

Map of the certification and voluntary environmental schemes landscape and the EU Environmental Technologies Verification

Competition, synergies and opportunities for performance test data recognition



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ABOUT THE BROCHURE

For many companies environmental performance side by side to technical and functional performance of products they deliver, processes they use, services they offer have become key attributes of innovation which together allow to build a competitive advantage on the market. At the same time performance-based or functional environmental requirements used as criteria in purchasing decisions both by private and public buyers drive the demand for providing credible information satisfying these requirements. The typical means of proof involve a variety of certification and labelling schemes developed as international standards, as regulations of the European Commission or as national schemes. Some of them are legally required while some others, though voluntary, are in high demand due to a strong market position. Performance of new products and technologies is also regulated by obligatory compliance schemes including specific technical requirements and testing to ensure that they will properly and safely function when used for the intended application.

The purpose of this brochure is to present the Environmental Technologies Verification (ETV) scheme based on [ISO 14034: Environmental Management: Environmental Technology Verification](#) in the landscape of different obligatory or voluntary schemes used either to demonstrate green performance of products, technologies or compliance to technical requirements as well as environmental management of organisations with an aim to:

- demonstrate the synergies and complementarities between these schemes which can help both technology providers and users understand how ETV can satisfy their needs,
- showcase the opportunities for recognition of technical/functional as well as environmental performance test data based on the synergies.

PROVIDERS OF INNOVATIVE ENVIRONMENTAL TECHNOLOGIES:

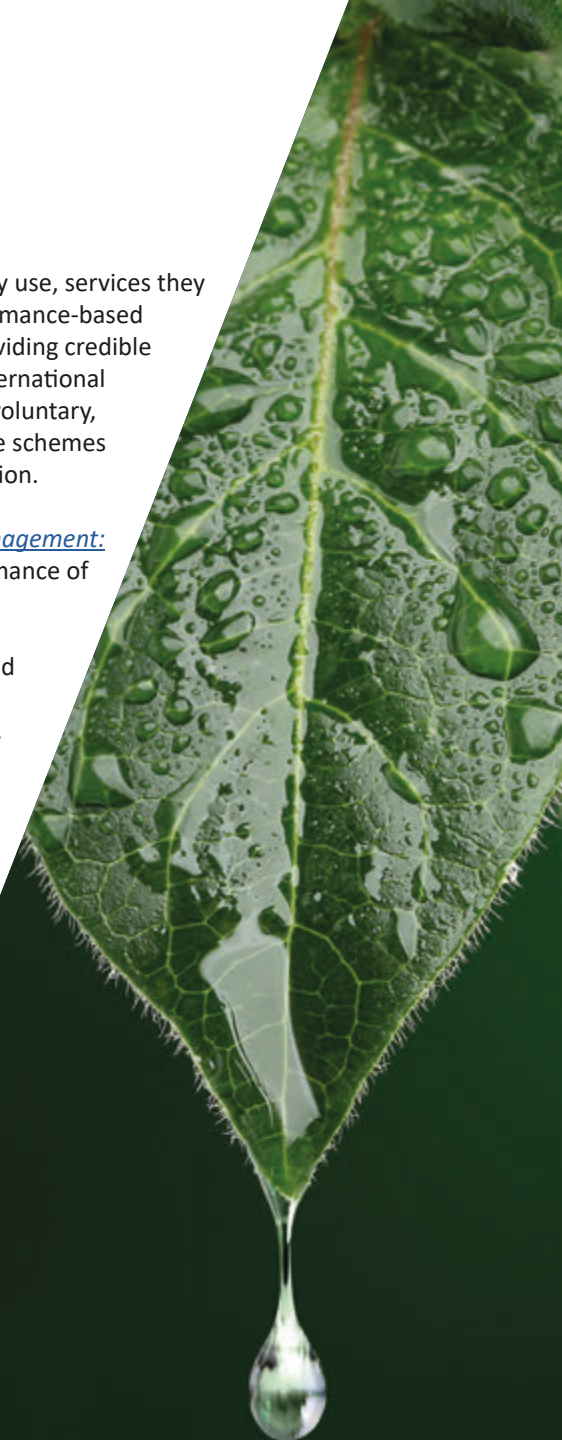
- to get a better idea of the ETV business case and targeting the customers by understanding how the EU ETV Statements of Verification can support them in improving the environmental performance of their products, processes or services or organisations,
- to maximise the utility of performance testing done for the needs of e.g., compliance certification as a resource of quality test data to be used for verifying the veracity of performance claims under ETV and thus reduce time and costs of verification.

BODIES PERFORMING THIRD-PARTY ENVIRONMENTAL CERTIFICATION OF PRODUCTS AND TECHNOLOGIES INCLUDING TESTING:

- to build capacities, skills and knowledge enabling performance test data generation and recognition for the needs of ETV with an aim to extend their testing service offerings and discover new market opportunities.

OPERATORS OF DIFFERENT ENVIRONMENTAL SCHEMES RELEVANT FOR ENVIRONMENTAL PERFORMANCE OF ORGANISATIONS:

- to explain how the performance of technologies verified under ETV can serve as credible evidence to confirm environmental objectives/compliance required by these schemes.



READING GUIDE

SECTION 1: Introduction to ETV

- explains the Environmental Technology Verification (ETV) scheme,
- presents in brief the ETV procedure.

SECTION 2: ETV in the EU landscape of environmental certification schemes

- provides an overview of the competitive landscape of ETV,
- describes the position of ETV in this landscape, indicating areas of competition niches for ETV and opportunities for synergies.

SECTION 3: Synergies between ETV and other environmental certification schemes

- highlights the areas of potential synergies between ETV and other environmental certification schemes,
- focuses on ETV synergies with: Ecolabel, Environmental Product Declaration, Product Environmental Footprint, EMAS, ISO 14001 and Ecodesign.

SECTION 4: Recognition of technology test data generated under performance compliance schemes for the needs of ETV

- explains the role and objective of performance test data generation in the innovation process,
- defines key areas of similarities and differences between ETV and compliance testing,
- explains key issues enabling the recognition of performance test data generated under other schemes for the needs of ETV,
- explains how the performance test data generated outside ETV is assessed under this scheme to verify the performance claim.

SECTION 5: Performance test data recognition: Practical examples

- provides a checklist divided into 4 areas of requirements relevant for the performance test data recognition under ETV,
- demonstrates performance test data recognition for the needs of ETV based on two practical cases: small wastewater treatment plants and innovative construction products.

Section 1.

Introduction to ETV

WHAT IS ETV?

Environmental Technology Verification (ETV) is a voluntary environmental scheme aimed to support the market uptake of innovative technologies resulting in an environmental added value or helping better measure the parameters reflecting the environmental impacts.

ETV as a performance based scheme

ETV provides a third party attestation that the claims referring to the performance of environmental technologies are true. The basis for the performance claim verification are quality assured and quality checked test data on technology performance. Verification consists in providing objective evidence that the technical design of an environmental technology allows achieving a declared performance (technical/functional) and the resulting environmental benefits for its specific application under defined operational conditions while taking into account all measurement uncertainties and other assumptions.

ETV as an EU Programme

At EU level the scheme is implemented as a [Programme of the European Commission](#). The principles and procedures of ETV are standardised by [ISO 14034: Environmental Management: Environmental Technology Verification](#). [The EU ETV General Verification Protocol \(GVP\)](#) serves as the main technical reference for the implementation of the EU ETV Programme. It defines the procedures, the quality assurance framework as well as the programme coordination at European level. It also integrates in full the ISO Standard 14034.

ETV as a scheme designed for green innovations

Unlike compliance schemes, ETV offers flexibility in the choice of performance parameters to be verified so that they best reflect its unique performance features relevant for the users. Moreover, ETV considers environmental aspects of a technology in a life cycle perspective, integrating the environmental performance with technical/functional performance to ensure that complex information is provided to the users allowing them to clearly see the benefits resulting from the implementation of a verified technology.

TECHNOLOGY AREAS COVERED BY ETV

Water treatment
and monitoring



Energy
technologies



Materials, waste
and resources



Cleaner production
and processes



Soil and groundwater
monitoring and remediation



Air pollution monitoring
and abatement



Environmental
technologies in agriculture



THE ETV PROCESS IN BRIEF

The ETV process involves several subsequent steps as presented on the diagram. Step 4 referring to test data generation is optional. If the test data relevant to demonstrate the claimed performance of a technology generated prior to application or in parallel to ETV e.g., during compliance testing meets the requirements of ETV, the test data can be recognised as evidence to verify the performance claim and no additional testing is then needed. Section 2 explains in more detail the issue of performance test data generation in the ETV process.



CONTACT

The proposer contacts a Verification Body to get information on the process, provides basic data about the technology together with an idea of a performance claim to be verified in order to check if his solution is a good candidate for ETV.



APPLICATION

After getting a positive feedback from a Verification Body from the initial contact, the proposer submits an application file detailing information about the technology together with the performance claim and existing performance test data. The Verification Body decides on the eligibility of the technology for ETV and revises the performance claim to be verified.



SPECIFIC VERIFICATION PROTOCOL

Verification Body develops the specific verification protocol including a detailed plan of the verification together with the specification of the parameters to be verified and test data requirements, assesses the existing data and decides whether further tests are needed.



