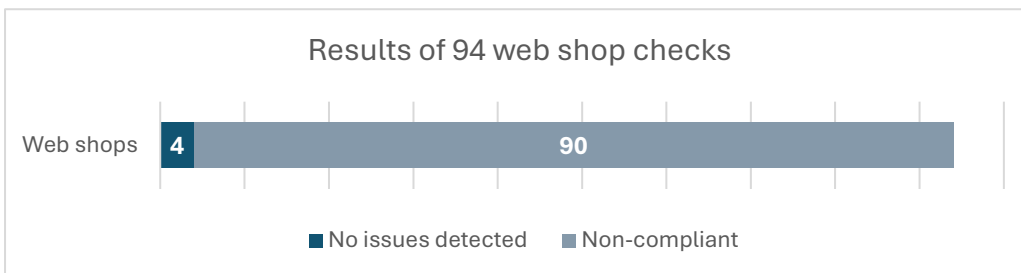
WEB SHOP CHECKS

The results of the web shop inspections were extremely poor. Checks on 279 product pages across 94 retailer websites in nine focus EU markets found that only 58 energy labels and 67 PIS were correct (i.e., compliant with the EU rules). Even worse, no energy label and PIS was found in 94 and 143 cases, respectively.

The situation differs from country to country. For instance, while most websites checked in Belgium, Germany and Ireland displayed at least some information, in other countries like Latvia and Malta most web shops had no information at all – although, as stressed, these results are not representative of the entire market.

A second round of inspections after enforcement actions revealed that many tumble dryer models were removed from the website listing between the first and second check. Some of the web shops stopped selling tumble dryers altogether, while six stopped displaying prices – EU energy labelling rules provide that websites where prices are displayed and relevant energy-related products may be bought are required to display the energy label and PIS.

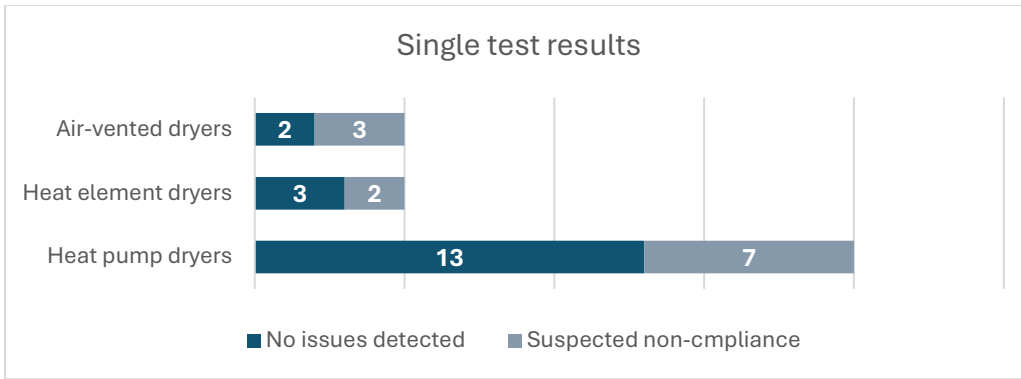
Overall, 34 web shops made corrections (i.e., corrected all or at least the most significant issues) as a result of the project’s enforcement actions.



LABORATORY TESTS

30 tumble dryer models were chosen by the nine participating market surveillance authorities based on the results of the document inspections. The product sub-types covered included heat pump dryers (20), dryers with heating element (5), and air-vented models (5).

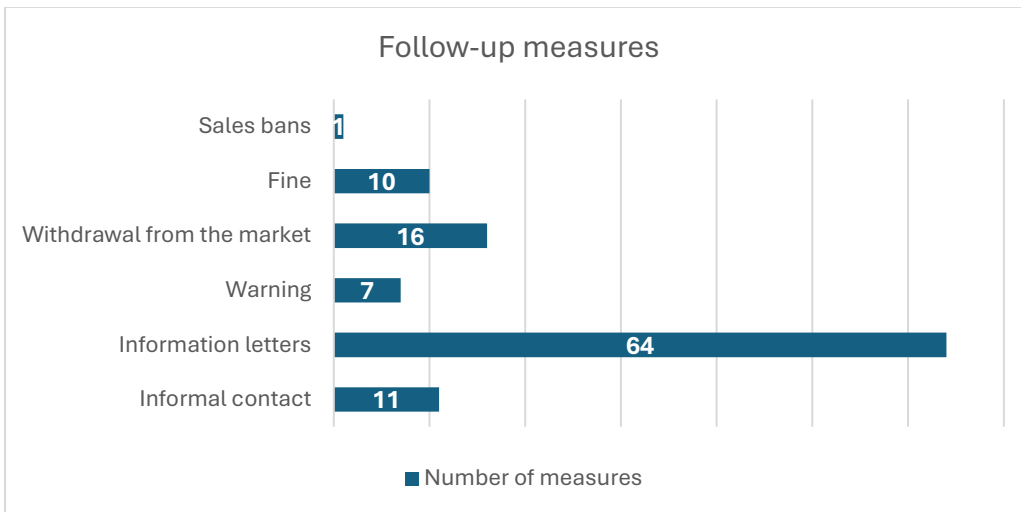
On the positive side, all 30 tumble dryer models tested met the energy efficiency requirements, implying no effect on the EU energy consumption for this product group. However, 12 (40%) of these models failed the single compliance verification test on other parameters, e.g., the final moisture content, or power consumption in on/off modes.



A triple test was performed on three suspected non-compliant models. The results confirmed the initial suspected non-compliance for all three models. Enforcement measures were taken accordingly.

FOLLOW-UP MEASURES

Over 100 corrective measures have been taken by the responsible market surveillance authorities based on the findings of the project inspection and testing activities on tumble dryers. The sale of one tumble dryer model was banned. 16 models were withdrawn from the market, and 10 economic operators (all online retailers) have been fined. Enforcement actions resulted in fines of 34.000 EUR, with 4.000 EUR being the highest amount fined.



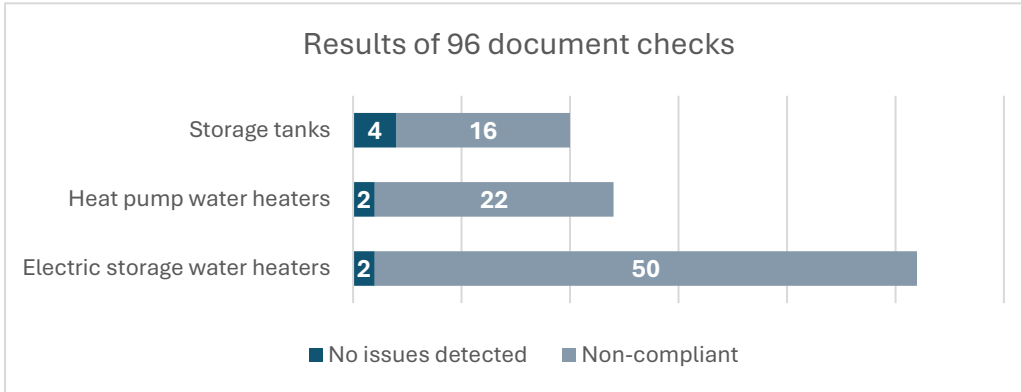
Water heaters & hot water storage tanks

High efficiency water heaters can reduce energy consumption by 10% to 50% compared to conventional models, resulting in lower utility costs for households.

