



ENVIRONMENTAL  
TECHNOLOGY  
VERIFICATION



# Guide for ETV applicants

Prove your green technology performs!



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# 1. Introduction

## 1.1 Overview of the Environmental Technology Verification scheme

Environmental Technology Verification (ETV) has been designed as a voluntary environmental scheme tailored to address the performance demonstration needs of new and even disruptive, commercially ready environmental technologies. It provides third-party attestation of performance claims of new environmental technologies to offer market-relevant and objective evidence to communicate their technical and functional performance and the resulting environmental benefits to buyers, investors, and other stakeholders. In this way ETV ensures credibility and fosters trust in new green technologies. It enables stakeholders such as buyers, permitting and regulatory bodies, and investors to make informed decisions, promotes market acceptance, and drives adoption of sustainable solutions, thus advancing environmental performance of operations and their innovation.

ETV is implemented in a collaborative process (Fig. 1) that involves a dialogue between the Applicant and the Verification Body. If additional performance tests are needed to generate test data, a test body designated by the Applicant also gets involved.

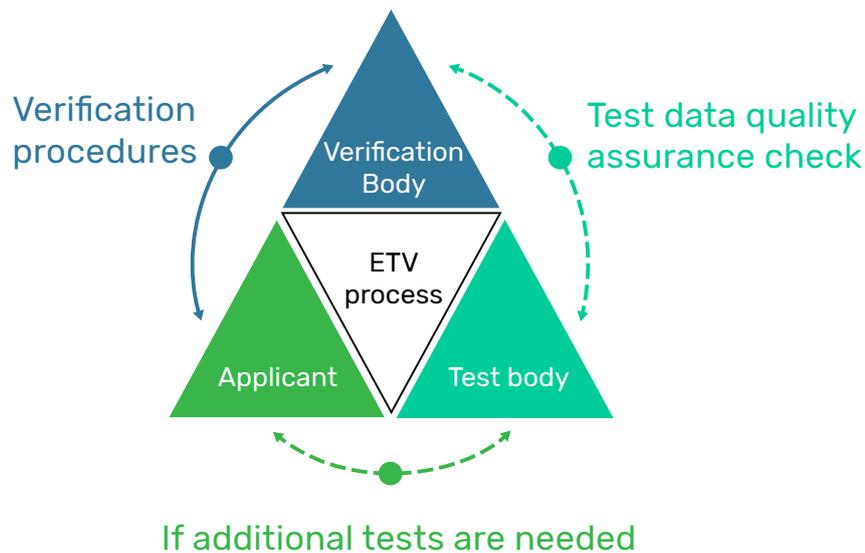


Figure 1.: Entities involved in the verification process

The ETV scheme follows a robust process defined in the technical standard ISO 14034:2016 – Environmental Management: Environmental Technology Verification (also a European Norm since 2018). The quality and impartiality assurance framework for this process is provided by:

- the Conformity assessment standard ISO/IEC 17020 – Requirements for the operation of various types of bodies performing inspection, which specifies the requirements for the competence and impartiality of the Verification Bodies performing ETV. Verification Bodies performing ETV must demonstrate compliance with the requirements for type A inspection bodies<sup>1</sup> by means of accreditation. In that sense ETV is an inspection scheme
- the standard ISO/IEC 17025 – General requirements for the competence of testing and calibration laboratories. The standard defines the conditions for generation of test data used to verify the performance

The key outputs of the ETV scheme are the verification report and the Statement of Verification. The verification report provides detailed information on the verification activities conducted to verify a given technology together with the specification of the verified performance expressed as parameters and their numerical values. The Statement of Verification serves as a key document for use in business relations and technology marketing. It includes the specification of the verified performance of the technology expressed as parameters and their numerical values together with a concise summary of the verification activities relevant for technology buyers, users and other stakeholders to properly understand the process which led to the achieved results together with all the conditions, assumptions and constraints which apply to it and the technology. Under the ISO 17020 standard, these documents are classified as type A inspection body reports and certificates, respectively.

<sup>1</sup> ISO/IEC 17020 identifies 3 types of inspection bodies: Type A inspection bodies – these bodies provide third-party services and are expected to be independent of the other parties involved; Type B Inspection bodies – provide first-party services to their parent body only; and Type C Inspection bodies – first-party inspection bodies which may also provide inspection services to other organisations. Since ETV involves third-party assessment, in order to be objective and impartial the service can only be offered by Verification Bodies accredited to Type A inspection bodies.

ETV is neither an eco-label nor a compliance or certification scheme. Certification confirms that a product or a service meets the specified standards or requirements typically established by independent organisations (e.g. standardisation bodies such as ISO or CEN/CENELEC). It typically involves a predefined procedure with predefined assessment criteria implemented by a designated organisation (e.g. an accredited or notified certification body). Verification means confirmation by providing objective evidence.

ETV is a third-party independent confirmation of tested and quantified performance claims proposed by the Applicant. Verification under ETV is concerned with the technical design of a technology, rather than with the production series of industrial products.

ETV is based on a 'snapshot' of the overall technology performance and is recommended for technologies when their innovative features reflected by their technical and functional performance or the environmental added value are not fully reflected in the existing regulatory requirements, labelling and compliance certification schemes or standardised performance frameworks for products. For example, an innovative wastewater treatment technology might produce higher quality effluent whilst using less energy than current technologies. ETV considers many performance parameters together, including energy consumption, enabling a useful comparison with relevant alternatives.

ETV addresses parameters quantifiable and measurable through testing. The environmental added value is considered from a life cycle perspective, i.e. considering the main benefits and impacts at each stage of the technology life cycle. However, ETV does not have the same objective and does not provide the same information as tools based on Life Cycle Analysis (LCA), such as Environmental Product Declaration (EPD) or Product Environmental Footprint (PEF).

ETV does not involve a regular third-party surveillance to confirm that the technology continues to meet the performance claim(s) as presented in the Statement of Verification, whereas certification requires any changes to the certificated technology to be reported in advance to the certification body, allowing checks to ensure ongoing compliance with certification requirements. In ETV it is the responsibility of the Statement holder to ensure that the verified technology conforms to the published Statement of Verification and to address any changes affecting the verified performance claims.

Unlike certification, in ETV, an on-going consistency of the manufacturing process is not verified.

While ETV is not typically used for well-established technologies, it is not entirely excluded. For example, it may be utilised to validate the performance of established technologies, if necessary. Applicants aiming to prove the compliance of their technology with a product standard should pursue product certification, as defined by the ISO/IEC Standard 17065 and implemented by certification bodies accredited to meet its requirements.

In general, ETV is not intended for consumer products for which dedicated labelling schemes are a better alternative.

## 1.2 The purpose of the Guide

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This document provides guidance to technology developers, manufacturers, providers and other entities interested in submitting their environmental technology for performance verification following a process based on standard ISO 14034: Environmental Management – Environmental Technology Verification (ETV). More specifically, the Guide explains:

- **the ETV process in general**, including:
  - verification steps
  - roles and responsibilities of entities involved in the verification process
- **the application process**, including:
  - eligibility requirements
  - summary of the required information and documents
  - detailed explanations to the required information and documents
- **the following stages of the verification process**:
  - application review
  - pre-verification: specification of performance to be verified and verification planning
  - verification
  - confirmation of verified performance
  - reporting including verification report and Statement of Verification
  - post-verification including publishing of verification outputs and validity of the Statement of Verification
- practical tips on how to leverage Statements of Verification for marketing purposes

The explanations are supported by practical examples to help the Applicant better understand the requirements.

## 1.3 The ETV process overview

ETV involves proving in a credible and objective manner that the claims regarding environmental technology performance made by providers are true and based on performance test data generated under quality-assured and controlled conditions. The verification process follows procedures defined in the standard ISO 14034: Environmental Management - Environmental Technology Verification, summarised in 5 steps: application, pre-verification, verification, reporting and post-verification (Fig. 2). The ETV process is implemented in dialogue with the Applicant.