GENERATION OF TEST DATA

If the existing test data does not meet the requirements defined in the specific verification protocol, the proposer is requested to perform additional performance testing typically with an appropriate test body.



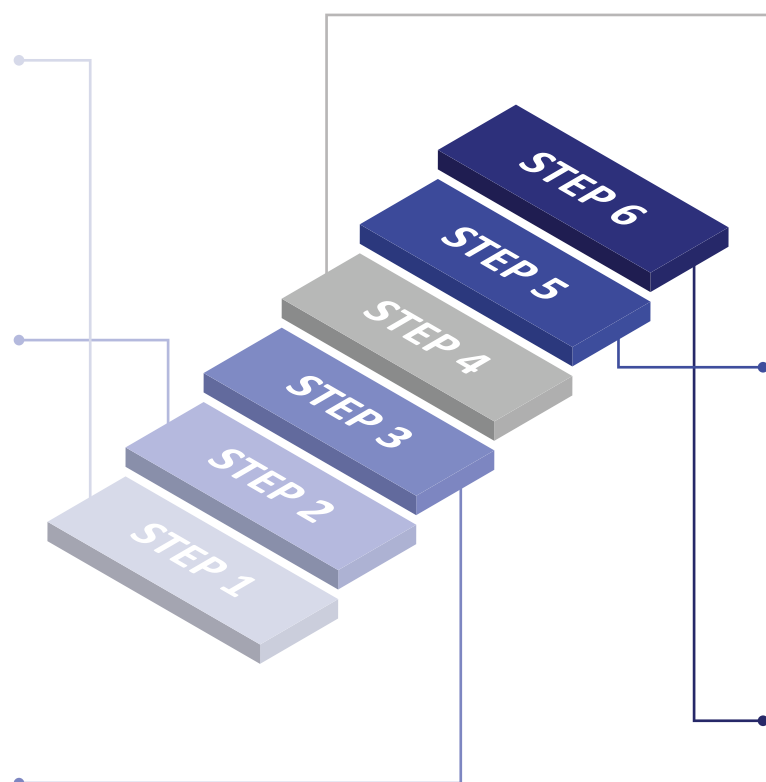
VERIFICATION OF PERFORMANCE

The Verification Body reviews the final set of data, concludes on the verified performance and develops a Verification Report and a Statement of Verification.



PUBLICATION

The ETV Secretariat registers and publishes the Statement of Verification on the ETV EU website.



Section 2.

ETV in the EU landscape of
environmental certification schemes

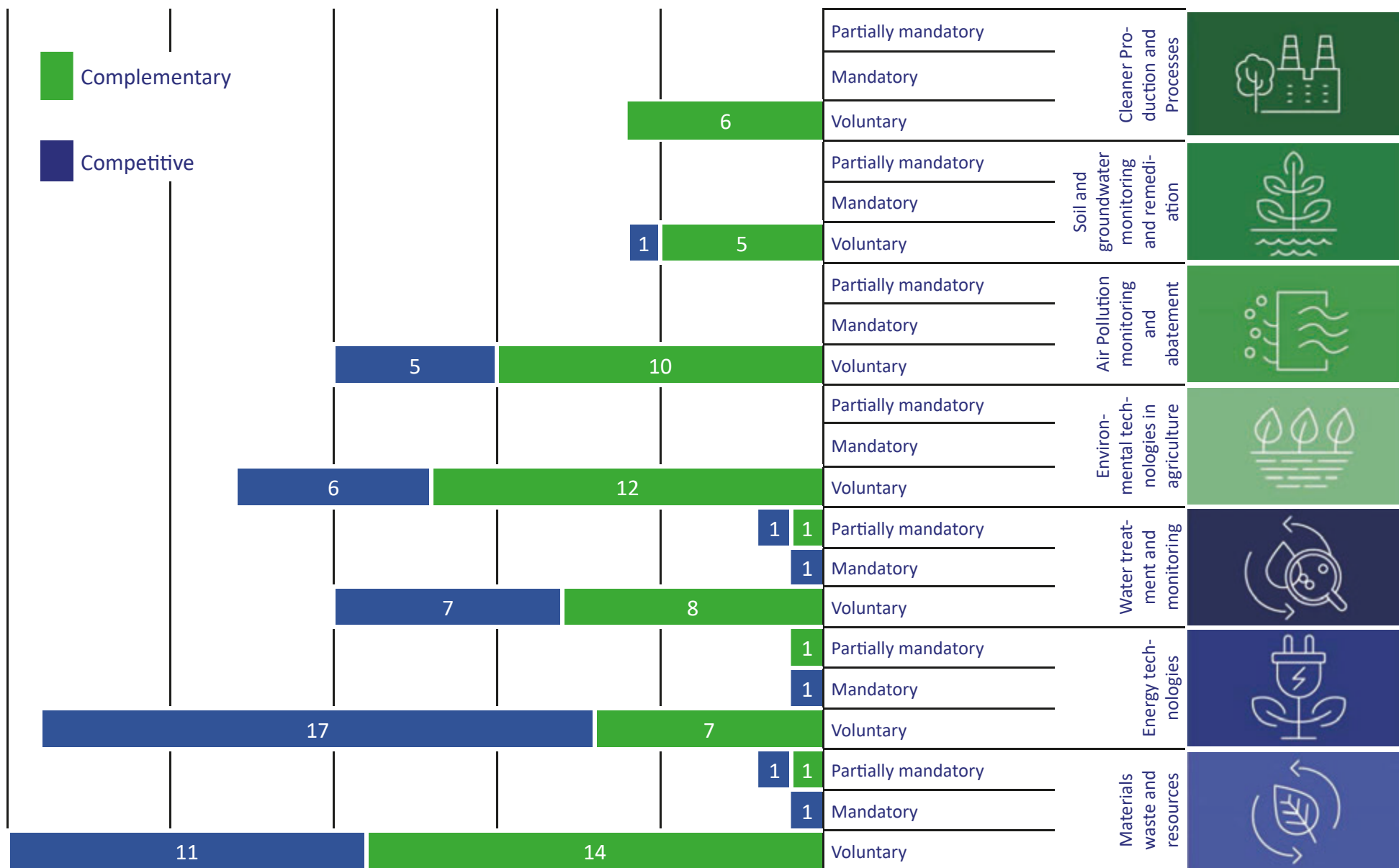
ETV LANDSCAPE OF ENVIRONMENTAL SCHEMES:

Schemes competitive and complementary to ETV

The competitive landscape of ETV is shaped by about 51 different schemes. The competitive schemes are the ones that are performance-based schemes aiming at testing technologies or materials belonging to at least one of the 7 ETV technology areas. From the 51 schemes identified, 47 are voluntary, 3 are mandatory and 1 partially mandatory*. Most of the schemes operate at EU level with a few only at national level. This landscape helps to identify the ETV technology areas with less schemes available where ETV can be a niche for performance verification, and also, the technology areas with the highest number of schemes, competitors to ETV, yet creating opportunities for technology performance test data recognition. The landscape of ETV involves also schemes that are not intended to performance evaluation rather than environmental assessment of products or companies, about 39** additional environmental schemes which are complementary to ETV and provide opportunities for building synergies based on data inputs, as it will be further explored in the following section of this brochure.

*Partially mandatory schemes refer to situations that in some specific conditions resulting from national legislation technologies or products must be certified prior to their marketing.

**Some of the 39 schemes may apply to more than 1 ETV technology area, so in the graphic they are showed in each of the technology areas that apply. The list of schemes is shown on the following pages