Europe continues to be the primary producer of these goods. There is a wide range of technologies for water heaters available on the market (e.g., electric, gas-fuelled, heat pump). The project decided to focus on two types: i) electric storage water heaters of load profile 3XS-S and M-4XL, <70kW, including 'smart'/internet connected models; and ii) monobloc heat pump water heaters of load profile M-4XL, <70kW. Storage tanks of <500 litres were also in the scope of this monitoring and compliance verification activity.

DOCUMENT CHECKS

The initial/first assessment of 52 electric storage water heaters (covering both small and large load profiles, and ‘smart’/internet connected models), 24 heat pump water heaters, and 20 storage tanks – a total of 96 product models – revealed a non-compliance rate of 92% (88 of 96), continuing the trait seen for air conditioners, comfort fans, and tumble dryers.

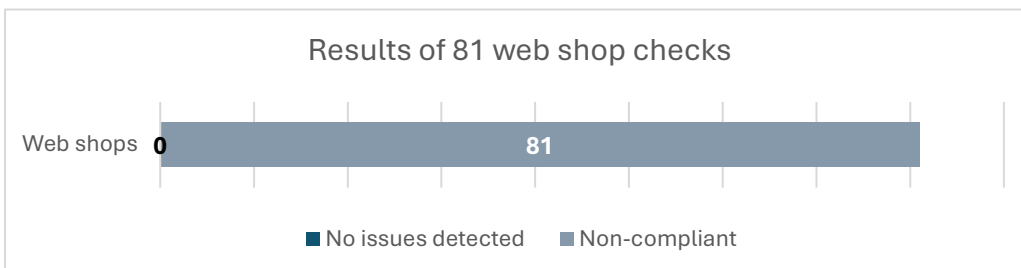


The situation improved considerably after the economic operators of non-compliant products were informed about the outcomes of these controls. A follow-up check showed that this time near half of the product documentation that failed the initial examination was corrected (42 of the 88 non-compliant cases). Still, about half of the product models under investigation had errors or omissions related to their EU declaration of conformity, CE marking, energy label, PIS, technical documentation, and/or the ecodesign information or threshold requirements. In several cases, it was found that the manufacturer or authorised representative had issued the EU declaration of conformity (see definition in the glossary of this report) *after* the product was placed on the EU market.

Enforcement actions have been implemented against the identified non-conformities – more on that below.

WEB SHOP CHECKS

All 81 web shops checked in ten EU-27 focus markets were non-compliant (100%). This figure went down to 67% (55 of 81) after enforcement. Non-conformities involved missing or wrong energy labels and/or PIS, problems with the nested display of the label, or legibility issues.

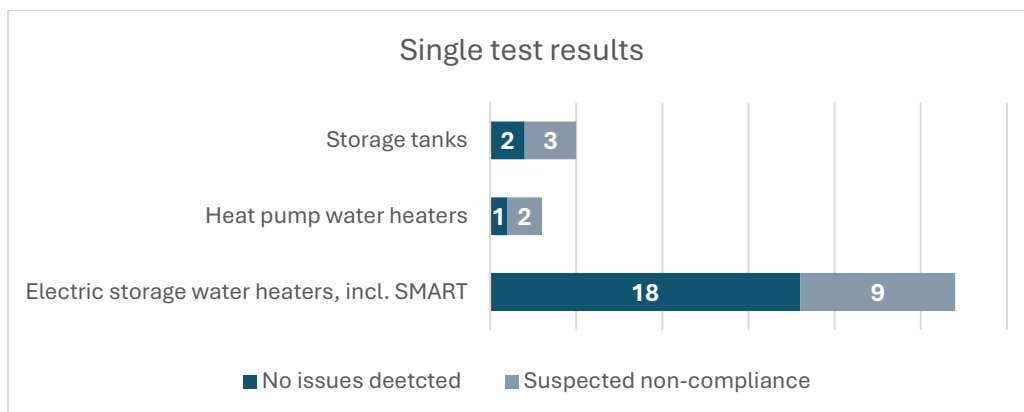


LABORATORY TESTS

Testing and verifying the compliance of water heaters is a complicated process. For choosing the models that would be sent for laboratory testing, market surveillance

authorities took into account the outcomes of the document checks and the severity of the detected errors.

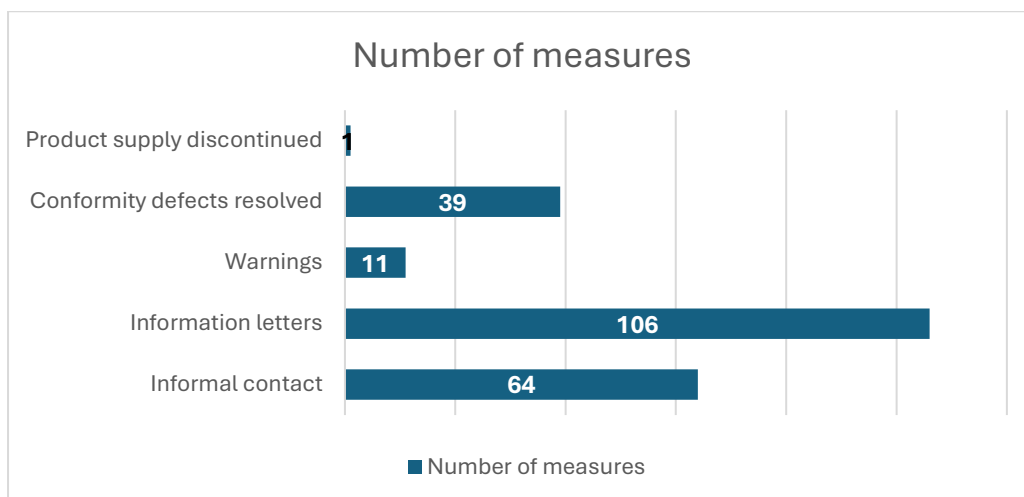
A total of 26 models from all three product sub-types in the scope of the activity was tested by two accredited laboratories. 14 (54%) of the 26 units failed the single tests. Depending on the product type, the test parameters included water heating energy efficiency (η_{wh}), daily electricity consumption (Qelec), quantity of water at 40°C, standing heat loss, tank volume, and non-functional SMART mode.



A triple test was performed on 8 of 14 suspected non-compliant models. The results of these tests confirmed the suspected non-compliance in 6 of the 8 cases. Appropriate enforcement measures have been taken against the non-conforming products.

FOLLOW-UP MEASURES

The involved market surveillance authorities took over 200 follow-up measures in response to the detected non-conformities. These included information letters and formal warnings to economic operators. There were no product withdrawals, sales bans, or fines. However, in one instance, the economic operator stopped the supply of the product voluntarily.