### Application

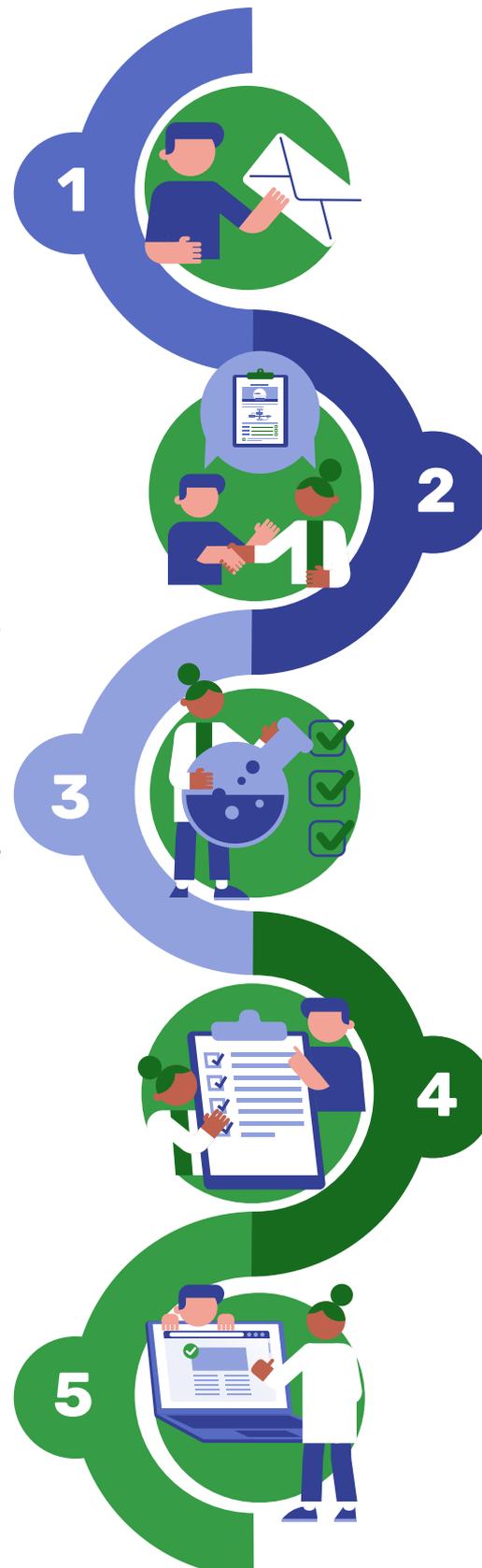
- The Applicant contacts a Verification Body for information and eligibility check
- The Verification Body may request some initial information about the candidate technology and an initial performance claim, e.g. in the form of a Quick Scan prior to application submission
- The Applicant submits an application file including initial performance claim and available test data
- The Verification Body reviews the file, decides on the eligibility of the technology for ETV and revises the performance claim together with the Applicant.

### Verification

- The Verification Body assesses the available test data on technology performance and decides if further testing is needed
- If such data is not available or it does not meet the testing requirements the Applicant is requested to contact an independent test body to do the testing

### Post-verification

- The Verification Body registers and publishes the Statement of Verification in a publicly available directory (e.g. website)



### Pre-verification

- The Verification Body and the Applicant specify the performance parameters to be verified
- The Verification Body develops a verification plan (Specific Verification Protocol) which details how exactly the stated performance will be verified, including the testing requirements

### Reporting

- The Verification Body develops a verification report reflecting all the technical and operational details of the performed verification together with a Statement of Verification summarising the verification

Figure 2: General overview of the process and key activities of the 5 verification steps.

## 1.4 Roles and responsibilities of entities involved in the verification process

The ETV process is implemented between the Applicant and the Verification Body. In cases when additional testing of the technology proposed for verification is deemed necessary by the Verification Body, the test body also gets involved. Understanding the roles and responsibilities of each entity involved in the verification process facilitates effective collaboration and resource planning. It allows the Applicant to anticipate engagement requirements and identify potential risks and challenges that may arise during the verification process.

The diagram below (Fig. 3) presents an overview of the roles of the Applicant, the Verification Body and the test body throughout the ETV process.

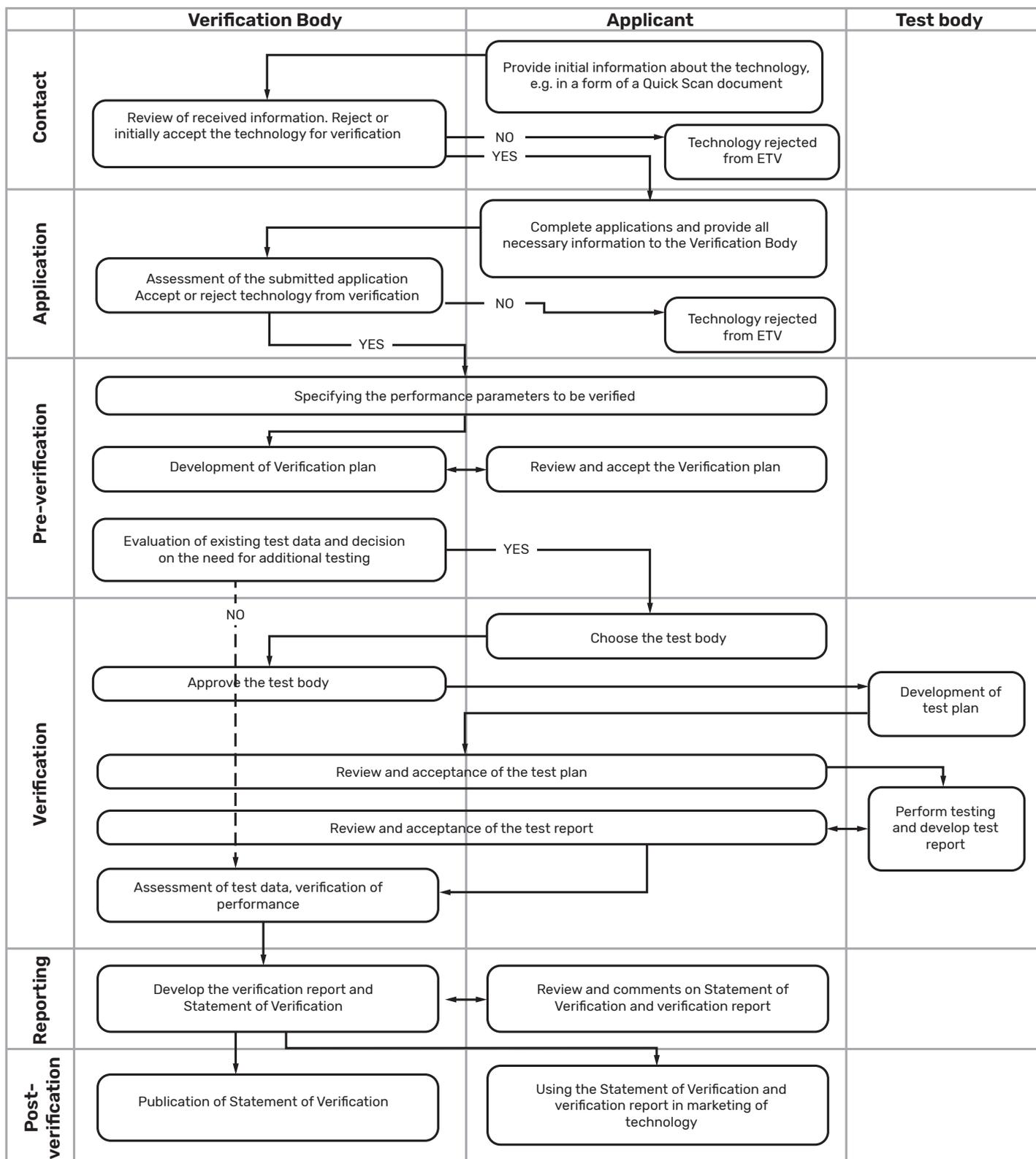


Figure 3: Overview of the roles of: the Applicant, the Verification Body and the test body in particular steps of the ETV process.