EXAMPLES OF SCHEMES COMPETITIVE TO ETV

Cleaner Production and Processes	N/A
Soil and groundwater monitoring and remediation	Voluntary: WaterSense for Soil Moisture-Based Irrigation
Air Pollution monitoring and abatement	Voluntary: AIRLAB Microsensor Challenge; Eurovent Certita Certification; INERIS - Certification of sensors system for air quality monitoring; ECARF Certified Air Purifiers; RESET™ Air
Environmental technologies in agriculture	Voluntary: Vera: UL S 8000 Horticultural Lighting Performance Specification; The Biofertiliser Certification Scheme; CERES - organic fertilizers; EN 13406 Agricultural machinery - Slurry tankers and spreading devices - Environmental protection - Requirements and test methods for the spreading precision ; ISO/DIS 16119-5 Agricultural and forestry machinery — Environmental requirements for sprayers — Part 5: Aerial spray systems
Water treatment and monitoring	Voluntary: ISO 15839:2003. Water quality — On-line sensors/analysing equipment for water — Specifications and performance tests ; Water quality association (WQA) certification; NF validation certification; ICES - Verification of ballast water compliance monitoring devices; MCERTS: performance standards and test procedures for continuous water monitoring equipment; WHO International Scheme to Evaluate Household Water Treatment; ISO 20468-7:2021 Guidelines for performance evaluation of treatment technologies for water reuse systems Mandatory: BS EN 12566-3:2016: Small wastewater treatment systems for up to 50 PT Packaged and/or site assembled domestic wastewater treatment plants Partially mandatory: Various NSF subtypes, as an example NSF/ANSI 42 , 44 , 53 , 55 , 58 , 62 , 177
Energy technologies	Voluntary: Certification for sustainable transportation (eRating); Solar Keymark; NI631 Certification Schemes for marine Renewable Energy Technologies; REDcert-EU; Energy Star; IEC 61400-12-1:2017 Wind energy generation systems - Part 12-1: Power performance measurements of electricity producing wind turbines ; DNVGL-SE-0163 Certification of tidal turbines and arrays ; IEC 61853-1:2011 Photovoltaic (PV) module performance testing and energy rating - Part 1: Irradiance and temperature performance measurements and power rating ; EN 14511- Standards for Air conditioners - Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling ; Heat Pump KEYMARK; CertifHy (Green and low carbon Hydrogen certification); Hydropower Sustainability Standard; ISO 23590:2020 - Household biogas system requirements: design, installation, operation, maintenance and safety ; EN 14236:2018 - Ultrasonic domestic gas meters ; EN 12976-2:2019 - Thermal solar systems and components - Factory made systems - Part 2: Test methods ; EN ISO 18243:2019/A1:2020 Electrically propelled mopeds and motorcycles - Test specifications and safety requirements for lithium-ion battery systems ; EN 1776:2015 Gas infrastructure - Gas measuring systems - Functional requirements Mandatory: European Ecodesign Directive (ErP Directive 2009/125/EC)
Materials waste and resources	Voluntary: Assessment and Verification of Constancy of Performance (AVCP); Plastica Seconda Vita (second life plastic); Recyclability certificate; EuCertPlast; Kiwa Watermark certification; Recycled Claim Standard; DIN-Geprüft test mark: (DIN EN 13432 or DIN EN 14995 standard); Seedling compostability mark (DIN EN 13432 or DIN EN 14995 standard); UL 746D Standard for Polymeric Materials, Fabricated Parts Partially mandatory: NSF/ANSI 14 product certificate for Plastics Piping System Components and Related Materials; CEN/TC 411 Bio-based products ; ISO/TC 61 'Plastics' Mandatory: Potable Water Standards (i.e., Royal Decree 140/2003 Spain)

EXAMPLES OF SCHEMES COMPLEMENTARY TO ETV

Voluntary: Environmental Product Declaration (EPD); UL ECOLOGO; [Eco-Management and Audit Scheme \(EMAS\)](#); ISO Environmental management — Life cycle assessment — Principles and framework; EU ETC; ISO 14030 family of standards

Voluntary: Environmental product declaration (EPD); Eco-Management and Audit Scheme (EMAS); ISO Environmental management — Life cycle assessment — Principles and framework; CEN/TC 223 'Soil improvers and growing media'

Voluntary: [ISO 14064-1:2018 Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals](#); [ISO 14067:2018 \(en\) Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification](#); UL ECOLOGO; Environmental product declaration (EPD); Eco-Management and Audit Scheme (EMAS); ISO Environmental management — Life cycle assessment — Principles and framework; Indoor Air Quality Certification; [EN 19694 series - Stationary source emissions - Determination of greenhouse gas \(GHG\) emissions in energy-intensive industries](#); ISO 14001 - Environmental Management System; [CEN/TC 264 Air quality](#)

Voluntary: Agri-Environment Schemes; UTZ certification; Rainforest Allianz Certification; 4C Certification; SRP Standard; Eco-scheme; Entry Level Scheme; Environmental product declaration (EPD); UL ECOLOGO; Eco-Management and Audit Scheme (EMAS); [ISO Environmental management — Life cycle assessment — Principles and framework](#); [ISO 17989-1:2015 Tractors and machinery for agriculture and forestry — Sustainability — Part 1: Principles](#)

Voluntary: Schéma Directeur d'Aménagement et de Gestion des Eaux (France); Environmental Product Declaration (EPD); UL ECOLOGO; Eco-Management and Audit Scheme (EMAS); ISO Environmental management — Life cycle assessment — Principles and framework; ISO 14001 - *Environmental Management System*; [ISO/TC 147 Water quality](#)
Partially mandatory: Building Research Establishment Environmental Assessment Method (BREEAM),

Voluntary: Environmental product declaration (EPD); UL ECOLOGO; Eco-Management and Audit Scheme (EMAS); ISO Environmental management — Life cycle assessment — Principles and framework; ISCC (International Sustainability & Carbon Certification); [EN IEC 62941:2020 Terrestrial photovoltaic \(PV\) modules - Quality system for PV module manufacturing](#); ISO 50001 - *Energy management*
Partially mandatory: Building Research Establishment Environmental Assessment Method (BREEAM)

Voluntary: CEWASTE; Environmental Product Declaration (EPD); UL ECOLOGO; Eco-Management and Audit Scheme (EMAS); ISO Environmental management — Life cycle assessment — Principles and framework; LEED certification (buildings); DGNB System (buildings); PassivHouse (building); HQE - Haute Qualité Environnemental (High Quality Environmental standard); Minergie (buildings); European Technical Assessments - ETA; CERA 4in1 certification system; [CEN/TC 350 - sustainability of construction works](#); ISO 14001 - Environmental Management System
Partially mandatory: Building Research Establishment Environmental Assessment Method (BREEAM)

CATEGORIES OF ENVIRONMENTAL CERTIFICATION SCHEMES IN THE ETV LANDSCAPE

Taking into account their purpose, the schemes that create the landscape in which ETV functions can be grouped into three categories: environmental performance of products, environmental performance of organisations and product/technology compliance schemes.

Environmental performance of products

They are generally aimed to provide information that facilitates environmentally aware choices of products or services by consumers, organisations and businesses.

They may be based on [ISO family of eco-labeling standardised approaches](#):

- **Type I** environmental labeling for eco-labelling schemes with clearly defined criteria for products (based on ISO 14024*) e.g., [EU Ecolabel](#);
- **Type II** self-declared environmental claims for products and services based on ISO 14021*, where there are neither criteria nor labeling schemes (with a flexible choice of parameters determined by the companies or associations);
- **Type III** environmental product declarations (EPD) for specific aspects of products using a life-cycle approach in accordance with ISO 14025* and EN 15804* (construction products) suitable for products that are used together with others in systems.

They may also use other Life Cycle Analysis based approaches e.g., Product Environmental Footprint method as well as other EU regulations referring to some aspects of environmental impacts of products e.g., Eco-design Directive and regulations complementing this directive e.g., Energy Labelling Regulation.

Environmental performance of organisations

These schemes are focused to provide environmental management frameworks to demonstrate organisations' conformity with their established environmental policy and requirements towards regulatory bodies and authorities as well as other value chain actors. They may be based on standardised approaches (e.g., ISO 14001*) or EU regulations, e.g., [EMAS](#).

Environmental performance of products and environmental performance of organisation schemes are highly relevant for building synergies with ETV, some examples of specific synergies are shown in Section 3

Product/technology compliance schemes

They are aimed to confirm compliance of specific products or technologies to the requirements defined in EU, national regulations or private organisations' specifications and are typically performance-based. Beside technical or functional performance, the compliance requirements may include additional parameters beyond these legally required but relevant to stakeholders as well as environmental performance of products and technologies. When mandatory, these schemes are a necessary step to enter the market. The compliance requirements may involve third party performance testing.

Despite creating competition to ETV, these schemes may provide an opportunity for performance test data recognition. Further information and practical examples of test data recognition are provided in Sections 4 and 5.

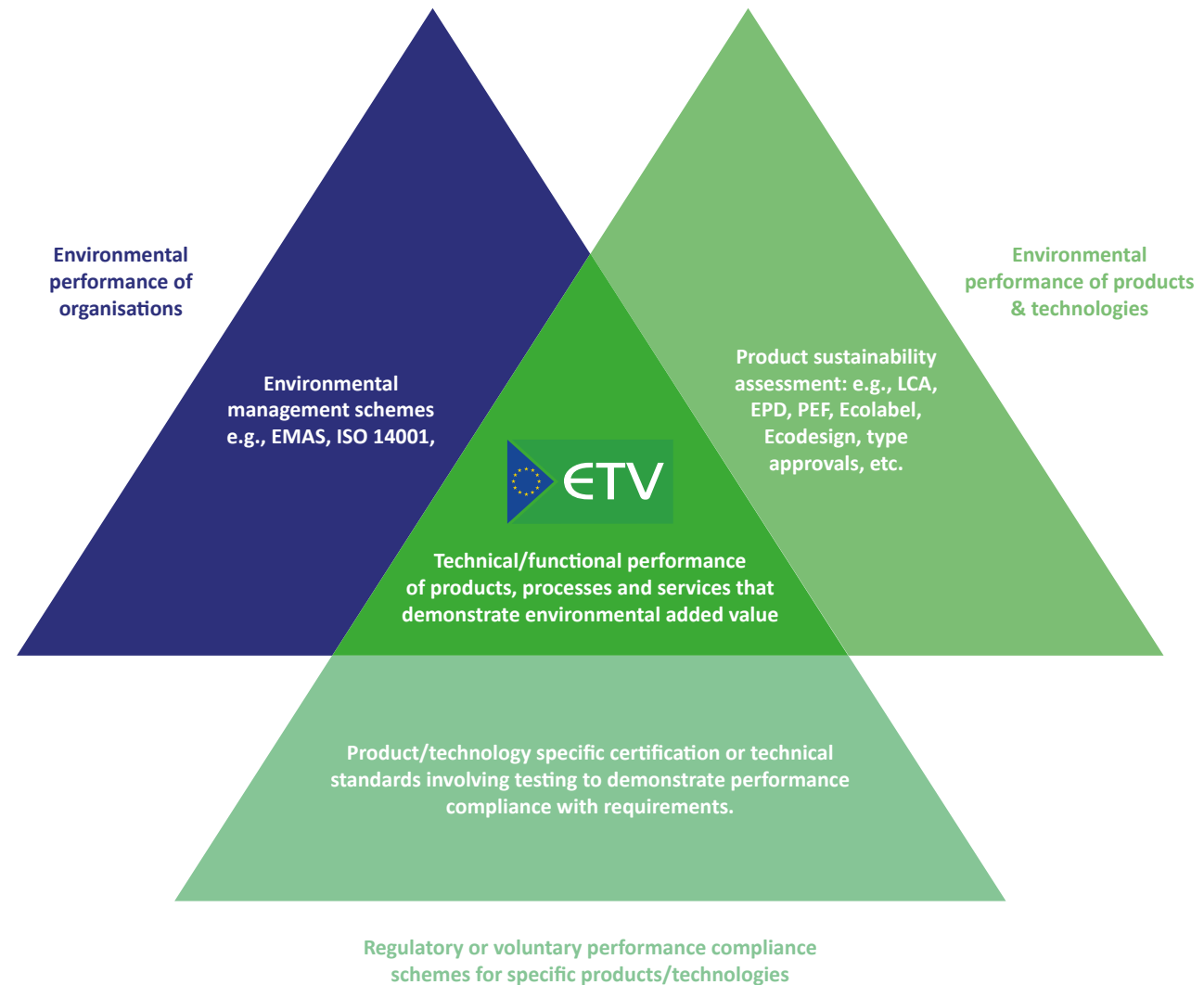
*) [ISO 14021:2016 – Environmental labels and declarations – Self-declared environmental claims](#)
[ISO 14024:2018 – Environmental labels and declarations – Type I environmental labelling – Principles and procedures](#)
[ISO 14025:2006 – Environmental labels and declarations – Type III environmental declarations – Principles and procedures](#)
[EN 15804+A2 – Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products](#)
[ISO 14001:2015 – Environmental management systems – Requirements with guidance for use](#)