Residential ventilation units (RVUs)

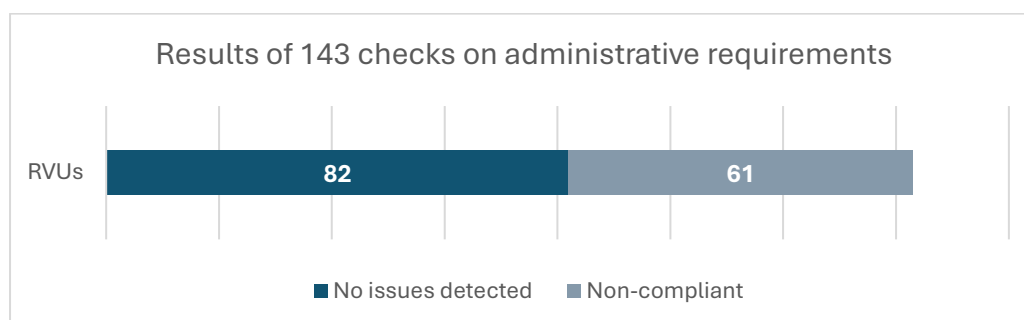
Ventilation units are systems that use electricity to expel stale air from a room, replacing it with fresh air from outdoors. In winter, an efficient ventilation unit with

a heat recovery system uses the heat contained in the outgoing air to warm up the incoming cold outdoor air. Heat recovery in ventilation systems can help save up to 90% of thermal energy, and thus reduce energy costs significantly.⁹

The project examined four different sub-categories of (small and large) ventilation systems, covering all main typologies on the market: i) bidirectional central RVUs with heat recovery (HR); ii) bidirectional decentral RVUs with heat recovery; iii) unidirectional central RVUs without heat recovery; and iv) unidirectional decentral RVUs without heat recovery.

DOCUMENT CHECKS AND CHECKS ON MANUFACTURERS' OBLIGATIONS

Step one involved the screening of 173 RVU models by nine market surveillance authorities based on available product information from EPREL and/or the internet. Risk-based selection criteria were used to prioritise 143 models from 65 different economic operators (including manufacturers and importers). Of these 143 RVU models, 61 (43%) failed the examination on manufacturers' obligations related to the PIS, the Specific Energy Consumption (SEC) class, or the presence of mandatory disassembly instructions.

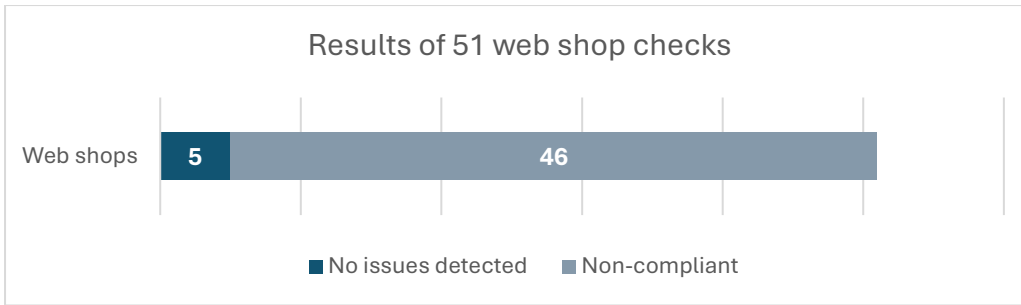


With regards to the technical documentation accompanying the energy label, out of 97 RVU models checked, for three the market surveillance authorities received no documentation from the responsible economic operator, whereas the documentation of 34 models had major or minor errors. Furthermore, 22 models had problems with their PIS and two with their energy label. The economic operators concerned were asked to correct the observed non-conformities.

WEB SHOP CHECKS

Checks on 51 retailer websites revealed some rather distressing results. 46 of these 51 web shops and 88% (89) of the 101 product pages inspected therein were found to be non-compliant because of missing energy labels, or PIS, or otherwise wrong product information.

⁹ Eurovent (2021), Eurovent Guidebook: Residential Heat Recovery Ventilation Units, Brussels



These findings demonstrate that, in contrast to white goods where inspections typically reveal higher compliance levels, online dealers of RVUs are either not aware of or disregard their obligations.

Non-compliant cases were corrected thanks to enforcement measures triggered by the project. As a result, few of the inspected online dealers have stopped selling RVUs.

LABORATORY TESTS

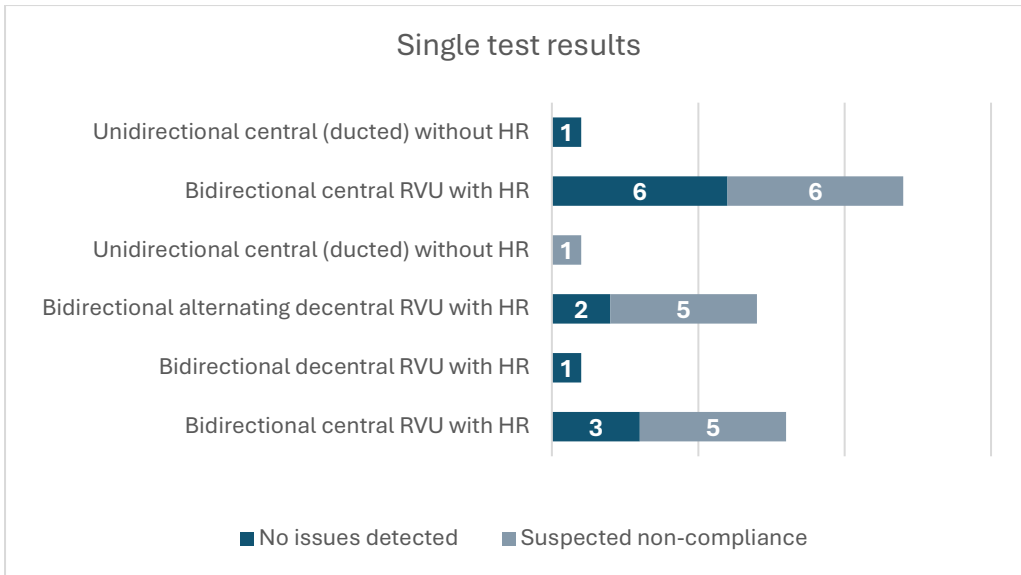
Testing of ventilation units is complex and costly. Good product screening and a risk-based approach with appropriate selection criteria are essential to cost-effective monitoring and verification of this product group.

Based on the results of the document and online checks, a sample of 30 suspicious RVUs models was sent for laboratory testing. Most of the samples (22) were bidirectional central RVUs with heat recovery and maximum declared airflow of 250 m³/h or less, and between 250 and 1000 m³/h. The split of samples among the four product sub-categories was intended to reflect their market share and trends as closely as possible.

To optimise costs, the test programme focused on four key parameters. Specific Power Input (SPI) and Specific Energy Consumption (SEC) were measured for all 30 samples. 28 samples with heating recovery were tested for thermal efficiency of heat recovery. Sound power levels were measured only for three non-ducted (decentral) RVUs.

17 (57%) out of 30 models failed the testing, indicating suspected non-compliance. Two small (<250 m³/h capacity) ducted bidirectional units with a regenerative heat recovery system underwent a triple test. Both were found to be non-compliant, verifying the result of the initial test.