## **RESPONSIBILITIES OF THE APPLICANT**

### **CONTACT**

Although this step is optional, at this stage it is recommended that the Applicant:

- provides initial information on the technology to be proposed for verification (e.g. by submitting a Quick Scan form, if applicable) sufficient for the Verification Body to assess whether the technology shows potential to be proposed for ETV

### **APPLICATION**

At the application step, the Applicant is responsible for:

- entering into a contractual agreement with the Verification Body
- developing the application file following the formal and technical application requirements. That is considering the comments and recommendations given by the Verification Body as a result of the initial technology assessment during the contact phase
- providing sufficient, appropriate and relevant information about the technology proposed for verification to state its eligibility for ETV, and to:
  - assess the conformity of the technology design with the performance claim. This includes presenting any existing test data substantiating the claimed performance
  - demonstrate its environmental added value to assess the compliance with the definition of an environmental technology
  - assess the relevance and adequacy of the performance claim for the intended application of the technology to the needs of interested parties
- responding to additional information and clarification requests of the Verification Body and providing requested data

### **PRE-VERIFICATION**

At the pre-verification step, the Applicant is responsible for:

- reaching consensus with the Verification Body on the final set of parameters relevant and sufficient for the claimed performance of the technology to be verified. The environmental added value, if applicable, including their numerical values and ranges, conditions, assumptions and limitations and the test methods, prior to the development of the verification plan
- agreeing on the additional parameters pertaining to the technology and its performance relevant for interested parties that will not be verified but included in the verification plan, report and Statement of Verification. It could be for example, the expected service time during which the claimed performance is relevant for, overall service life, health and safety issues, installation and maintenance requirements, etc.
- reviewing and approving the verification plan

### **VERIFICATION**

At the verification step, the Applicant is responsible for:

- ensuring access to the technology, the performance of which is verified, the relevant accessories, and manuals
- providing all test data (test plans and test reports) relevant to the verified performance if not provided so far to the Verification Body for assessment
- If additional testing is needed:
  - providing an adequate number of units of a technology/product for testing
  - choosing a test body if additional testing is needed and presenting it for approval to the Verification Body
  - providing training on the operation of the technology, including safety requirements, where applicable, to the personnel of the test body
  - entering into a contractual agreement with the test body
  - ensuring that there is cooperation between the test body and the Verification Body to develop a test plan and perform a test system assessment assuring test data quality
  - reviewing and approval of the test plan and test report and providing both documents for review and approval to the Verification Body

### REPORTING

At the reporting step, the Applicant is responsible for:

- reviewing the verification report and providing comments on it, if necessary
- reviewing the Statement of Verification and providing comments on it, if necessary

### POST-VERIFICATION

At the post-verification step, the Applicant is responsible for:

- complying with the requirements concerning the use of the Statement of Verification and the verification report
- notifying the Verification Body about any changes pertaining to the conditions under which the technology was verified, the Statement of Verification and the report (if applicable) were published. These changes may refer, for example, to the changes in the verified technology which may influence its performance, change of the Applicant's company name etc.

## **RESPONSIBILITIES OF THE VERIFICATION BODY**

### CONTACT

At the contact step (optional), the Verification Body is responsible for:

- ensuring that the information provided by the Applicant is sufficient, relevant and adequate to:
  - make an initial check if the technology is potentially eligible for ETV
  - understand the Applicant's expectations concerning the verification
  - decide on the ability and competences to perform the requested verification (e.g. if the technology falls in the scope of accreditation of the Verification Body)
- providing feedback to the Applicant on whether a technology to be proposed for verification potentially meets ETV application requirements
- providing recommendations relevant to meeting formal and technical requirements of ETV application, including technology description, definition of the performance claim and additional testing needs

### APPLICATION

At the application stage, the Verification Body is responsible for:

- entering into a contractual agreement with the Applicant, ensuring that the confidentiality aspects are properly addressed
- providing guidance on the development of the application within the limits of impartiality
- performing a formal review of the application to check the completeness of the information provided by the Applicant
- performing a technical review of the application to decide on the eligibility of the presented technology for ETV, and in particular if:
  - the technology fulfils the definition of environmental technology
  - the proposed performance claim for the intended application of the technology addresses the needs of the interested parties
  - the information on the technology is sufficient to review the performance claim. This includes an indicative assessment of the applicability of the existing test data provided by the Applicant to substantiate the claimed performance
- communicating to the Applicant:
  - any issues resulting from the formal and technical review of the application, including requests for additional clarification or providing additional information
  - the decision on acceptance or rejection of the technology for verification with due justification

### PRE-VERIFICATION

At the pre-verification stage, the Verification Body is responsible for:

- defining the final set of parameters for verification, in consensus with the Applicant, which are relevant and sufficient to verify the claimed performance of the technology, and its environmental added value, if applicable, including their numerical values and ranges, conditions, assumptions and limitations and test methods, prior to the development of the verification plan
- agreeing on additional parameters concerning the technology and its performance relevant for interested parties that will not be verified but will be included in the verification plan, report and Statement of Verification under the responsibility of the Applicant

- developing the verification plan and presenting it to the Applicant for approval

## VERIFICATION

At the verification stage, the Verification Body is responsible for:

- assessing the test data provided by the Applicant that were generated prior to verification and deciding on their acceptance for the verification of the performance claim
- communicating the assessment result to the Applicant together with the need to perform additional testing, if relevant
- if additional testing is needed:
  - approval of the test body
  - cooperation with the test body to develop a test plan
  - approval of the test plan
  - performing the test system assessment to ensure test data quality
  - approval of the test report
- assessment of the test data against the performance specified in the verification plan and confirmation of the achieved performance

## REPORTING

At the reporting stage, the Verification Body is responsible for:

- development of a verification report presenting the verification activities and the confirmed performance
- development of the Statement of Verification summarising the verification activities and the confirmed performance
- presenting the verification report and Statement of Verification for review and comments to the Applicant
- considering the Applicant's comments as deemed appropriate

## POST-VERIFICATION

At the post-verification stage, the Verification Body is responsible for:

- publishing, as a minimum, the Statement of Verification on a publicly available domain (e.g. Verification Body's website)
- if a notification has been provided by the Applicant about the change in the conditions as per technology verification:
  - determine the impact of these changes on the verified performance of the technology to the verification conditions
  - consider the validity of the Statement of Verification and verification report
  - communicate the decision to the Applicant

## TEST BODY

If the Verification Body decides that additional testing is needed at the verification stage, the test body gets involved.

The test body is responsible for:

- entering into a contractual agreement with the Applicant to perform testing
- developing a test plan, in accordance with the verification plan
- presenting the test plan for review and approval to the Verification Body and the Applicant
- undergoing training provided by the Applicant concerning the technology operation, if relevant
- performing the testing according to the approved test plan and ensuring the level of testing quality required by ISO/IEC 17025
- cooperating with the Verification Body during test system assessment
- developing a test report and presenting it for review and approval to the Verification Body and the Applicant

## 2. Eligibility and application requirements

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### 2.1 Criteria for eligibility

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ISO 14034 defines criteria for eligibility which refer both to the technology and to the Applicant. They are presented and explained below.

#### 2.1.1 Which technologies can apply for ETV?

The term “technology” refers to the practical application of technical or scientific principles in the environmental area to achieve a given purpose. It covers a variety of products, processes, and services. In general, ETV is a scheme for technologies with industrial applications rather than consumer products for which different labelling schemes may add better value.

There are 3 key eligibility criteria which a technology must satisfy cumulatively to be eligible for ETV:

1. compliance to the definition of environmental technology
2. sufficient level of maturity, i.e. the technology must be ready to enter the market or already commercially available
3. potential to comply with legal and regulatory requirements of the target market

The criteria are explained further below.

#### **CRITERION 1: COMPLIANCE WITH THE DEFINITION OF ENVIRONMENTAL TECHNOLOGY**

A candidate technology demonstrates compliance with the definition of an environmental technology when it either:

- results in an environmental added value, or
- helps better measure parameters that indicate environmental impacts compared to relative alternatives, i.e. solutions currently used in similar situations

A technology results in environmental added value when its environmental impact, wholly or partially resulting from material acquisition, design, production, use or end-of-use, is beneficial or less adverse compared to relative alternatives.

A candidate technology helps better measure parameters that indicate environmental impact when it is, for example, more precise, more robust or flexible in terms of application, allows for faster or autonomous measurement, detects emerging pollutants not detected or measured before, utilises novel detection or measurement methods, requires fewer chemicals, energy or resources, generates less waste or facilitates multiple uses instead of single-use parts, etc.