ETV POSITIONING IN THE EU LANDSCAPE OF ENVIRONMENTAL CERTIFICATION SCHEMES

ETV fills a gap in the landscape of environmental certification schemes because it integrates three aspects of technology assessment:

- as a performance based scheme it focuses on technical/functional performance of a technology,
- as an environmental scheme it addresses the environmental performance of a technology using life cycle perspective,
- as green innovations scheme, it focuses on the environmental added value of a technology resulting from the application of innovative solutions to its design, raw materials and energy involved, production process, use/ operation, recyclability or final disposal.

It makes ETV a scheme suitable for those environmental technologies which fall outside regulations or standards because of their unique performance features or above average performance and for innovations which do not fit into existing legislative, labelling or standards frameworks.



Section 3.

**Synergies between ETV and other
environmental certification schemes**

KEY AREAS OF SYNERGIES BETWEEN ETV AND OTHER CERTIFICATION SCHEMES

Complementarity is an important aspect determining both the ETV business cases as well as the role of the scheme in building sustainable value chains. As presented in the previous section, the areas of synergies between ETV and other environmental certification scheme type relevant either for environmental performance of products and technologies or organisations result from the integrative character and completeness of information offered by ETV. Depending on the type of scheme and its objectives, three key areas of synergies and data cross-exchange can be identified between ETV and other schemes:

- ✓ utilisation of environmental performance data delivered by other schemes for the needs of ETV,
- ✓ providing data on technology performance to satisfy information needs of other schemes,
- ✓ recognition of technology performance data generated under performance compliance schemes for the needs of ETV.



SYNERGIES BETWEEN ETV AND OTHER SCHEMES IN BRIEF

ETV, environmental performance of products and LCA based schemes

In ETV, the environmental added value of a technology i.e., its more beneficial or less adverse environmental impact compared to technologies applied currently in a similar situation, is considered from a life-cycle perspective, i.e., taking into account the main benefits and impacts during the life cycle of the technology such as consumption of natural resources, water and energy consumption, emissions to air, water and soil, generation of waste (including hazardous waste), noise, etc. but with a simplified approach. ETV does not have the same objective or provide the same information as specialised environmental tools based on life-cycle information such as Life-Cycle Analysis (LCA), Environmental Product Declaration (EPD) or Product Environmental Footprint (PEF) as they are aimed to deliver the final environmental impact of a product. ETV deals with the technical/functional performance of an environmental technology. However, it can use the LCA data to aid in assessing the environmental added value of the technology or its compliance with the definition of environmental technology as specified in the ISO 14034 standard. The data provided by the environmental tools can also serve for the definition of potential environmental parameters for verification identified as major environmental issues related to e.g., manufacturing, operation or end of use life stages of the technology.

ETV and environmental management schemes

ETV does not address the management of the environmental performance of organisations. However, information delivered by ETV about the performance of technologies and their environmental benefits may be useful for companies to address their environmental objectives that are most relevant or urgent either to constantly improve on environmental performance in such areas as e.g., energy efficiency or resource productivity that are closely related to the processes and technologies used as well as for implementing environmental management schemes to demonstrate compliance with the requirements.

ETV and performance compliance schemes

Like in performance compliance schemes, the assessment of the technical/functional performance parameters of a technology must be quantifiable and measurable through testing and relevant to its defined intended application, with the difference that ETV allows flexibility in the choice of performance parameters to be verified so that they best reflect the innovative and environmental aspects of the technology relevant to its users. However, some of those performance parameters may also be addressed in compliance schemes relevant to the technology and its application which creates opportunities for performance test data recognition.



ETV and EU Ecolabel

The type I environmental declarations or Ecolabels scheme is based on a third-party assessment of a product based on several criteria involved in the environmental impact of a product or material based on its life cycle considerations. The purpose of Ecolabel is to communicate environmental information to consumers while on B2B level to meet the requirements of green public procurements. The EU Ecolabel supports products and services that have a lower environmental impact and contribute to sustainable development along their life cycle, are energy efficient, durable and repairable. The label ensures that environmental considerations and optimisation are taken into account at each life stage of the product.

EU Ecolabels are based on a standardised scheme defined in standard ISO 14024: *Environmental labels and declarations — Type I environmental labeling — Principles and procedures*. The standard provides a selection of product categories, product environmental criteria and product function characteristics as well as requirements for assessing and demonstrating compliance.

The assessment addresses the major environmental impacts associated with a product from the perspective of its life cycle, focusing on some discrete parameters such as toxics, recycled content, renewable energy percentage, etc. These criteria are defined by experts in consultation with main stakeholders and are subject to revision every 4 years to incorporate innovation in each sector. The EU Ecolabel certification scheme does not focus on technologies but mostly on specific products, some of them also for industrial applications e.g., detergents or cleaning products.

For companies interested to establish new business opportunities through getting an EU Ecolabel, the process of checking whether a product complies with the Type I environmental declarations criteria enables to identify areas and ways of optimising a product and its production processes from the life cycle perspective, taking into account e.g., biodegradability potential, the use of certified renewable resources, reduction of the use of hazardous substances, etc.

Performance parameters of products or processes verified under ETV may serve as a basis for the choices of input materials to the processes to improve the performance of the product in line with the Ecolabel environmental criteria or for integration of new technologies into manufacturing processes of the product to reduce the environmental impacts.

SYNERGIES



ETV may deliver useful information on technical / functional performance and environmental performance of technologies or input materials (e.g., secondary raw materials) that can be used to optimise the production process or environmental parameters of a product to comply with the requirements of Ecolabel



ETV and Environmental Product Declaration (EPD)

The EPD declaration is a certificate of environmental impact assessment of a product from its Life-Cycle perspective, covering all stages of its life: from material acquisition, through production, transport, assembly, use, to disposal and recycling. It quantifies the extraction of raw materials, energy consumption in the production process, water consumption and waste generation. The EPD declaration allows to compare environmental profiles of products fulfilling the same function, their assessment and selection from the viewpoint of their overall environmental performance.

EPD or type III environmental declarations are compliant with the ISO 14025 standard and based on independently verified life cycle assessment (LCA) data, life cycle inventory analysis (LCI) data or information modules in accordance with the ISO 14040 series of standards and, where relevant, additional environmental information. Similarly to ETV, EPDs are typically used in B2B communication, they do not confer a judgment, but enable informed decisions. EPD also involves third party assessment. It refers to ensuring the impartiality and credibility of the LCA data.

EPD does not deal with the technical/functional performance parameters of a technology or product, neither is it limited to environmental technologies only. On the contrary, it may apply to any product or technology category. The aim is to detail quantified environmental information on the life cycle of a product to enable the comparisons between products fulfilling the same function based on predefined Product Category Rules (PCRs).

The ISO standard 14025 establishes the procedure for developing PCRs and the required content of a PCR, as well as requirements for comparability. In Europe, the European Committee for Standardisation has published a European norm EN 15804 that includes common Product Category Rules (PCR) for EPD development in the construction sector. Data delivered by EDP may be used for the assessment of the environmental added value of a technology including identification of its major environmental aspects from the life cycle perspective which is carried out under the application phase of ETV to check if the technology complies with the definition of an environmental technology. It may also be used when relevant for the definition of the performance claim as well as specification of environmental parameters associated with the major environmental impacts of a technology to be verified. For companies interested to establish new business opportunities through getting an EPD, the process enables to identify the areas and ways of optimising a product and production processes from the life cycle perspective. Here, ETV could provide information on the performance of a technology to make the choice of the most suitable options allowing to optimise the environmental impact of a product.