All non-conformities were addressed through enforcement.

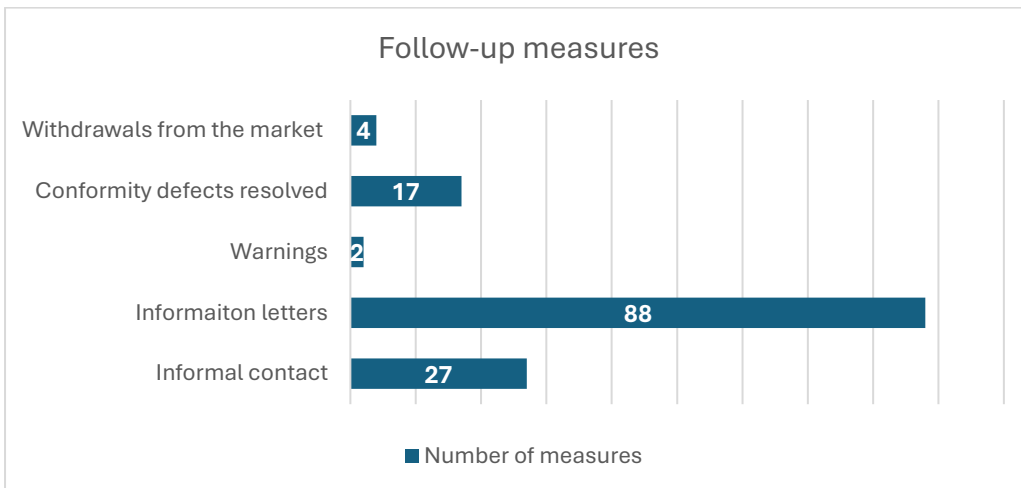


FOLLOW-UP MEASURES

Overall, enforcement actions were taken against 17 distinct economic operators for non-compliance following testing. All non-compliant models were either withdrawn from the market or voluntarily brought into compliance.

46 of the 51 retailer websites that were inspected were asked to implement corrections.

Furthermore, all 42 manufacturers whose products were found to have issues in EPREL have corrected the detected non-conformities.



Light sources

Lighting is a major source of energy demand. Light sources are the largest ecodesign product group in terms of installed units, with almost 11 billion lamps used in Europe in 2020. This huge quantity of installed products makes lighting the third largest energy

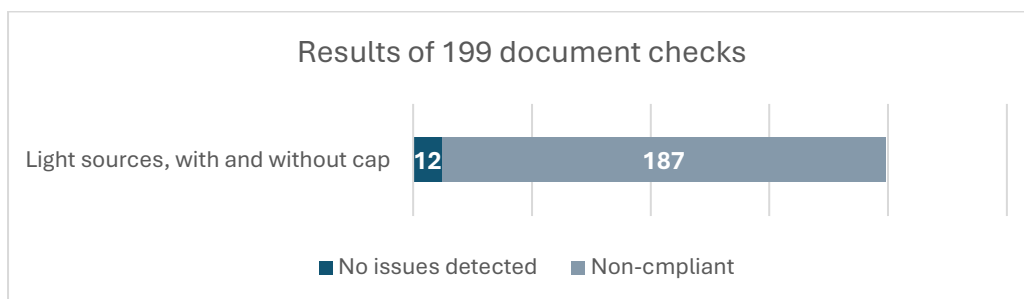
consumer, after industry components and space heating, accounting for 8% of the primary energy in 2022.¹⁰

LED is the leading efficient lighting technology on the market. The project prioritised this segment, targeting two sub-types: i) non-directional and directional light bulbs with a cap; and ii) non-directional and directional light sources without a cap, ensuring a good representation of today's market.

DOCUMENT CHECKS

199 products were chosen from a pool of 252 pre-screened product models to verify the compliance of their documentation with the ecodesign and energy labelling requirements. For this selection, market surveillance authorities used a risk-based methodology of multiple risk factors.

Compliance checks on product documentation – obtained directly from economic operator or via EPREL – revealed some rather distressing results. 187 of 199 models (94%) were declared non-compliant due to missing or wrong elements.



Some of the issues involved not legible or large enough energy label or nested label images, nested labels with wrong colours, broken QR codes on the label, errors in the energy efficiency class, missing or inconsistent information and values – for example, different information on the product package and in EPREL. As we will see below, the absence of declared values in the technical documentation of products – which is a formal non-compliance in itself – complicated laboratory testing and the assessment of test results.

Many economic operators seem to have difficulties in understanding which technical documentation should be provided with a product and what needs to be included in it.

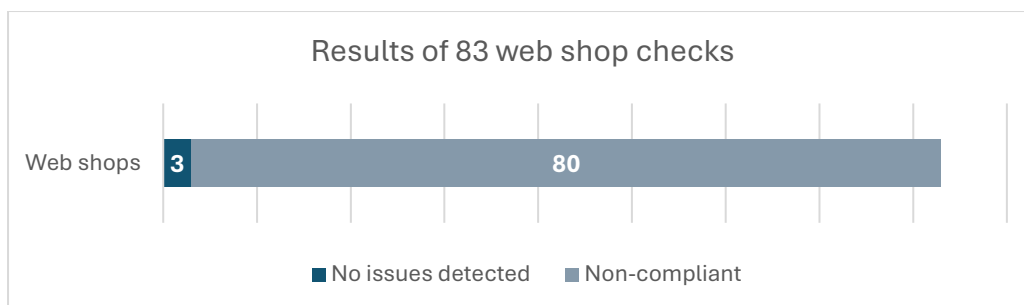
A follow-up inspection showed marginal improvements. Necessary enforcement measures were taken to bring the instances of non-compliance to an end.

WEB SHOP CHECKS

Participating market surveillance authorities also verified the completeness and compliance of the energy label and PIS of 249 light source models sold on 83 web shops in ten focus countries.

¹⁰ Ecodesign Impact Accounting Overview Report (EIA) 2023, p. 14 and 57.

The results of these checks were equally discouraging. Out of 249 cases, 195 (78%) energy labels and 211 PIS (85%) did not comply with the energy labelling requirements. Only 3 retailers were found with no issues.



The situation improved dramatically after the first round of enforcement actions. Some of the economic operators under scrutiny decided to remove all light sources previously on offer or those products that have been inspected by market surveillance authority in EEPLIANT3. In other cases, web shops under investigation closed or seemed to be ‘under construction’. All in all, in 99 reverifications, only 19 energy labels and 27 PIS presented issues. For these cases, further corrective measures had to be taken.

LABORATORY TESTS

To ensure a testing campaign with a product distribution that reflects the current market, half of the test samples were light sources with standard caps (E24, E27, etc.), and the other half were standalone or contained light sources including panels, spotlights, modules, etc.