Examples of the technology resulting in environmental added value include, but are not limited to:

- different treatment technologies aimed at eliminating/reducing pollution emissions to different environmental media (e.g. wastewater treatment technologies, air cleaning systems, soil remediation technologies, etc.)
- solutions for manufacturing processes aimed at reducing consumption of resources, energy or/and generating less waste/emissions to the environment
- technologies for energy production and storage, including renewable energy sources
- novel materials for industrial applications, e.g. secondary raw material-based materials, biobased materials such as bioplastics, novel construction materials improving insulation properties in buildings or increasing energy efficiency (e.g. insulation materials)
- solutions aimed at improving energy efficiency in production and treatment processes, e.g. energy efficient pumps
- novel solutions enabling easy recycling, reuse, repurposing or recovery of different materials/products, e.g. recycling of artificial turf from sports facilities, recovery of phosphorus from wastewater
- monitoring systems, sensors, detection devices, and sampling devices dedicated to measuring the quality of different environmental media, e.g. air pollution sensors, water quality monitoring systems, microplastics pollution detection and measuring devices, sensors, sampling kits, etc.
- technologies reducing the environmental impact of agricultural production, e.g. systems for cleaning exhaust air from stables

It should be noted that measurement equipment is also subject to assessment of the environmental added value.

In terms of specific types of solutions, ISO 14034 is technology-neutral. However, typically, environmental solutions may be categorised as belonging to the following technology areas:

- Water and wastewater treatment, water quality monitoring
- Resource recovery, materials, waste management, recycling
- Energy production and storage, renewable energy sources
- Energy efficiency (incl. buildings)
- Soil and groundwater monitoring and remediation
- Cleaner production and processes
- Environmental technologies for agricultural applications
- Air pollution monitoring and abatement

At the application stage, the Applicant is requested to specify to which technology area the candidate technology belongs. This is to help the Verification Body determine if it is competent to verify it, i.e. if it falls within its scope of accreditation.

Requirements concerning the scope of information relevant to demonstrate the compliance of the technology with the definition of an environmental technology are provided in section 4.7, while the explanation of the eligibility assessment of this criterion is provided in section 5.

## **CRITERION 2: SUFFICIENT LEVEL OF TECHNOLOGY MATURITY**

The minimum Technology Readiness Level (TRL) of a technology to be proposed for ETV is TRL 7 – System Prototype Demonstrated in Operational Environment. In practical terms, the candidate technology could be:

- a commercially available unit
- a prototype that is the final design and represents a pre-commercial unit
- a pilot unit with demonstrated scale-up factors that do not influence its performance and prove that the commercial unit will satisfy the performance claim

Moreover, if the candidate technology is not in the market yet, to apply for ETV, it must demonstrate the following features:

- at least one unit must be available at the stage of development where no substantial changes affecting its performance will be implemented before being introduced into the market;
- stable and predictable performance under normal conditions proven by test data. Performance that varies within determined ranges due to some known variables that affect this performance under normal operating conditions may also be considered stable and predictable

Technologies that are already commercially available may also be verified under the ETV scheme if the Applicant sees the added value in having the performance verified. For example, if a standard relevant to the candidate technology or product does not exist, or if proving better performance would help distance the competitors.

## **CRITERION 3: POTENTIAL TO COMPLY WITH LEGAL AND REGULATORY REQUIREMENTS OF THE TARGET MARKET.**

Ensuring legal compliance is the responsibility of the Applicant. Therefore, the Applicant should be aware of which legal and regulatory requirements the target market applies to the technology for verification of its performance in the intended application. The Verification Body will use caution to avoid verifying the performance of a technology that does not comply with the minimum regulatory requirements. Compliance with legal and regulatory requirements may require demonstrating that the technology meets the reference values defined in regulations, technical or ISO standards related to performance parameters, Best Available Technologies values provided in BAT reference documents (BREFs) in relation to the Industrial Emissions Directive. For example, equipment that comes in contact with drinking water must have an appropriate certificate; a drinking water treatment technology must meet the drinking water criteria of the target market, and some technologies must meet the CE mark requirements. Therefore, depending on the scale and readiness level of the technology, the Verification Body may request evidence that the technology demonstrates potential to perform in line with legal and regulatory requirements.

### **2.1.2 Who can apply for ETV?**

The Applicant can be any legal entity or natural person established in or outside the European Union. The Applicant may be a technology developer, manufacturer, provider, or an authorised representative (e.g. an investor).

Typically, the Applicant should have full control over the candidate technology, i.e. be its sole owner.

When the Applicant shares the ownership of the technology and the IPR:

- If a key part or parts of the technology directly related to its performance to be verified are unique and offered only by one supplier or designed specifically for the technology by another organisation or are owned by another organisation (e.g. used under licence), they need to be clearly identified in the application. The Verification Body will require signed declarations from the other owners of the technology or its key parts and those holding IP rights consenting to the verification. The Applicant, however, retains all rights to the technology and technical data produced during the verification
- If a key part or parts of the technology directly related to the performance to be verified are commercially available and offered by several providers, a relevant technical specification concerning this part or parts in the application should be sufficient. However, this will be determined by the Verification Body

When the Applicant is not the owner of the technology but has a legal right to put the technology forward for ETV (authorised representative), applying for ETV will require a legally binding document from the technology owner specifically consenting to the right to put the technology forward for verification. Similarly, as technology owner, the authorised representative is responsible for providing all information about the technology required for the application including, if relevant, confidential data pertaining to, for example, technology design or operation principles.

## 2.2 Where to verify a technology?

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Verifications are carried out by Verification Bodies (referred to as verifiers in ISO 14034). A Verification Body is an organisation accredited for compliance with the requirements of the standard ISO/IEC 17020 - Requirements for the operation of various types of bodies performing inspection for type A inspection bodies to perform ETV in accordance with ISO 14034. Each Verification Body is accredited for one or more specific technological scopes. The technological scope could be defined as the technological areas listed in the textbox in section 2.1.1

## 2.3 Who performs the testing?

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A test body is an organisation providing the means for test implementation, including performing and reporting on the testing of an environmental technology for the purpose of verification.

The test body must demonstrate compliance with the quality management and general testing requirements of ISO/IEC Standard 17025 – 'General requirements for the competence of testing and calibration laboratories', which are relevant to the performed tests and ensure the quality of the test results.

Moreover, if tests consist of analyses<sup>2</sup>, the test body carrying out these analyses shall be accredited to apply ISO/IEC 17025 for the corresponding analytical methods.

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<sup>2</sup> Analyses are distinguished from tests when they follow highly standardised methods, independent of the innovation or specific features of the technology at the origin of the test samples. This concerns for example biological or chemical analysis of water samples and other products.

## 3. How to apply for ETV

### 3.1 Contact with a Verification Body

To apply, the Applicant must contact a competent Verification Body<sup>3</sup>. At this stage, the Applicant is requested to provide the following initial information:

- a short description of the technology including:
  - a brief explanation of the specific problem(s), needs or opportunities for interested parties that the technology addresses
  - the intended application for which the performance of the technology is to be verified
- stage of the technology development (market readiness)
- initial proposal of the performance claim(s)
- information on available test data supporting the claim(s)
- information on the environmental added value
- intellectual property rights to the technology

The Verification Body may request providing this information in a structured way using a dedicated form, e.g. a Quick Scan. This approach can help to avoid unnecessary work in preparing the full application or forwarding the application to another Verification Body if the contacted one is not competent to perform ETV.

The outcome of this stage is the recommendation of the Verification Body to develop a full application including comments to improve the information provided in order to meet the formal and technical requirements of the application. If the Verification Body lacks the expertise to carry out the process, it should direct the Applicant to another Verification Body that may have the necessary competence.