SYNERGIES

EPD



LCA data: compliance with the definition of an environmental technology: assessment of the environmental added value of technologies/products



PCRs: Environmental aspects to be considered as environmental parameters for verification



ETV: technology/product performance parameters to optimise the environmental performance of a business model or value chain relevant for a product applying for EPD



ETV and Product Environmental Footprint (PEF)

Product Environmental Footprint (PEF) is a multi-criteria measure to quantify the environmental impacts of products (goods or services) throughout their life cycle. PEFs involve Life-Cycle Assessment of products and take into consideration all relevant environmental interactions associated with a good, service, activity, or entity from a supply chain perspective i.e., from extraction of raw materials, through production and use up to final waste management. Information provided by PEFs is aimed to make products fit for a climate neutral, resource efficient and circular economy and reduce waste. An LCA based methodology similar to PEF may also be applied to measure the sustainability aspects of organisations as Organisation Environmental Footprint (OEF)

PEFs methodology assumes common methods based on Product Environmental Footprint Category Rules (PEFCR) to enable measurement, comparison and communication of the sustainability of products taking into account environmental impacts as well as additional environmental information of a product category including other technical parameters that are relevant for a given type of a product to assess and present its overall environmental footprint. These technical parameters may include e.g., the use of renewable energy or renewable fuels, secondary raw materials, consumption of freshwater resources, disposal of hazardous versus non-hazardous waste types, dismantleability, reparability and another circular economy related information.

The parameters should be expressed quantitatively and based on quality assured data. PEFs are subject to verification by third party verifiers for compliance with the methodology.

Through PEFs, organisations are able to identify the major environmental impacts as well as resource-related burdens caused by their products and services and find out technical and non-technical solutions helping to minimise these impacts in the most efficient way. ETV verified technologies may serve as a source of information and facilitate the purchase choices of solutions to reduce the impacts and improve the benchmarking of the environmental claims of a product or organisation belonging to the same category.

PEFs results may deliver data relevant for other third party schemes related to environmental claims, e.g., ETV. Besides, some of the parameters considered under PEF evaluation (such as the use of energy, water, raw materials, or emissions to air, water and soil) may also be verified under ETV and thus contribute with additional environmental information relevant for PEFs.

SYNERGIES



ETV: may provide data relevant to additional technical parameters relevant for PEFs as well as make technology or product choices to reduce environmental impacts relevant to improve the environmental claims of products or organisations and their benchmarking with similar organisations or products



PEFs data application: e.g., identification of the most relevant life cycle stages with environmental impact for the assessment of the environmental added value of a verified product under ETV



ETV and EMAS

The Eco-Management and Audit Scheme (EMAS) is a voluntary environmental management scheme developed by the European Commission to enable organisations assess, manage and continuously improve their environmental performance. The scheme is globally applicable and open to all types of private and public organisations. The requirements of the scheme are defined in the [EU EMAS-Regulation "EMAS III" \(1221/2009\) and the Commission Regulation \(EU\) 2017/1505 and 2018/2026, in Annex IV.](#)

The EMAS Regulation incorporates the environmental management system requirements of the ISO 14001 international standard for environmental management, as well as additional requirements specified for EMAS that go beyond the ISO requirements such as employee engagement, ensuring legal compliance and issuing an annual Environmental Statement.

Because of its additional requirements, EMAS is known as the premium scheme for the environmental management of organisations.

Under the EMAS Regulation, an organisation shall establish environmental objectives at adequate functions and levels, taking into account its significant direct and indirect environmental aspects relevant for its environmental performance, associated compliance obligations while considering its risks and opportunities. The organisation must also plan appropriate actions to achieve its environmental objectives and targets.

While EMAS is a voluntary scheme, EMAS registered organisations are obliged to produce an Environmental Statement, where they annually report on their environmental performance using the key performance indicators related to direct environmental aspects of their activity: energy efficiency, material efficiency, water, waste, biodiversity and emissions.

The Statements specify the environmental objectives, targets and key performance indicators of the organisation. When determining them, the organisation shall take into account - among others - change in its operations, including planned or new developments, and new or modified activities, products, technologies and services.

ETV may provide useful data on technologies' performance relevant for improving the core environmental indicators specified under EMAS by the organisation. These can be used by the companies seeking alternatives to reach their environmental objectives and targets. They also serve as means for performance benchmarking against these indicators to support purchase decisions according to the objectives of an EMAS registered organisation.

The link between ETV and EMAS applies also to organisations building EMAS as preparing for EMAS registration often requires improvements in the environmental performance of their processes where ETV could contribute with appropriate verified technological solutions.

SYNERGIES



ETV: technology performance data relevant for core environmental indicators to reach the environmental objectives and targets in the framework of an environmental management system;



ETV / EMAS: the two systems can mutually support to fulfil each other's requirements, so that EMAS registered organisations become ready to use ETV-verified technologies while EMAS key performance indicators can support ETV



ETV and ISO 14001

ISO 14001, similarly as the ETV standard ISO 14034 belong to a family of ISO standards dedicated to environmental management. ISO 14001 provides a framework that a company or organisation can follow to set up an effective environmental management system with an aim to improve their environmental performance. Through identification, management, monitoring and control of their environmental issues relevant for their activity. ISO 14001 can be applied by any organisation type.

ISO 14001 describes a management system which supports organisations to eliminate their environmental burden together with targets and areas of actions associated with their operations while taking into account their environmental ambition as well as all environmental aspects relevant to their operations e.g., air pollution, water and sewage issues, waste management, soil contamination, climate change mitigation and adaptation, and resource use and efficiency.

ISO 14001 does not lay down requirements regarding the effects of environmental activity. It only requires undertaking the obligations contained in the environmental policy, regarding the operation in accordance with the legal and other requirements to which the organisation has committed itself. Therefore, the standard is based on the assumption that companies will periodically review and evaluate their environmental management system to identify improvement opportunities to achieve environmental objectives and implement them.

It may induce organisations to consider the use of highly efficient environmental technologies such as ETV verified technologies, where it is appropriate and economically justified, and to take into account the economic performance associated with such technologies.

Another synergy between ISO 14001 and ETV may be related to purchase policies which take into account environmental aspects when making the procurement choices. ETV Statements of Verification may be used as third party proofs of the technology performance to meet the client's requirements concerning environmental aspects.

Also ISO 14001 certified companies may encourage better environmental performance of their suppliers by integrating them into the organisation's business systems which combines business management with environmental aspects. ETV may help suppliers using verified technologies in their processes or providing products that have been verified to enter supply chains managed by an ISO 14001 certified organisation as means of demonstrating the technical and functional performance together with the environmental benefits making thus their offerings more attractive.

SYNERGIES



ETV contributes to the identification of technologies that can help achieve the environmental objectives planned under ISO 14001



The ETV Statements of Verification can be used as elements of the purchase policies of ISO 14001 certified organisations to prove the compliance of technologies with their requirements



ETV may increase the attractiveness of offerings of organisations wishing to enter supply chains managed by ISO 14001 certified organisations



ETV and the Ecodesign Directive

The [EU Ecodesign Directive \(2009/125/EC\)](#) applies to energy-related products and provides minimum energy and environmental performance standards for these items in order to be legally placed on the EU market. The Directive addresses the integration of environmental aspects into a product development process referring to all stages of the product's life to achieve the lowest possible environmental impact throughout the product life cycle. In the context of circular economy, the importance and scope of the application of the ecodesign may extend and address also other products.

Ecodesign is mandatory for over 40 product groups (e.g., boilers, computers, household appliances, etc.). Although it is primarily focused on energy consumption it also covers other environmental issues such as materials use, water use, polluting emissions, waste issues, and recyclability. For each product falling under the Ecodesign Directive, the manufacturer must define a product ecological profile based on its Life Cycle Analysis in order to identify alternative design options and solutions to minimise its environmental impact.

As defined in Annex II of the Directive, specific ecodesign requirements are aimed at improving a selected environmental aspect of the product and may refer to the reduced consumption of a given resource, such as a limit on the use of a resource in the various stages of a product's life cycle (e.g., water consumption or quantities of a given material incorporated into the product or a requirement for minimum quantities of recycled material).

ETV may facilitate the choices of a specific design solution appropriate to ensure high environmental performance of an energy-related product at its design stage. It can be done by providing data on the performance of innovative materials or technologies which, when integrated into industrial processes, may result in reduced environmental impacts. Therefore, it can facilitate the analysis required by the Ecodesign directive on the search of best-performing products and technologies available on the market. Besides, the information available in the framework of other European Community activities (where ETV belongs) can be used in Ecodesign.

The ETV Statements of Verification may also support the technical documentation file required from the manufacturer to enable an assessment of the conformity of the product with the requirements of the applicable implementing measure as specified in Annex IV to the Directive.

SYNERGIES

Ecodesign



ETV: facilitate the choice of specific design solutions involving materials and technologies that result in substantial improvements of the targeted environmental aspect of the product



ETV Statements of Verification may also support the technical documentation to demonstrate compliance



Section 4.