The test programme covered the majority of the parameters listed in Regulations 2019/2020 and 2019/2015.¹¹

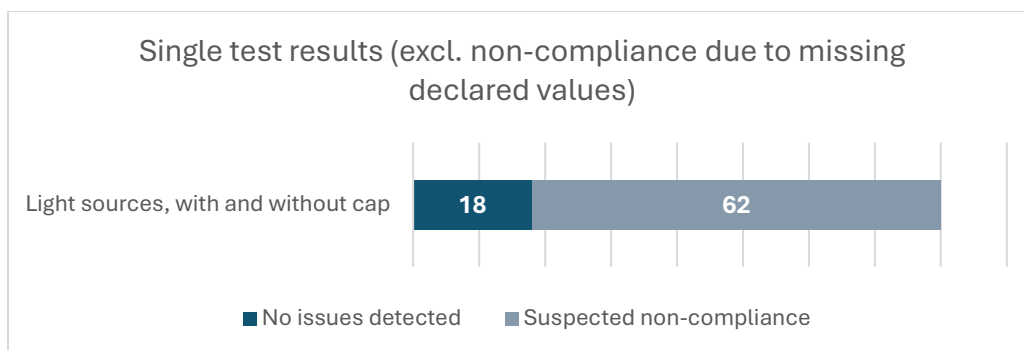
A particular non-compliance found during the examination of the technical documentation of products sent for testing caused difficulties in the verification of compliance. For many products, the declared values (see definition above), used as a reference for verifying compliance during testing and which must be included in technical documentation, were missing. When no declared values were available, market surveillance authorities decided to use the published values instead.¹²

This may lead to a handful of possible outcomes regarding the assessment of technical compliance. For example, the (unknown) declared value is outside the verification tolerance (i.e., the product is non-compliant), but the (used for the verification) published value is within the tolerance. In that case, technical non-compliance can be avoided via a re-declaration.

¹¹ <https://eur-lex.europa.eu/eli/reg/2019/2020/oj> and https://eur-lex.europa.eu/eli/reg_del/2019/2015/oj, respectively (accessed May 2024)

¹² Published value means a value provided by the supplier in the energy label and PIS of a product. Published values are not more favourable for the supplier than the declared values. For the purposes of market surveillance, any value made public by the supplier in any of the documents accompanying a product is considered as a “published” value.

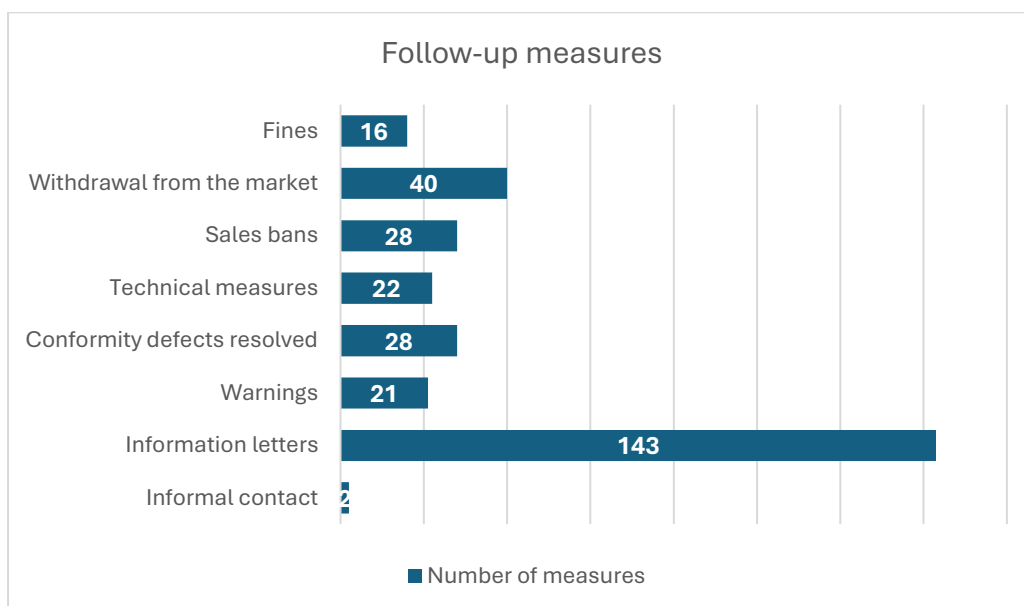
A total of 80 models was tested. Of these, 62 (78%) were non-compliant – showing deviations between the determined and declared values or, if not provided, with the published values and after considering the verification tolerances.



Cases where neither a declared nor a published value was available for certain test parameters were also considered non-compliant. The same goes for products with declared or published values that were already exceeding the ecodesign limits according to their documentation, even if the values determined by testing fall inside the ecodesign limits. When taking all these cases into account, the non-compliance rate grows to 89% (71 out of 80).

FOLLOW-UP MEASURES

The high levels of non-compliance have triggered equally high numbers of corrective measures. There were, overall, 21 warnings, 28 sales bans, 40 product withdrawals from the market, and 16 fines to non-compliant economic operators. Several cases were still open at the time of publication of this report.



Local space heaters

There are many different types of local space heaters (LSH) on the market. These are classified according to their energy source (solid fuel - fossil or biomass - gas, liquid fuel, or electricity) but also depending on their technology (for example there are six

different performance requirements for different types of electric heaters and within one of these categories, fixed electrical heaters with power >250W, there were five distinct technologies: convector, oil filled, dry electric, fan, towel warmers).

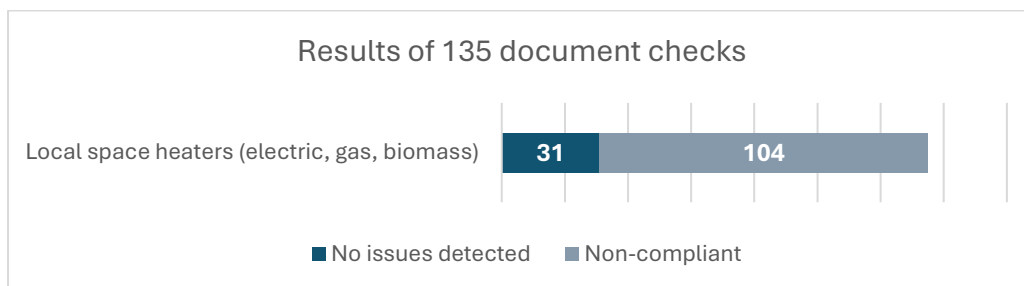
Electric heaters are by far the largest LHS group with 256 million installed units in 2020, followed by solid fuel local heaters (69 million).¹³

Replacing a conventional local space heater with a highly efficient model can save a significant amount of money over the lifetime of the product.

The project covered three product types: i) electrical (conventional and radiant and only for ecodesign); ii) Gas and liquid fuelled LSH (for both ecodesign and energy labelling); and iii) Solid fuelled (biomass) LSHs (only for energy labelling).

DOCUMENT CHECKS

We checked a total of 135 LSH models to verify compliance with the ecodesign, energy labelling, and technical documentation requirements. 77% (104 of 135) of these models had missing elements, missing information, or errors in the EU declaration of conformity, CE marking, energy label, PIS, and/or their technical documentation.



The issues identified are comparable to the findings of the other project inspection and testing activities. Non-conformities included missing energy labels, PIS or test reports, missing instructions, incorrect or unclear brand or model name, missing values, not reported emissions, etc.