### 3.2 Summary of information and document requirements for an ETV application

To apply for ETV, the Applicant needs to develop an application file comprising an application form provided by the Verification Body and supporting documentation. The required information and documents include:

- a) information about the Applicant, including their name and address(es) of their physical location(s);
- b) description of the technology, including:
  - 1) a unique identifier of the technology
  - 2) details about the intended application of the technology, including:
    - i) the purpose of the technology
    - ii) the type of material the technology is intended for
    - iii) measurable properties affected by the technology and how they are impacted

**NOTE 1: More than one technology purpose, type of material and measurable property can be provided.**

- 3) sufficient information to comprehend the operation and performance of the technology
- 4) the developmental status of the technology proposed for verification and its readiness for the market

**NOTE 2: A technology proposed for verification must either already be available in the market or at least be at a stage where no substantial change affecting its performance will be implemented before its market entry.**

- 5) details regarding relevant alternatives to the technology; including their performance and environmental impacts
  - 6) information on significant environmental impacts of the technology proposed for verification and its environmental added value, if applicable
- c) performance claim including a proposed set of performance parameters and their numerical values to be verified
  - d) relevant existing test data and methods of obtaining such data used to support the performance claim

<sup>3</sup> A list of Verification Bodies is available in the ETV network section at the <http://etv-hub.eu>

- e) any relevant legal requirements, or standards related to the technology and its use
- f) where applicable, a declaration confirming that the technology complies with the relevant regulatory requirements
- g) depending on the type of the technology proposed for verification, additional supporting information relevant to the interested parties including, but not limited to:
  - 1) installation and operating requirements and conditions
  - 2) service and maintenance requirements
  - 3) the expected duration for which the technology will function under normal operating conditions, and
  - 4) any applicable health and safety requirements and considerations

Details and explanations concerning specific information and documentation requirements of the application file are provided below.

Before developing an application file, the Applicant may use the self-assessment tool for ETV Applicants provided by the ETV-HUB in the section "Get started with ETV".

The tool helps to prepare a successful ETV application in accordance with ISO 14034 ETV requirements:

- it checks if the Applicant already has all the necessary and relevant information to develop an ETV application file
- it provides immediate feedback to the Applicant's answers and identifies any missing information that needs to be collected and prepared
- it explains the significance of certain information and how it is used to verify a technology
- it provides the Applicant with guidance and tips on how to obtain the missing data and information
- it allows the Applicant to assess whether the technology potentially meets the eligibility requirements for verification

Using the tool before or during the development of an ETV application file:

- assists the Applicant in comprehending the process and its requirements, enabling them to determine if ETV is a suitable scheme for the technology
- reduces the time and cost required to develop an application file suitable for the technology in line with the technical and formal requirements of ETV
- accelerates the evaluation process by the Verification Body, potentially leading to faster verification of the technology if it meets the ETV eligibility criteria

Website address: [http:// ETV-HUB.eu/get-started/](http://ETV-HUB.eu/get-started/)

### 3.3 Contractual agreement

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Before the verification process is initiated, i.e. the application is developed and submitted for review to the Verification Body, the Applicant enters into a contractual agreement with the Verification Body. The contractual procedure may consist of one or more steps, depending on the complexity of the verification and the internal procedures of the Verification Body.

In some cases, parts of the verification contract may need to be revised after application has been reviewed. This applies in particular to situations when, upon the technical and formal review, the technology and/or the Applicant are not able to fulfil the ETV eligibility criteria and the Verification Body refuses to continue the process. In such cases, the Applicant and the Verification Body may conclude a contract that is limited to the technical and formal review of the application and leave the remaining steps of the process to another contract. Alternatively, the contract may be revised after the application has been reviewed.

A check list of issues which a verification contract should include:

- Intellectual Property Rights (e.g. ownership or control of the technology) must be guaranteed by the Applicant, who also retains all rights to the technology and all technical data generated during the verification. The Verification Body retains all rights to the verification process, protocols, plans, methods, and procedures developed during the process
- information and communication principles between the Applicant and the Verification Body, including notification of changes to verification conditions if they occur
- the definition of the obligations of the Applicant and the Verification Body under the contract for verification
- a schedule for the verification procedures

- ☑ rules and statement on the use of the Statement of Verification, verification report; and the ETV logo
- ☑ a description of limitations on the use of the verification results, e.g. a statement that the verification results reflect the performance of the technology at the time and under the conditions of verification and thus cannot be understood as a guarantee of the same level of performance in the future or under different conditions; The Applicant shall not use or refer to the Statement of Verification or the verification report for any other technology or application and shall not use extracts from the Statement of Verification for any purpose
- ☑ terms and conditions for withholding the verification procedure or withdrawal of parties from the verification process
- ☑ terms and conditions for payment
- ☑ legal regime applicable and competent legal authorities in the case of a dispute related to the verification procedure
- ☑ confidentiality issues; The Verification Body is obliged to maintain the confidentiality of all information received from the Applicant at any time, which is guaranteed by the ISO 17020 Type A accreditation. Throughout the entire verification process, the Verification Body is obliged to maintain professional secrecy with regard to all information obtained in the performance of their tasks during verification activities. The Verification Body must ensure that the activities of its subsidiaries or subcontractors do not affect the confidentiality, objectivity, or impartiality of its verification activities.

The verification contract generally does not include the cost of testing. If the Verification Body, after assessment of the existing test data, decides that additional testing is required, it is up to the Applicant, in agreement with the Verification Body, to choose and conclude another contract with an appropriate testing body approved by the Verification Body.

If the Applicant is an association of organisations that together form a consortium, or is not the sole owner of the technology, the organisation entering a contractual agreement with the Verification Body should be a legally authorised representative of those organisations acting as the sole intermediary in conducting arrangements with the Verification Body.

## 4. Development of the application file step-by-step

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Development of the application file requires the most commitment from the Applicant. The information to be provided in the application, and the accompanying documentation, require good knowledge of the ETV process, an understanding of what ETV delivers and on which pillars it is built. Additionally, the person involved in completing the document must be well acquainted with the technical and functional aspects of the technology proposed for verification. The Verification Body will provide technical advice if there are any doubts when completing the application form.

To facilitate the development of the application file, the Applicant may use the self-assessment tool for ETV Applicants provided by the ETV-HUB to check if the required information is available and how to prepare it.

### 4.1 Information about the Applicant

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The required information about the Applicant includes:

- the details of the organisation
- full name of the organisation
- registration number
- contact details (telephone number and email address, person responsible for the application file with the contact details)

If the Applicant is an association of organisations that together form a consortium, regardless of whether they enter into a separate written consortium agreement, the application should be represented by a legally authorised representative organisation that acts as the sole intermediary for conducting arrangements with the Verification Body with which the Verification Body enters into a contractual agreement to perform the verification.

### 4.2 Description of the technology

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The technical data provided in the application to describe the technology at this stage must be sufficiently detailed to allow the Verification Body to thoroughly understand the nature of the technology, including the scientific principles, its purpose, reference to regulatory requirements, and major environmental impacts and aspects associated with its life cycle.

#### 4.2.1 Unique identifier of the technology

A unique identifier of the technology is, for example, a registered commercial name of the technology, an identification number or version number, etc.

It must be clearly stated which technology is subject to verification. It is also necessary to ensure that all documents produced during the verification, including the Statement of Verification and the verification report, unambiguously indicate to which technology they apply.

#### 4.2.2 Introduction or context

The technology should be presented in the context of explaining the specific problem(s), the needs of the users or buyers or the opportunities it can create for the interested parties, if not already provided during the contact phase, e.g. in the Quick Scan form. The problems and needs should be presented in a concrete way. They will later serve as a basis for understanding the innovation and the benefits reflected in the performance claim. When presenting the context, the Applicant may refer to conventional solutions (relevant alternatives) focussing on the shortcomings of these solutions in addressing a problem. For example, the current solution may be effective in treatment but at the same time consume a lot of energy, which is a problem for the user. A technology proposed for verification may perform in a similar way but consume less energy.

### 4.3 Information about the intended application of the technology

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The performance claim proposed for verification must refer to the intended application of the technology. The intended application shall specify the matrix, the purpose of the technology, defining the measurable property of the matrix that is affected by the technology and how it is affected, as well as a set of parameters defining the technical conditions under which the claimed performance is achieved.

#### 4.3.1 Matrix

Matrix means the type of material for which the technology is intended, and which is affected by the technology.

Examples of a matrix could be: different types of wastewater, e.g. from a dairy, municipal wastewater, drinking water, a specific type of waste, air/effluent polluted with a compound, contaminated soil, alkaline degreasing bath, etc.