Recognition of technology test data
generated under performance
compliance schemes for the needs of ETV

ETV AND TECHNOLOGY PERFORMANCE DATA GENERATION

Technology buyers, users, investors and regulatory bodies demand credible and objective evidence based on independent quality assessed data on the performance of innovative environmental technologies that will demonstrate whether or not a proposed new solution will result in a substantial improvement and/or satisfy their needs and help them solve an environmental problem.

From the technology providers side, it typically involves:

- ✓ proving compliance legally required for a technology market entrance,
- ✓ proving advantage and innovation for market competition and stakeholder's satisfaction,
- ✓ proving performance and environmental effects for technology users' needs.

ETV, similarly to other compliance schemes, requires data on the performance of a technology generated through testing. While in some compliance schemes performance testing is an obligatory part of the process, in ETV the test data generation process is considered optional, if the technology provider presents a set of quality assured data relevant to the performance claim to be verified.

However, in order to understand how performance test data generated for e.g., compliance certification can feed performance data for ETV needs it is necessary first to focus on:

- ✓ the role and position of ETV and performance test data generation in the innovation process,
- ✓ the differences and similarities between ETV and compliance testing/certification schemes,
- ✓ the key issues enabling the recognition of test data generated outside the ETV process e.g., under other performance based schemes.



PERFORMANCE TEST DATA IN THE INNOVATION PROCESS

Performance testing plays a crucial role at all stages of technology development and commercialisation: from in-house testing during the demonstration or pilot phase to compliance testing of mature solutions.

Pilot/demonstration phase

During a pilot or demonstration, the testing of performance is done to demonstrate that the system works properly in the industry relevant operational environment. The testing is done in house or by test labs under the instructions of the technology developer.

Mature products/technologies

At the stage of deployment of a mature technology or product, testing is done based on established standards and norms involving a predefined set of criteria or requirements, performed typically by third party accredited certification bodies.

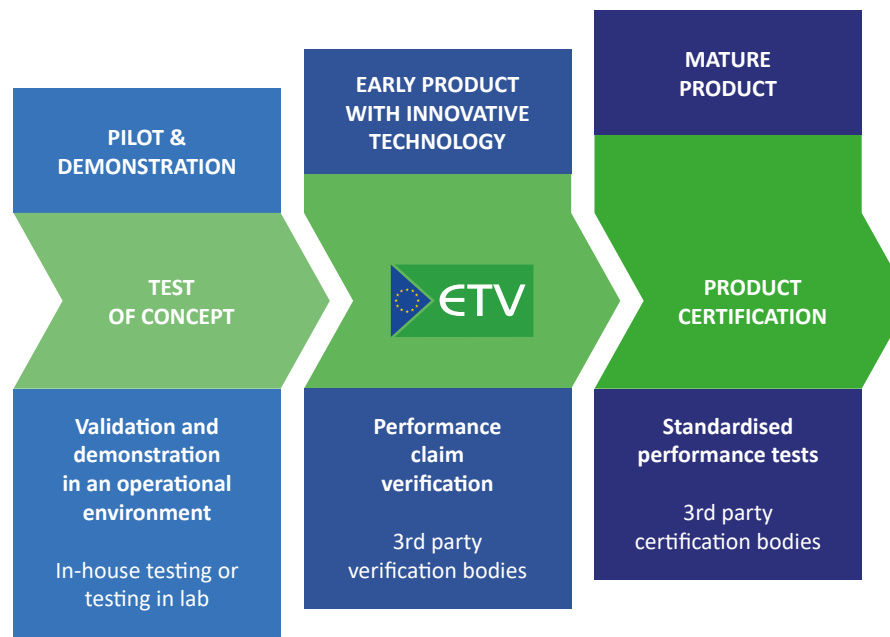
Early product stage

In-between however, there is a stage of an early product, when performance testing is done to de-risk or show the commercial potential of the solution before its deployment as a mature product. At this stage in-house or ad hoc testing is not sufficient anymore to credibly prove performance claims. Therefore, providers of innovative environmental technologies, often fall into the trap where they allocate a lot of time and resources on compliance testing by third party certification bodies while struggling with proving the technology's innovation and environmental benefits it delivers to the users. Very often the compliance/certification schemes used for mature products are not adequate to prove the performance claims of those new technologies whose performance falls outside regulations or standards and for innovations that do not fit into the existing legislative, labelling or standardised performance frameworks. Such an approach works at cross-purposes since unless the technology users are able to see and clearly understand the benefits of the innovation, the providers will not be able to realise their return-on-investment.

Verification is done by accredited third party Verification Bodies, under quality conditions comparable to those of certification, based on the technology specific features and performance claims instead of certification standards like in the case of compliance schemes.

The claimed performance is verified based on quality assured and quality assessed test data. Since ETV is a scheme dedicated to innovative technologies it allows for flexibility in the choice of performance parameters to be verified. They may involve parameters addressed in standardised performance tests as well as other parameters for which standards do not exist.

To maximise the utility of the performance testing results, ETV allows for the use of test data generated outside ETV e.g., for compliance testing to verify the claim on condition they meet the ETV process requirements.



ETV AND COMPLIANCE TESTING/CERTIFICATION: KEY AREAS OF SIMILARITIES AND DIFFERENCES

ETV is not a compliance scheme. It is neither based on a pre-defined set of criteria nor does it result in a “pass-or-fail” judgment on the performance of technologies.

ETV does not aim to substitute existing regulatory or voluntary systems such as type-approval or labels.

ETV will not substitute the actual testing of new technology or obligatory compliance testing; it reviews the performance test results in order to assess the veracity of the performance claim.



COMPLIANCE TESTING	Key areas of similarities and differences	ETV
Business2Consumer (B2C) Business2Business (B2B)	TARGET	Business2Business (B2B)
Obligatory / Voluntary	STATUS	Voluntary
Specified mature products, technologies, services	OBJECT	New environmental technologies i.e., processes, products or services resulting in an environmental added value or measuring parameters that indicate an environmental impact
Confirm compliance to requirements	PURPOSE	Confirm technology provider's claim on technology performance and its environmental value
Specified criteria, parameters, rules and procedures	CRITERIA & PROCEDURES	Flexibility in the choice of verification parameters, specified verification rules and procedures
A broad scope: from testing of product type, a production series through quality management systems at the production site	SCOPE	Verification of claims on technology performance expressed as technical/functional parameters and environmental parameters and their numerical values on the achieved performance
Third party, quality assured test data	TEST DATA REQUIREMENTS	Third party, quality assured test data
Certificate of conformity, attestation, certification of a batch, granting the right to use marks of conformity, label	END RESULTS	Verification Report and EU ETV Statement of Verification. ETV is neither a label nor a conformity mark
May involve surveillance	SURVEILLANCE	Statement of Verification remains valid as long as the technology to which it applies in conforming to the conditions that applied as per its verification

KEY ISSUES ENABLING TEST DATA RECOGNITION FOR ETV

Under ETV, verifications of performance are based on a “**defendable and complete data set**” produced through testing. The testing could be performed either within the verification process or outside for example during the implementation of a demonstration project or testing under an obligatory compliance testing/certification scheme.

The following issues are key to enable the recognition of test data generated outside the ETV process:

- ✓ reference to the technology to be verified,
- ✓ relevance to the performance claims to be verified,
- ✓ compliance to the quality requirements specified in the EU ETV General Verification Protocol,
- ✓ compliance to the verification-specific requirements defined in the specific verification protocol developed for each verified technology.

In ETV, requirements on data and data quality and completeness (e.g., regarding reproducibility, repeatability, ranges of confidence, accuracy, uncertainties) as well as the testing conditions refer to both: performance parameters to be verified as well as operational parameters, and should demonstrate levels generally accepted for the technology by the scientific community or (by default) by the industrial sector concerned. Therefore, prior to testing for the needs of other certification schemes, the technology provider should consult the verification body and competent test body to ensure that the testing meets the requirements of the EU ETV scheme.



Reference to the technology to be verified

The test data must refer to the tested technology unit that is identical to the one for which the performance is verified under ETV. The technology must also demonstrate sufficient technology readiness level (TRL).

The test data should clearly indicate the object of the testing i.e., a unique identifier must be provided to enable tracing to which object of testing the data refers to e.g., a commercial name of the technology, an identification number or applicable version.

The test data must be produced for a technology demonstrating a sufficient technology readiness level (TRL) i.e., a minimum of 7. Compliance testing is typically the last step before the technology's entrance to the market, so the test data already refers to a market ready (mature) unit.

If the test data is generated for a technology that is a final prototype design prior to manufacture or supply of commercial units, it can be recognised as valid only if that prototype is the final design representing a pre-commercial unit and will apply only to the verification of any subsequent commercial unit whose design is identical to the one for the prototype unit used for performance testing.

If the test data is generated for a technology that is a pilot scale unit, in order to prove that the commercial unit will satisfy the performance claim, it can be recognised only when combined with demonstrated scale up factors that do not influence the performance.



Relevance to the performance claim to be verified

The testing should follow specific objectives that are relevant for the performance parameters and allow the application of a specific test or set of tests that are able to provide statistically relevant data. For testing relevant to specific parameters, standardised test methods, preferably International Standards should be used.