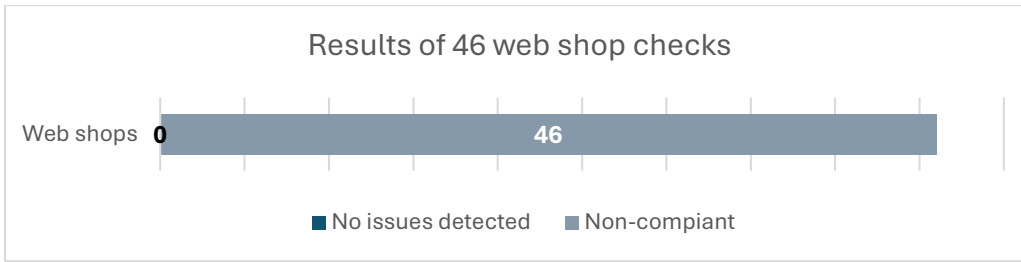
Furthermore, out of 67 products checked in the EPREL database, only 8 (12%) had fully correct and complete documentation.

The results of these investigations led to several corrective and enforcement measures.

WEB SHOP CHECKS

LHS models that went through a document inspection were also looked for online. Checks were carried out on 46 web shops and a total of 125 products. All 46 (100%) websites had compliance issues. The main nonconformities involved missing labels or PIS, energy labels placed far from the price, incorrect nested display colour, or illegible information.

¹³ Ecodesign Impact Accounting Overview Report (EIA) 2023, p. 46.



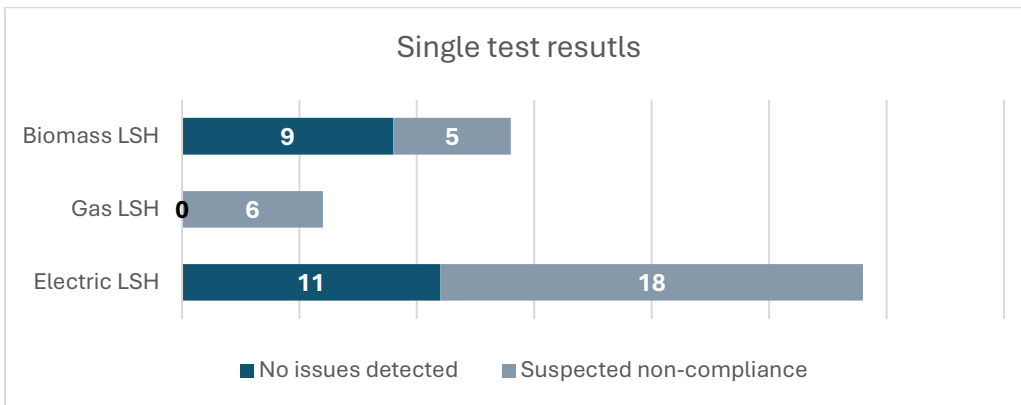
Furthermore, inspections performed in EPREL revealed that most products were not registered in the database.

Again, appropriate corrective actions have been implemented to address the identified non-compliances.

LABORATORY TESTS

Laboratory tests were performed on 52 LHS models from all three types of products in the scope of the activity (electric, gas, biomass). Priority was given to the electric heater segment to reflect the current stock and market forecasts.

26 of 52 LHS models (50%) were presumed to not conform after single tests.



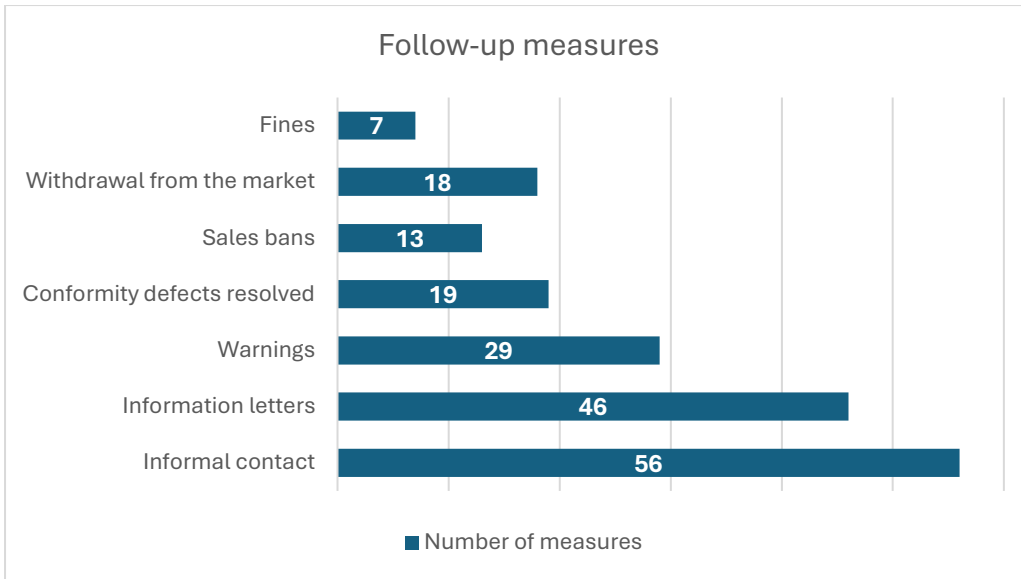
A triple test was carried out on one (1) electric radiant heater for standby power. The model was deemed non-compliant after the testing of three additional units, which confirmed the determined values found in the initial test of the first sample.

One of the main findings of the testing was that the absence of verification tolerances for some declared parameters (e.g., output heat) in the regulations makes it difficult for market surveillance authorities to enforce certain deviations between declared and determined values.

FOLLOW-UP MEASURES

Market surveillance authorities engaged with 123 economic operators, taking over 180 follow-up measures as a result of the EEPLIANT3 LHS inspection and testing activities. These comprised more than 50 informal contacts, 46 information letters, 29 warnings, and 19 resolutions of conformity defects. Additionally, market surveillance authorities issued 13 sales bans and 7 financial penalties. Finally, 18 LHS models were withdrawn from the EU market.

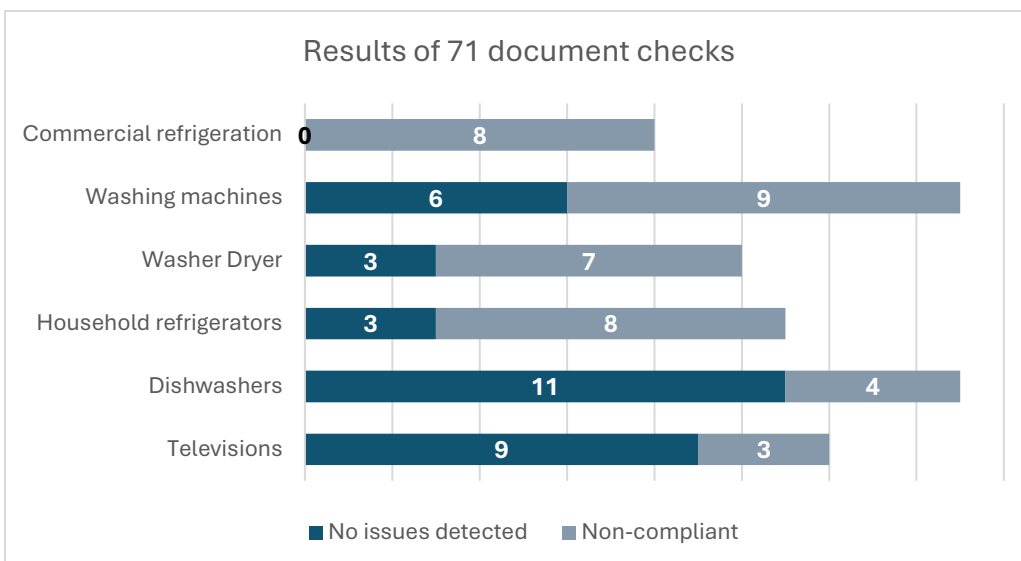
Few enforcement cases were still ongoing.