A technology may be intended for more than one type of matrix. For example, if the purpose of the technology is to extract the solid fraction from manure, it could also be used for domestic wastewater.

The characteristics of the material should be provided in such a way that makes it possible to define the effects of the technology on the material, which can be measured through testing. The key parameters of the matrix which affect the claimed performance should be specified and defined in terms of numerical values (usually within ranges of limit values).

For example, the key parameters of the matrix for a technology intended to treat domestic wastewater while preserving the content of nutrients in order to produce an effluent with fertilising properties for agricultural use could be defined as follows:

Matrix: domestic wastewater after sand and grease removal, characterised by the following daily contaminant concentrations in the influent:

- BOD limit value expressed as  $\text{gO}_2/\text{m}^3$
- COD limit value expressed as  $\text{gO}_2/\text{m}^3$
- total nitrogen content in  $\text{m}^3$  of the influent
- phosphorus content in  $\text{m}^3$  of the influent
- suspended solids content in  $\text{m}^3$  of the influent

Proper characteristics of the matrix may require analysis of historical data from technology testing. However, it is essential to define the requirements and conditions for test data generation related to the parameters of the matrix that need to be measured during the technology testing in order to generate data relevant to verify the performance claim.

Moreover, key parameters characterising the matrix will also be specified later in the Statement of Verification as information essential to present the assumptions, constraints and limitations under which the technology can be applied and perform as verified. Such information is relevant for a buyer/user or other stakeholders (e.g. permitting bodies).

### 4.3.2 Technology purpose

Purpose means the way in which the technology affects the matrix, i.e. what it does to the matrix and with what effect. The purpose should be expressed in a way that can be measured or monitored. For example, "reduction" can be measured by determining the parameters of the matrix before and after the implementation of the technology.

Examples of purpose could be:

- for a treatment technology: reduction of the concentration of a given substance or the rate of removal of a pollutant from the matrix
- for a recycling technology, the purpose could be the recovery of a given resource from the matrix
- for a manufacturing technology, the purpose could be the utilisation of carbon dioxide from a flue gas stream to produce precast concrete components or the utilisation of a secondary raw material to replace a raw material
- for a measurement device, the purpose could be the measurement of a specific parameter in the matrix, such as microorganisms, bacteria or heavy metals
- for an energy technology like solar panels, the purpose could be the recovery of energy released by the panel.

When relevant, the Applicant may define more than one purpose of the technology

Information on the intended application of the technology may be expressed differently depending on whether it is a technology resulting in environmental added value (e.g. water/air/soil clean-up technologies, recycling technologies, recycled material-based products, energy production technologies, technologies improving energy efficiency) or a technology for measuring parameters reflecting environmental impacts and/or state of the environment (e.g. monitoring technologies, test kits, probes, analysers).

For example, the intended application of the technology resulting in environmental added value can be expressed as follows: the purpose of the technology is to remove nutrients from municipal wastewater (type of material) by reducing (mode of impact) nitrate concentrations (measurable property affected by the technology expressed as  $\text{mg NO}_3^-/\text{l}$ ). The intended application of a technology measuring parameters reflecting environmental impacts and/or state of the environment can be expressed as follows: the purpose of the technology is to detect (mode of impact) total coliforms (measurable property affected by the technology expressed as number of organisms per ml) in drinking water (type of material).

## 4.4 Information on the operation and performance of the technology

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The Applicant shall provide all information required to understand the operation and performance of the technology.

### 4.4.1 Conceptual design of the technology

A conceptual design of the technology shall be typically presented in the form of a diagram or scheme with relevant descriptions and explanations necessary for understanding the design and operation of the technology.

The conceptual design should also indicate interactions or processes. If the technology to be verified is part of a larger installation or system, the conceptual design should specify where the technology fits into the installation/system (interfaces) as well as indicate input and output points.

The conceptual design is necessary for the Verification Body to assess the adequacy of the technology design with the performance claim and to identify the novelty aspects, especially if the performance to be verified results from innovation in design. It may also provide information on the environmental aspects.

### 4.4.2 Manufacturing drawings or similar schematics

Manufacturing drawings or similar schematics should provide information on how the technology is constructed and manufactured. They should present components, sub-assemblies, circuits, etc. Similarly to the conceptual design, the drawings and schemes should be accompanied with descriptions and explanations necessary for understanding these documents as well as the operation of the technology. Manufacturing drawings may be particularly relevant for the verification of products or equipment.

### 4.4.3 Technical and scientific principles relevant to the performance and operation of the technology

A description must present how the technology achieves its purpose. It must also explain which scientific or technical principles and techniques the technology is based on.

For example, technologies for environmental monitoring and assessment rely on principles of sensor technology, data analysis, and remote sensing to collect and analyse environmental data.

The description of the scientific principles and techniques applicable to the technology may also serve to identify the possible risks related to its performance and resulting environmental aspects/impacts. Additionally, this information is relevant to properly define the parameters to be verified and/or to determine if the technology results in reduced environmental impacts compared to other technologies or helps better measure parameters reflecting environmental impacts.

If needed, the Verification Body may request an operational and maintenance manual for the technology to supplement the description.

## 4.5 Development status of the technology and its readiness for market

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This includes, for example, information on the commercial availability of the technology; if not commercially available, the development status of the technology should be expressed in terms of technology readiness level<sup>4</sup> (e.g. full-scale or pilot scale with direct and clear scale-up instructions), with the information when the technology is expected to be commercially available. At least one unit of the technology should be available minimum at a development stage where no substantial changes affecting its performance will be implemented before applying for ETV.

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<sup>4</sup> The following definitions of Technology Readiness Levels (TRL) could be used, e.g.

TRL 7 – System prototype demonstration in an operational environment

TRL 8 – System complete and qualified

TRL 9 – Actual system proven in an operational environment

The technology and all its components (apparatus, processes, products) are full-scale and commercially available.

The data to be used for verification are from the use or demonstration of a commercial unit with a unique identifier.

The technology is a final prototype design prior to manufacture or supply of commercial units.

Verification of the performance claim is valid only if that prototype is the final design and represents a pre-commercial unit and will apply only to a subsequent commercial unit the design of which is identical to the prototype unit design.

The technology is a pilot scale unit used to provide data which, when used with demonstrated scale-up factors that do not influence its performance, prove that the commercial unit will meet the performance claim.

For prototype or pilot stage technologies, the development status will be clearly indicated in the Statement of Verification, with necessary information provided on representativeness of a full-scale commercial unit and conditions on scale-up to the commercial version.

This includes, for example, information on the commercial availability of the technology; if not commercially available, the development status of the technology should be expressed in terms of technology readiness level (e.g. full-scale or pilot scale with direct and clear scale-up instructions) with information when the technology is expected to be commercially available. At least one unit of the technology should be available minimum at a development stage where no substantial changes affecting its performance will be implemented before applying for ETV.

## 4.6 Information about relevant alternative(s) to the technology

A relevant alternative means a technical solution with the same function/purpose that is currently used in a similar situation (e.g. a conventional technology) as the technology proposed for verification. There may be more than one relevant alternative available. A relevant alternative may be also a combination of technologies that altogether give the same result, for example, technologies working in sequence, e.g. in recycling, a material sorting procedure including dismantling can be an alternative to a crusher.

Relevant alternatives are identified to allow the determination of the benefits of an environmental technology, especially the environmental added value and the innovation. They provide a baseline for benchmarking performance and could include, for example:

- current best available technology
- existing technologies available in the market, with similar applications and purposes
- conventional technologies having a similar application or producing similar outputs
- state-of-the-art technologies

It is important to avoid the selection of poor-performing or otherwise irrelevant alternatives to ensure that a comparison of the technologies does not result in a more positive impression of the proposed technology.

If the technology proposed for verification is a completely new solution to a problem, the relevant alternative could be a commercially available technology (or a combination of technologies) currently used to address this problem. For example, in the case of an entirely new process for recycling a certain waste that has never been recycled before, the relevant alternative could be its disposal without recycling, e.g. landfilling, or incineration.