The test data relevant for the verification of the performance claim under ETV refers to the following types of performance parameters:

- **performance parameters** related to the performance of the technology in fulfilling its purpose (also referred to as technical or functional performance),
- **environmental parameters** related to potentially significant impacts on the environment, directly and indirectly, along the life cycle. These may include for example energy consumption, resource consumption or emission of pollutants to air or water. Environmental parameters directly linked to the purpose of the technology are considered as performance parameters,
- **operational parameters** related to the technical conditions of the intended application of the technology. They are used in particular to determine the testing conditions.

The testing must be carried out in the same conditions, using the same matrix and under the same assumptions and limitations that apply to the verified performance claim. Also, the precision of the results and their statistical validity must correspond to the verified performance claim.



Quality compliance to the requirements of the EU ETV General Verification Protocol

ETV requires that the test data used for the verification are generated under a quality assurance framework compliant with standard [ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories](#). This framework refers to the quality management and general technical requirements related to the test system that generated the test data understood as a testing environment and means for performing and reporting on the testing of a technology.

If tests consist of analyses, the test body performing those analyses shall conform to ISO/IEC 17025 requirements for the performance of relevant analytical methods. A test body demonstrates its conformity to ISO/IEC 17025 requirements by way of accreditation for the methods of testing and calibration relevant for the verification process.

In order to recognise the test data generated outside the ETV process, the verification body carries out an assessment of the test system. It consists in determining whether the test system and quality management system applied by a test body to generate test data for verification purposes comply with the requirements of the General Verification Protocol (including the compliance to ISO/IEC 17025) as well as the specific verification protocol.

A test system assessment typically involves the examination of a test system and of a quality management system. It is achieved through the review of relevant procedures, observation of actual practices and evaluation of test performance. Where applicable, it includes the examination of control data for the relevant period, the participation in proficiency testing and/or control of calibration of measurement devices.

The verification body may carry out spot checks or witness checks to evaluate the acceptability of the existing data.

The EU GVP requires that the test body develops a detailed test plan and a test report for the testing. It also predefines the content of these documents. To enable test data recognition generated outside the ETV process, the test data must be accompanied by documents including the content and meeting the requirements for the test plan and test report as defined in the EU GVP. These requirements should be taken into account for planning a combined testing for compliance and ETV as well as referred to in the contractual arrangements between the technology provider (client) and the test body.

Accredited test bodies typically use their own templates for test plans and test reports approved under their accreditation schemes. To facilitate the test data recognition, for planning and reporting test data for the needs of ETV, it may be required that the test plans and test reports follow the templates included in the EU ETV General Verification Protocol and are presented as annexes to the test plans and reports developed by the test bodies as required under their accreditation.

Compliance to the verification-specific requirements

For each technology verified, the verification body establishes a Specific Verification Protocol, which is based on the requirements set up in the EU General Verification Protocol and complies with the requirements of a verification planning document defined in the standard ISO:14034 *Environmental Management: Environmental Technology Verification*.

The Specific Verification Protocol details which parameters have to be measured in order to verify the performance claim and sets out the requirements on the necessary testing and data quality including:

- ✓ overall test design e.g., continuous or batch tests, scale, test methods, etc.,
- ✓ scale (laboratory/simulated environment/field) and actual matrix used for tests; it should be the same matrix for which the verification parameters have been defined,
- ✓ parameters to be measured,
- ✓ methods to be used, including sampling, test and calculation methods, determination of uncertainty and statistical methods,
- ✓ testing conditions,
- ✓ data management,
- ✓ quality assurance,
- ✓ test plan and test report contents.

In order to be recognised, the test data generated prior to the verification process must also meet these requirements.

However, when defining the test design including the methods to be used for testing specific parameters to be verified, whenever possible, the verification body uses the existing standardised methods, schemes and procedures that apply to the measurement of a specific parameter.

These methods may be similar to those used for compliance testing and typically detail the requirements for the measurement performance including the requirements to achieve statistically relevant quality test data.



WHEN AND HOW IS THE EXISTING TEST DATA ON TECHNOLOGY PERFORMANCE ASSESSED IN THE VERIFICATION PROCESS?

The existing test data e.g., generated outside the ETV process e.g., for the needs of compliance testing is considered by the verification body in a two-step approach.



The first review of the existing test data to assess their usefulness for performance verification is carried out by the verification body as a part of the technical revision of the application file submitted by the technology provider together with the performance claim to be verified. What is considered?

- ✓ Test data relevance and sufficiency to back up the performance to be verified;
- ✓ Existence of an appropriate test plan and test report including an assessment of their quality and content with reference to the EU GVP requirements;
- ✓ Assessment of the qualifications and competences of the test body (e.g., ISO 17025 accredited/non-accredited) that generated the test data.

The exiting test data may also be used by the verification body to assess the specification of the performance parameters to be verified, including their values and ranges. If there is a defensible set of existing test data generated outside ETV e.g., produced for the needs of compliance testing or other certification schemes developed by a competent test body meeting the requirements of ISO/IEC 17025, that has been generated for different conditions than those specified in the claim to be verified, it may be considered and mutually agreed between the technology provider and the verification body to modify the claim so as to correspond to this test data and in this way eliminate additional testing.

An in-depth assessment and final approval of the existing test data takes place at the stage of the Specific Verification Protocol development, based on the criteria for test data acceptance including specified parameters to be verified, the corresponding test methods defined as well as the quality assurance required.

The verification body may perform an ex-post test system assessment during the development of the Specific Verification Protocol or after its completion to check whether the test data to be accepted that was generated by a test system is meeting the conditions and requirements of ISO/IEC 17025 as well as additional testing requirements that may be added in the Specific Verification Protocol to ensure the quality, sufficiency and relevance of these tests and test data for the technology to be verified.

If the ex-post test system assessment is carried out after the completion of the Specific Verification Protocol, the existing test data can be recognised and accepted only conditionally with an indication for final approval upon the test system assessment completion.

Section 5.

**Performance test data recognition:
Practical examples**

THE TEST DATA RECOGNITION CHECK LIST

The following checklist summarises the most important issues for consideration that are relevant to enable the recognition of test data produced outside ETV e.g., for the needs of compliance certification. The checklist has a two-fold purpose:

- helps the bodies involved in the testing process in developing appropriate procedures to build a combined testing offer for their clients involving test data generation for the needs of compliance certification and ETV,
- informs technology providers required to perform compliance testing who plan to verify their technology under ETV and intend to submit the test data generated prior to verification to back up their claims about the issues that they need to consider when specifying their request for service in contractual arrangements with appropriate test bodies.

Since each verification is unique, it is recommended that prior to concluding the contractual arrangement with a test body, the technology provider contacts a verification body competent to verify his technology to ensure that the test data generation requirements relevant for his verification are properly addressed.

Requirements concerning the technology and the verified performance

- The performance test is representative of the current technology being verified (it must be ensured that the compliance testing documentation includes a requirement on providing a unique identifier enabling a clear reference of the test data to the tested technology);
- The performance test addresses the effects attributable to the technology being verified;
- Parameters relevant for the performance claim to be verified were measured under the test.

Requirements concerning test performance

- Performance testing carried out based on a test plan;
- Measurements carried out using calibrated/certified measuring devices;
- Test body described and documented the process/method of performance testing;
- Testing (sampling and measurement) carried out according to ISO/IEC 17025 requirements for relevant test methods;
- Performance testing implemented by competent personnel;
- Testing performed using relevant, preferably internationally standardised methods compliant to the test plan;
- Applied analytical methods adequate for the tested performance parameters;
- Test samples collected over a sufficient period of time to ensure that they are representative of process performance.

Requirements concerning test planning

- Test plan based on which the testing was carried out is available;
- Test plan developed by test bodies accredited to ISO/IEC 17025 or certification bodies accredited to 17065;
- Test plan addresses testing objectives that correspond to the generation of test data necessary to verify the performance parameters;
- Test plan details information on test site, test methods incl. sampling methods, information on the sampling and test personnel, test schedule, test equipment used, type and number of samples, testing period, testing conditions, analytical performance requirements (if applicable), information on preservation and storage of samples (if applicable), selection and use of statistical procedures, data management (including storage, transfer and control, where applicable), quality assurance, etc.;
- Description of the method for selecting the technology item(s) to be tested is provided.

Requirements concerning test data and results

- Test report is available;
- Test report provides sufficient data to perform statistical analysis and meets the requirements related to test data specified in the specific verification protocol;
- Test data documented according to requirements of ISO/IEC 17025;
- Date(s) and location(s) of performance of the tests provided;
- Test results provided with an estimation of the uncertainty;
- Information on specific test conditions, such as operational conditions provided;
- Amendments to and deviations from test plan specified (if relevant).

CASE #1: SMALL WASTEWATER TREATMENT SYSTEMS

Small wastewater treatment systems demonstrate a huge potential for innovation improving not only on the treatment process efficacy but also on issues such as compactness, sludge management, energy efficiency, recovery of valuable materials e.g., nutrients, etc. In order to be placed on the EU market, they need to undergo mandatory certification based on the norm EN 12566-3:2016. It defines requirements, test methods, the marking and evaluation of conformity for packaged and/or site assembled domestic wastewater treatment plants (including guest houses and businesses) used for populations up to 50 inhabitants.