■ Pilot testing of televisions, washing machines, and wine storage appliances

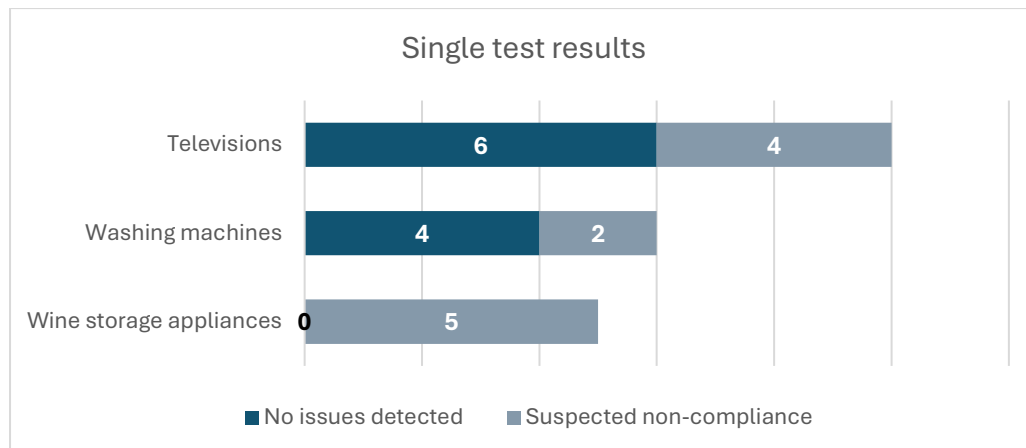
In addition to the six main product compliance verification activities, EEPLIANT3 also carried out a small inspection campaign on six more product groups: refrigerating appliances; refrigerating appliances with a direct sale function (commercial refrigeration); washing machines (for household use); washer-dryers for household use; dishwashers for household use; and electronic displays.

The primary objective of this pilot, which was performed as part of EEPLIANT3's capacity-building activity on new and emerging challenges for ecodesign and energy labelling market surveillance, was to review certain aspects of MSAs' work and test different methodologies than those that are typically used in monitoring and verification activities.



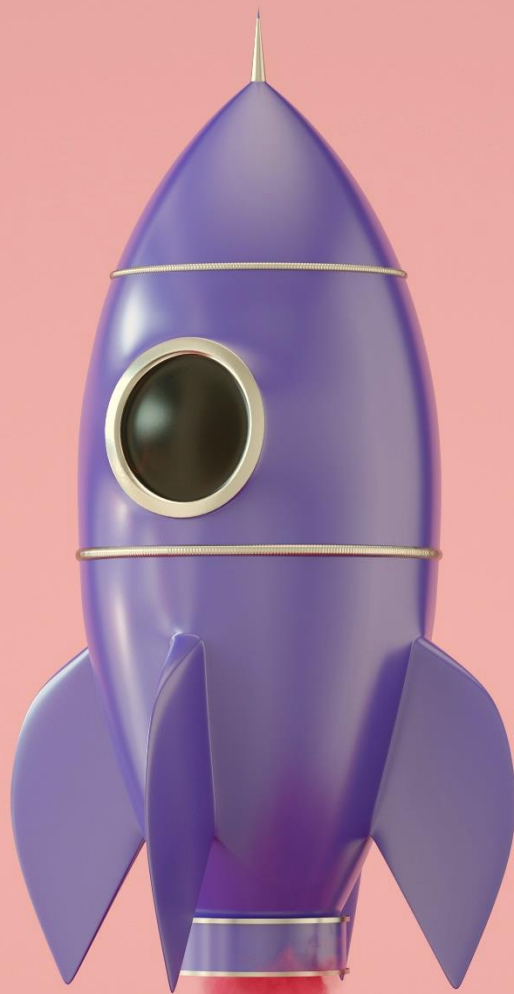
Checks on the documentation of 71 product models from all six product groups targeted by this activity revealed that 39 of them (55%) were non-compliant. The highest non-compliance rate was found in the commercial refrigeration group (100%) and the lowest in televisions (25%).

Laboratory tests were carried out on a very small sample of 21 product models from three of the six product groups: televisions, washing machines, and wine storage appliances.



The detected non-compliances have been addressed through enforcement according to national rules and in line with the procedures and practice of each market surveillance authority.

In most of the cases, the manufacturer accepted the test results and agreed to take all necessary corrective measures as requested by the responsible market surveillance authority. Conformity defects were resolved in 5 cases, a warning has been issued for 2 cases, and 2 non-compliant economic operators have been fined.



3. Building Capacity

Empowering ecodesign and energy labelling market surveillance

To improve the effectiveness and efficiency of market surveillance in the areas of energy labelling and ecodesign, EEPLIANT3 implemented five (5) capacity-development activities. These included:

- 1.** Development of digital/IT tools for ecodesign and energy labelling market surveillance
- 2.** Collaboration with Customs
- 3.** Establishment of centres of excellence for product testing
- 4.** Training activities, including study visits
- 5.** Addressing new and arising issues posing challenges to ecodesign and energy labelling market surveillance.

The goal was to help market surveillance officials get access to new digital tools and work methods, create new skills, and gain experience that they could then use back home.

FIVE NEW IT TOOLS FOR ECODESIGN AND ENERGY LABELLING MARKET SURVEILLANCE

With the ever-growing volume of energy-related products being placed on the EU market, leveraging digital technologies is essential for offsetting the resource constraints many market surveillance authorities are facing. Optimising market surveillance workflows is part of the solution.

To answer this problem, EEPLIANT3 developed three IT solutions. The flagship of the project's IT portfolio is the eepliantCrawler. This is a minimum viable product (MVP) for crawling retailer websites and e-commerce platforms that sell TV monitors in two EU markets, Germany and Ireland. The tool extracts data and information such as product descriptions, specifications, prices, energy labels, PIS, and helps inspectors detect non-compliant products more quickly by flagging, for example, items with incorrect or missing information, energy labels, or the PIS. The software also highlights mismatches in data between the websites and entries in EPREL.