Relevant alternative also serves to demonstrate the innovation of the technology proposed for verification, e.g. novelty in terms of design, raw materials and energy involved, production process, use/operation, recyclability, or final disposal compared to a conventional solution. They also help determine the environmental added value of the technology proposed for verification through a qualitative comparison. Therefore, the scope of information about the relevant alternative should also include qualitative information about its major environmental impacts and, whenever available - quantitative data. Details are presented in the section below.

## 4.7 Information on significant environmental impacts and environmental added value

Information on environmental aspects and impacts of the technology is necessary to demonstrate its environmental added value and compliance with the definition of an environmental technology. This information is particularly relevant for technologies that are claimed to deliver an environmental added value and may be less relevant for measurement technologies.

As much qualitative and quantitative information as possible should be provided regarding the significant differences in the environmental impacts (e.g. use of raw materials, water, energy and other consumables, presence of pathogenic bacteria, together with all types of emissions, products, and wastes) likely to be generated by the technology as compared to the relevant alternative. The life stage of the technology at which the significant environmental impacts

likely to be generated may occur (e.g. material acquisition, design, manufacturing, use or end-of-use) in comparison with the relevant alternative, should be indicated.

For example:

- if the technology uses biodegradable materials rather than conventional materials, as used in the relevant alternative, information on the environmental impacts related to the material acquisition and the end-of-use of this technology should be provided in addition to information on the manufacturing and use phases
- if the technology proposed for verification uses a different manufacturing process than that of the relevant alternative in order to increase its efficiency during its use phase, but uses natural resources similar to those used by the relevant alternative, information on the environmental impacts for the manufacturing and use of the technology should be provided

Providing quantitative information which shows the differences in the major negative or positive environmental impacts between the technology proposed for verification and the relevant alternative(s) applies in particular to these differences which are directly linked to the performance parameters included in the performance claim and/or reflect the innovative features of the technology. Such information can be derived from the knowledge of the environmental performance parameters of the relevant alternative(s), especially when they are directly linked to the purpose of the technology or from understanding the environmental problems and issues of the technology users and concerns of the interested parties.

For the life stages where potentially no significant differences in the major environmental aspects and impacts occur or are unlikely to occur, an explanation is required.

For transparency reasons, during the technical review, the Verification Body may request to include some parameters resulting from the identified major differences in impacts (whether beneficial or adverse) as parameters to be verified considering them as important information from the users' point of view (e.g. a technology may achieve better performance in a pollutant removal compared to the conventional technology but at the same time it may consume more energy or require maintenance involving the generation of hazardous waste) compared to the alternative.

When reviewing the application file, the Verification Body shall analyse the information about the differences, considering also other information provided about the relevant alternative and check whether the differences are properly recognised.

## 4.8 Performance claim

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The performance claim of the technology shall be a concise declaration consisting of a set of parameters and their numerical values which:

- describe the functioning or performance of the technology in a specified application and under specified conditions of technology use and operation
- are directly related to the technology itself, and not, e.g. to the environmental management of the company or the sources of raw material
- highlight the advantages and innovative features of the technology
- reflect potential, direct environmental impacts of the technology in the specified application and under specified operating conditions
- are quantitatively verifiable through tests

The performance claim proposed for verification may refer to both technical/functional performance parameters of the technology and/or the resulting reduced environmental impacts related to its intended application.

Technical/functional performance refers to the performance of the technology in fulfilling its purpose in specified conditions of use and operation. Parameters presenting reduced environmental impacts generally refer to the environmental added value of the technology, for example:

- parameters referring to the required use of resources for production of the equipment/technology itself: consumption of raw materials (e.g. steel used in construction; this parameter may also be combined with the end-of-life and decommissioning parameters in the context of how much steel was used for production and how much can be recovered)
- consumption of electricity or other energy (heat)
- use of hazardous substances
- use of recycled material/raw material substitutes
- waste generated (biodegradable/recyclable/hazardous, etc.)
- emissions (air, water)

- longevity: e.g. robustness/vulnerability to changing conditions of use or maintenance
- end-of-life decommissioning and disposal: e.g. reusability, recyclability (fully or in part), parts needed to be disposed of

When proposing the performance claim, the following main aspects should be considered:

- **technology users' needs and other interested parties.** These may include, for example, regulatory or permitting bodies (e.g. when the verified performance is to support environmental permits, requests or to demonstrate compliance with BAT requirements), public buyers (e.g. when the verified performance is to demonstrate compliance with technical specification/green criteria defined for a public tender or some specific requirements of the target market), funding bodies (e.g. if the verification is performed under a project funded by a programme with specific performance indicators), investors (e.g. when the verified performance is to prove that the project involving the verified technology may be considered as a green investment in the meaning of ESG reporting or to help demonstrate the improvements of the environmental performance of the user's organisation in the meaning of compliance to the technical criteria of the EU Green Taxonomy), industrial associations or value chains of large enterprises as they may have some common additional performance indicators or technology performance/reduced environmental impact requirements resulting from joint commitments
- **legal requirements of the target market** applicable to the performance of the technology in its intended application (technical or legal reference values). The most important are those which concern the effect of operation and use of the technology, methods and measurements required to obtain data that are significant to quantify its impact on the environment. Knowledge of the legal requirements of the target market allows defining a performance claim to be verified that includes parameters relevant from the viewpoint of the target market. It applies to the knowledge of reference values defined in the relevant regulatory and legal requirements (e.g. BAT reference values or values defined in technical or ISO standards), especially when the performance claim is to prove better performance than legally required
- **environmental added value** (significant positive differences between the technology proposed for verification and the relevant alternatives throughout the life cycle)
- innovative aspects of the technology
- **technical conditions for use and operation** including relevant constraints, assumptions and limitations (see explanation below)
- **market requirements** for the specified application. They may refer to specific user demands and conditions which the technology should fulfil to succeed in the market. Additionally, there may be specific rules regarding the installation functionalities, use of the technology, or the necessity for compliance with other certifications
- **required use of resources for operation**, e.g. energy demand; raw material demand and/or demand for water (e.g. quality and quantity), chemicals, reagents, specific hazardous substance necessity, etc.

The performance claim should clearly define the technical conditions of use and operation under which the parameters presented in the performance claim are achievable. The technical conditions consist of operating conditions and constraints, assumptions, and limitations.

Operating conditions (also referred to as technical or process conditions) are a set of defined measurable parameters under which the technology is assumed to perform as claimed, fulfilling its purpose. They should be defined as normal conditions referring to the intended application of the technology.

Examples of parameters defining the operating conditions are: production capacity, ambient temperature, humidity, concentration of non-target compounds in the matrix, water flow, pressure in the boiler, wind speed, temperature range, pH range, presence of raw materials, etc.

Limitations, assumptions and constraints relevant to the claimed performance apply to the technology use, operation and performance to be verified. Constraints, limitations and assumptions may be directly derived from operational/process/technical conditions or pertain to the properties of the matrix.

Examples of the possible constraints and limitations may include: a minimum capacity requirement for the technology to operate, ambient temperature ranges, servicing and maintenance requirements, detection limits, a maximum concentration of a compound in the matrix, etc.

Limitations, assumptions and constraints refer to conditions that may prevent the claimed performance to be achieved and therefore must be considered together with the operating conditions. They are also relevant for the technology users who want to know under which conditions the technology will work as claimed.

A relevant performance claim should:

- be related to the technology itself (e.g. not reduced eutrophication of surface waters but removal rate of phosphorus in wastewater)
- be expressed in a specific and unambiguous way using absolute measurable figures so that only one interpretation is possible, e.g. energy consumption expressed in MW/ton of production units, not as 2% reduction compared to the average energy consumption of similar technologies available in the market
- specify the minimum rather than the maximum achievable performance (e.g. at least ....and not up to...)
- precisely define the technical conditions of use and operation under which the minimum claimed performance is achievable (e.g. temperature range, water flow rate, etc.)
- meet the minimum standards required, e.g. by legal regulations for the technology or other technical standards (e.g. relevant EU criteria for drinking water as well as target market drinking water criteria or Best Available Technologies values in relation to the Industrial Emissions Directive)
- be measurable using, whenever available, standardised test procedures and analytical techniques

For a measuring technology the following examples of performance parameters to be verified may apply:

- limit of detection
- range of application
- precision (repeatability/reproducibility)
- robustness
- accuracy
- specificity
- interferences
- linearity

The measurement technology could also claim to yield results more quickly and cost-effectively than the relevant alternatives. For example, a detection technology that can estimate fungal or bacterial biomass concentrations on site in less than one hour offers an advantage over a technology that requires a long analysis time. This claim would support applications such as on-site screening and monitoring of water and air quality to help prevent and control pollution.