However, demonstrating compliance of a new technology to this norm may not necessarily reflect all its innovative features to gain attention of the clients.

The certification scheme involves third party conformity assessment carried out by a certification body notified by the European Commission. The conformity assessment under this scheme is based on the performance data relevant for the wastewater treatment efficiency of the technology under different conditions and involves different wastewater physicochemical parameters determined before and after treatment, as well as energy consumption. The scheme is not a pass or fail system, the results are expressed as the percentage of elimination of the certified parameters achieved in the testing.



CASE #1: SMALL WASTEWATER TREATMENT SYSTEMS



Meeting ETV requirements concerning technology and the verified performance

Similarly as in ETV, the certification process under EN 12566-3:2016 requires a unique identifier of a technology.

The performance tests under the certification scheme refer to the technical/functional performance of a small wastewater treatment plant and are aimed to determine the wastewater treatment efficiency of the technology before and after the treatment such as:

- Chemical Oxygen Demand (COD);
- Biological Oxygen Demand (BOD);
- Total Suspended Solids (TSS);
- Ammoniacal nitrogen;
- Total phosphorus.

These parameters are measured under different conditions simulating real situations that the technology can face in its later installation. Furthermore, the tests defined under the certification also consider the functioning of the technology under abnormal situations, such as an energy outage.

The above mentioned parameters may be relevant also for the verification of the performance declaration under ETV.



Meeting ETV requirements concerning test planning

The certification scheme defines a test plan to be implemented to test the technical performance of the technology that meets the requirements of ETV. Testing should be done by a third party, namely, an EC notified body to perform this type of testing. Sampling and testing should be performed by a laboratory belonging to the notified body and accredited under the ISO/IEC 17025 for the relevant test methods. In order to perform the testing, the scheme describes the selection of the technology to be evaluated indicating that the smallest-size technology should be selected. Then, a numerical scale of the parameters relevant for its upscaling is developed.

The test plan specifies:

- Parameters to be tested, as well as, the test conditions including normal functioning conditions and abnormal situations including characteristics of the matrix i.e., physico-chemical characteristics of the wastewater to be treated (influent);
- Details of the test schedule;
- Testing requirements including reference test methods and equipment requirements (calibration, etc);
- Specification of operational parameters such as daily hydraulic flow, ambient temperature and wastewater temperature;
- Sampling requirements, including sampling procedure, the number of samples, the personnel responsible for sampling, the type of the samples, the timing, etc.

CASE #1: SMALL WASTEWATER TREATMENT SYSTEMS



Meeting ETV requirements
concerning test performance

As a compliance scheme it requires that the testing follows a specified test plan defined in the norm. It details all test quality requirements for the test performance including compliance to ISO/IEC 17025 and the use of standardised reference methods for the parameters addressed by the norm.

The test performance should also take into consideration:

- the reporting of any deviations from the initially defined test plan,
- the record of maintenance performed to the technology during the testing process (following the recommendations of the technology provider),
- detailed information of any physical deterioration of the equipment.

The above mentioned test performance requirements are similar to those of ETV.



Meeting ETV requirements
concerning test data and results

As mentioned before, testing under EN 12566-3:2016 must meet the requirements of ISO 17025. The scheme also details the minimum information requirements to be included in the results report:

- general information of the tested technology (technology identification, notified body who performed the testing, place and date of testing) and a description of the tested technology,
- information on the installation and start-up procedures,
- description of the wastewater treatment assays including the characteristics of the influent wastewater, daily wastewater flow and the testing schedule,
- analytical methods including the reference method used and the quantification limits,
- results obtained for the monitored water physicochemical parameters as mean values and as a percentage of elimination. The results are shown for each of the tested conditions performed,
- energy consumption of the technology,
- maintenance operations performed during testing,
- reporting of any deviations from the test plan and any physical deterioration of the technology during testing.

The obtained report is not publicly available and is owned by the technology provider. The requirements of the scheme concerning test data and results reporting correspond to the requirements of ETV.

CASE:#2 INNOVATIVE CONSTRUCTION PRODUCTS

The European Technical Assessment (ETA) provides an independent Europe-wide procedure for assessing the essential performance characteristics of a construction product and is issued upon request. It offers manufacturers a voluntary route to CE marking, where the product is not or not fully covered by a harmonised standard (hEN) under the EU Construction Products Regulation (EU) 305/2011 (CPR).

The ETA provides the reliability and credibility of an objective technical assessment of the performance of a construction product in relation to its intended application. It is open to any (current or future) non-standard construction product, especially improved and innovative products, niche products and products for which there is as yet little on-site experience.

The ETA results in issuing a Declaration of Performance (DoP) required under the Construction Product Regulation in order to put a construction product on the EU market.

ETAs may only be carried out by Technical Assessment Bodies (TABs) designated by the Member States. Thus, the ETA helps enhance market transparency and build trust.



CASE:#2 INNOVATIVE CONSTRUCTION PRODUCTS



Meeting ETV requirements concerning the technology and the verified performance

As in ETV, the ETA process requires that the performance test is representative for the assessed product i.e., it requires its unique identifier.

The performance tests are aimed to determine relevant information on the performance of a construction product in relations to its intended use. The scope of the tests refers to the essential characteristics of the product agreed by the manufacturer and the TAB for the declared or intended use including such parameters as:

- mechanical resistance and stability,
- safety in case of fire,
- hygiene, health and the environment,
- safety and accessibility in use,
- protection against noise,
- energy economy and heat retention,
- sustainable use of natural resources.

These parameters are measured under different, specified conditions simulating the conditions of the product use. Some of the mentioned parameters may be relevant also for the verification of the performance claims under ETV like energy economy and the sustainable use of natural resources.



Meeting ETV requirements concerning test planning

In the process of ETA, the selected Technical Assessment Body (TAB) determines the test plan that describes the specific testing procedure to demonstrate the technical performance of a construction product. The Technical Assessment Body has the responsibility to ensure the competence and the impartiality of the test bodies.

The test plan is developed for each ETA based on the applicable European Assessment Document (EAD), which is a harmonised technical specification developed by the European Organisation for Technical Assessment (EOTA) and a reference to it is published by the Commission in the Official Journal (OJEU). It specifies:

- the generation of test data necessary to assess the performance parameters and references to the methods used for the assessment,
- the determination of essential characteristics and how these are assessed, e.g., test methods, tabulated values as well as detailed factory production control,
- procedures for how to express the performance of the product in the ETA and requirements for factory production control for the manufacturer and the notified certification body (where relevant) to check if the performance does not change over time.

Most of these requirements comply with the requirements of ETV concerning planning for testing, except for the control of the production system which is out of ETV's scope.

CASE:#2 INNOVATIVE CONSTRUCTION PRODUCTS



Meeting ETV requirements
concerning test performance

Performance testing has to be carried out in accordance with a specified test plan based on the EAD.

The testing shall be done by a test body accepted by the Technical Assessment Body. If the test body is not accredited in accordance with EN ISO 17025 to the specified test method, the Technical Assessment Body is responsible for ensuring that the testing laboratory operates with internal quality management system compliant to ISO/IEC 17025 for the relevant test methods.

Similarly as in ETV, the testing laboratory describes and documents the process and methods of performance testing.

Independent and competent Technical Assessment Bodies (TABs) are responsible for ensuring that the work is carried out in accordance with the provisions in the EAD.

The mentioned test planning and its performance evaluation may be relevant for the verification of the performance declaration under ETV as both require quality assurance for performance data generation and testing conditions compliant to ISO 17025.



Meeting ETV requirements
concerning test data and results

The test report produced by the test laboratories is used for issuing an ETA and includes the following information:

- general information and description of the product and its production,
- identification of the accredited test laboratory who performed the testing,
- place and date of testing,
- detailed description of the tested methods and test conditions,
- description of the test instruments,
- results of the tests, including a description of deviations (if any).

With that respect it demonstrates the potential to satisfy the requirements of performance test data reporting for the needs of ETV.

Responsibility for ensuring that a product has the correct characteristics for a particular application rests with the manufacturers, contractors and local building authorities.

The procedures for the assessment of a product's characteristics are set out in the relevant technical specification (EAD).

The obtained report is not publicly available, it is owned by the technology provider, who in the case of ETV may provide it as a set of existing performance data as a part of the application file.



www.lifeproetv.eu

This brochure has been developed in the framework the LIFEproETV project: Promotion and implementation of ETV as an EU voluntary scheme for verifying performance of environmental technologies. The project is implemented under the Governance and Information component of the EU LIFE Programme.

LIFEproETV aims at the promotion and building market acceptance and recognition of ETV on the EU market as a voluntary scheme to support the uptake of new environmental technologies for the benefit of reducing the environmental impact of EU SMEs, industries and the public sector.

The project is implemented by a consortium of 8 beneficiaries from 6 countries: Poland, France, Hungary, Italy, Spain and Slovenia and EIT Raw Materials as an organisation of European dimension and thus allows to address ETV promotion, market acceptance and recognition from a variety of perspectives.



LIFEproETV-project



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**Coordinating
Beneficiary**



**Associated
Beneficiaries**



SLOVENIAN
NATIONAL BUILDING
AND CIVIL ENGINEERING
INSTITUTE

CETAQUA
CENTRO TECNOLÓGICO DEL AGUA



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