CybPort is another software application developed by EEPLIANT3. The tool is an iteration of the solution built by EEPLIANT2 and automates the upload of case investigations to the European Information and Communication System for Market Surveillance (ICSMS).¹⁴ For most market surveillance authorities, the registration of product investigations into the ICSMS is done manually. Because of CybPort, for 246 cases, EEPLIANT3 inspectors spent no time on this process.

ClickAway (<https://eepliant.eu/index.php/click-away>) is EEPLIANT3's new info hub that gives access to a collection of tools, databases, and other useful assets for ecodesign and energy labelling market surveillance.

¹⁴ https://single-market-economy.ec.europa.eu/single-market/goods/building-blocks/information-and-communication-system-market-surveillance_en (accessed May 2024)

EEPLIANT3 also contributed to the productization of two sophisticated IT solutions of the Sustainable Energy Authority of Ireland (SEAI), a store energy labelling inspection and reporting tool, and a case management system configured to ecodesign, energy labelling and tyre labelling market surveillance. Both applications are available for distribution and reproduction by interested market surveillance authorities.

COLLABORATION WITH EU CUSTOMS

One of the most effective monitoring, verification and enforcement strategies is having non-compliant products blocked at the borders before they enter the EU market. To do this, strong collaboration between market surveillance authority and Customs is essential. EEPLIANT3 researched all existing cooperation mechanisms and working methods to identify barriers, good practices, and potential accelerators.

The end result was the conceptualisation of two different models of collaboration. To test the models on the ground, EEPLIANT3 set up a pilot joint action with four EU customs authorities on LED lightbulbs and Christmas string lights.

These joint controls produced some interesting conclusions and feedback on how to optimise processes and coordination efforts. Good communication between market surveillance authorities and Customs is essential for a better understanding of what should be controlled, why, and how. Furthermore, training Customs officers on the legal principles and the specific requirements of ecodesign and energy labelling for each product area would increase the effectiveness and efficiency of controls.

CONTRIBUTION TO ESTABLISHING CENTRES OF EXCELLENCE FOR PRODUCT TESTING

The organisation and commissioning of compliance verification testing is a core activity for market surveillance. But access to accredited test facilities for energy-related testing is challenging for many of the European market surveillance authorities enforcing the ecodesign and energy labelling regulations. Some have responded to this challenge by developing in-house testing capacity, whereas others continue to struggle to find suitably qualified private (usually commercial) testing facilities that have also the necessary availability.

EEPLIANT3's primary research revealed that for several of the 26 analysed product-specific ecodesign and energy labelling regulations the number of available test facilities is limited. As a result of this research, the project has developed a free-access interactive online directory of commercial test facilities, and a directory of existing or planned test facilities operated by MSAs or equivalent authorities in the European Economic Area (EEA).

DELIVERING A MULTI-FACETED TRAINING PROGRAMME

Study visits and exchanges of MSA staff are recognised as key enablers for harmonising and enhancing EU market surveillance, and a unique opportunity for peer-to-peer knowledge sharing. Besides the more traditional training activities, including a webinar for over 170 market surveillance officials from 29 countries, and despite the challenges of the pandemic, EEPLIANT3 executed a cross-disciplinary programme - the first of its kind - of five study visits in four countries: Denmark, Italy, Latvia, and Sweden. Twenty-four (24) officials took part in these study visits.

A NEW e-LIBRARY RELATED TO ECODESIGN AND ENERGY LABELLING MARKET SURVEILLANCE

Being an inspector in the areas of ecodesign and energy labelling is a big task. Over 50 regulations are in place, covering a wide range of quite diverse product types, some of which are very complex. Besides continuous training, access to ready-to-use tools, good practices, and guidance can assist market surveillance officials in their daily work and boost their efficiency.

In addressing this need, EEPLIANT3 has developed one of the largest electronic databases available to EU market surveillance authorities. In this e-library, MSA inspectors can access more than 250 inspection tools, guidelines, training materials, legal documents, and other useful resources related to market surveillance for ecodesign and energy labelling.

INTERNATIONAL COLLABORATION

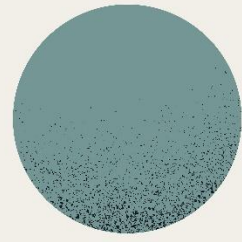
Apart from building capacity within European market surveillance authorities, EEPLIANT3 also sought to support jurisdictions outside the EU in improving the effectiveness of their ecodesign and energy labelling policies and work practices. That was the objective of EEPLIANT3's synergy with two EU-funded international actions, the «EU STARTER» project in Ukraine and the «Taka Nadifa» project in Algeria.

Both collaborations involved several interactions between EEPLIANT3 experts and the participants of the two projects, a dedicated market surveillance workshop in Brussels, and free access to EEPLIANT3's webinar on document inspections. Seventy (70) market surveillance officials from Ukraine participated in the webinar, along with inspectors from Bosnia and Herzegovina (1), Albania (2), Norway (4), Switzerland (1), and Montenegro (2).

ADDRESSING NEW AND EMERGING CHALLENGES

One of the objectives of this concerted action was to identify issues that pose challenges to market surveillance on ecodesign and energy labelling, analyse them, and come forward with problem-solving recommendations. EEPLIANT3 examined 18 of these issues, and for 11 of them a solution has been proposed.

Policy recommendations have been formulated for the following subjects: Equivalent models, Declaration of Identity, Software updates, Complex products, Guides for good practice of market surveillance procedures (energy labelling and ecodesign verification testing), Defeat devices/Circumvention.



4. Impact & End Notes

IMPACT ASSESSMENT & END NOTES

EEPLIANT3's inspection and testing activities revealed significant levels of suspected non-compliance across all six product categories under investigation. The findings, while not statistically representative due to the risk-based approach to product selection, demonstrate the ability of the European market surveillance authorities to identify products with a high probability of non-compliance, and at the same time underscore the need for economic operators to increase adherence to the EU ecodesign and energy labelling requirements

The cumulative energy losses from product non-compliance with the energy efficiency requirements before EEPLIANT3's interventions are estimated to **over 15 TWh** by 2033. To put things into perspective, Belgium's final energy consumption in 2021 was 417.52 GWh (35.9 Mtoe).¹⁵

15 TWh

estimated 10-year energy losses due to non-compliance, before EEPLIANT3's interventions

Only from EEPLIANT3's monitoring, verification and enforcement actions on light sources, there is a total energy saving potential of 14.4 TWh by 2033. This corresponds to cumulated GHG savings of 3,6 million tons, and estimated monetary savings for EU consumers of ~4 billion EUR.

THE NEW EEPLIANT4 CONCERTED ACTION

The baton is now passed to market surveillance authorities for exploiting EEPLIANT3's results, and to the new EU co-funded EEPLIANT4 Concerted Action that began in May 2024.

EEPLIANT4 is a consortium of 28 organisations from 22 European countries. The Project Coordinator is PROSAFE.

The work programme comprises eight product compliance verification and four capacity-building activities.

The eight product groups under investigation are: refrigerating appliances, tyres, electronic displays, cooking appliances, vacuum cleaners, off-mode/networked standby devices, air heating and cooling products, and solid fuel space heaters.

¹⁵ European Commission (2023), EU energy in figures, Statistical pocketbook 2023



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DISCLAIMER

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