For a technology resulting in an environmental added value, i.e. treatment technology, the following examples of performance parameters to be verified may apply:

- achieved cleaning/treatment effects
- range of application: variation of cleaning effects
- by-product formation
- residual chemical
- emissions to water, air, soil
- waste generation
- energy efficiency
- resource use

Examples of performance claims:

### **EXAMPLE 1**

**Technology:** AUTOMATIC SOLID BIOFUEL QUALITY CONTROL SYSTEM

**Matrix:** solid biofuel feedstock, e.g. forest residue chips, stem wood chips, bark, sawdust with a moisture content in the range of 10-75 % of water content.

**Purpose:** The technology measures in real-time the quality parameters of solid biofuel feedstock such as moisture content and presence of foreign objects (e.g. impurities such as stones) in its mass volume directly during its transportation on a conveyor belt. The technology allows the calculation of the calorific value of the transported fuel before its feeding to optimise its parameters, e.g. in the mixing process prior to combustion so as to ensure stability and effective combustion performance.

**Performance claims proposed for verification:**

1. the technology determines the fuel moisture with a maximum deviation of +/- 1 – 5% of water content, depending on the fuel type (matrix) and its moisture content

2. technology detects at least 80% of foreign objects such as stones and metals with a cross section >25 mm

**Operational parameters:**

Ambient temperature (outdoor conditions): -30°C – 45°C

Material thickness (vertical cross-section) on the conveyor belt: 100mm – 600 mm

Required throughput: minimum 100 m<sup>3</sup>/h, maximum – 1000 m<sup>3</sup>/h

Moisture content of matrices: between 10% and 75%

**Limitations:** Scrapers on the conveyor belt with a shield for the X-ray and foreign objects close to the scrapers will not be detected. Large objects in the same location but in different depths will be registered as one object.

**EXAMPLE 2**

**Technology:** A MICROBIOLOGICAL PROCESS FOR UPGRADING BIOGAS INTO METHANE

**Matrix:** Biogas with 20 – 40 % of CO<sub>2</sub> and < 1000 ppm hydrogen sulphide

**Technology purpose:** The technology converts CO<sub>2</sub> contained in the biogas into CH<sub>4</sub> with addition of H<sub>2</sub> to achieve parameters enabling its injection to the natural gas grid.

**Performance claims proposed for verification:**

1. the technology converts feed streams of biogas with 20 – 40 % CO<sub>2</sub> and up to 1000 ppm hydrogen sulphide into methane, with the following quality specifications: > 95%vol. methane, < 4% H<sub>2</sub>, < 1% CO<sub>2</sub>, 5 mg/Nm<sup>3</sup> H<sub>2</sub>S
2. electricity consumption (including H<sub>2</sub> generation) less than 25 kWh/Nm<sup>3</sup> of produced CH<sub>4</sub> for the flow of 20 Nm<sup>3</sup>/h of CO<sub>2</sub>

**Operational parameters:**

Flow range of CO<sub>2</sub>: between 5 – 30 Nm<sup>3</sup>/h

Required addition of H<sub>2</sub>: 4m<sup>3</sup> per m<sup>3</sup> CO<sub>2</sub>

Reactor temperature: between 60°C and 65°C

Pressure: up to 10 bar

Content of impurities in the biogas: below 5000ppm of hydrogen sulphide

**Limitations:** The system is designed to operate within specifications at normal outdoor conditions for the site (-10°C to 35°C), however, its testing in the outdoor temperature limits is not possible due to the lack of controllable test parameters.

**Constraints:** Once at operation temperature and pressure is reached, the system can achieve the nominal conversion performance within 15 minutes. The system can be stopped and stay idle without energy input for 2 hours.

**Additional information:**

The system can be stopped in less than 1 minute.

The H<sub>2</sub> can be delivered from an electrolysis unit or any other process with excess H<sub>2</sub>.

The oxygen can be utilised in the aeration tanks of the biogas plant to increase the efficiency there. The heat produced by the water electrolysis and the methanation reactions can be exported, for instance for the heating of the biogas plant, to increase the overall energy efficiency.

## 4.9 Relevant existing test data

Existing test data refer to data sets from testing of the technology generated before application for ETV. These data sets may refer to the tests pertaining to the claimed performance of the technology itself, i.e. provide evidence supporting this claim (e.g. the specification of the performance parameters, their values and ranges) and demonstrate the stability of technology performance as well as the characteristics of the matrix, in particular to its parameters that may affect the performance claim to help determine testing conditions.

The test data could be generated by in-house testing or by a third-party testing body. Such data sets can be produced, for example, at the final stage of the technology development during the validation of its operation in the real environment (e.g. under a demonstration project), for compliance testing or for market implementation activities.

The existing test data sets should be accompanied with information in what conditions and by whom they were generated. Whenever available the following should be provided:

- a test plan and/or a test report specifying the testing conditions (i.e. test site, when and how long the test has been performed, test type and scale: batch experiment, continuous testing, conditions of technology use and operation applied during the testing, information of the intended application of the technology for which the test was performed, including matrix characteristics, constraints, assumptions, testing procedures followed and test methods used, including references to standard methods, etc.
- source of the test data, i.e. who generated it, if generated by a test body – the competence of the test body, e.g. if a test body was accredited under ISO 17025 for the applied measurement or analytical methods

The existing test data may be used, in part or in full, for the verification of performance if they are sufficient, adequate and relevant to the performance claim and generated compliant with ISO/IEC 17025 requirements. The existing test data referring to the performance claim will be analysed by the Verification Body during the technical review of the application to provide an indicative assessment concerning its applicability for verification of the claimed performance.

### 4.10 Relevant legal requirements or standards related to the technology and its use

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This information should specify any relevant standards applicable to the technology proposed for verification and include especially those standards that relate to its performance and use, to the test and measurement methods required to produce relevant test data needed to verify its performance or to the quantification of relevant environmental impacts.

For example: for water quality monitoring equipment aimed to detect and measure *Escherichia coli* and coliform bacteria based on the most probable number method, the relevant standard would be ISO 9308-2 (Water quality – Enumeration of *Escherichia coli* and coliform bacteria – Part 2: Most probable number method).

For a water recycling method aimed at producing water for food crop irrigation purposes, the relevant standard/regulatory requirement would be REGULATION (EU) 2020/741 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 May 2020 on minimum requirements for water reuse.

### 4.11 Statement on technology adherence to applicable regulatory requirements

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The purpose of this statement is to potentially dismiss from environmental technology verification those technologies that would not meet applicable regulatory requirements regarding both the intended application of the technology and the market(s) targeted by the technology. Where relevant, the statement should refer to the regulatory requirements directly applicable to the technology or to its intended use (see section 4.10 above). The statement is part of the contractual agreement (see section 3.3).

### 4.12 Supporting information relevant to the interested parties

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The scope of the supporting information may include any information offering additional insight into the technology application and performance, for example:

- installation and operating requirements
- service and maintenance requirements
- expected length of time for which the technology functions under normal operating conditions
- any applicable health and safety requirements and considerations

#### 4.12.1 Installation and operating requirements

Installation requirements include all conditions that must be met to ensure proper operation and safe use of the technology. These may include, for example, standard operating procedures (SOPs), requirements regarding installation site and space, adequate electrical power supply, cooling or ventilation system, or the need for appropriate subfloor preparation. Operating requirements may be relevant for conditions necessary for the proper exploitation, performance and use of the technology after its installation and launching, for example, start-up time required to achieve full performance, set-up adjustments, etc. This information is relevant to ensure that the requirements related to installation and operation are met during technology testing to generate test data for the needs of the performance verification.

#### 4.12.2 Service and maintenance requirements

Similarly as above, service and maintenance requirements are important to ensure that these requirements are met during technology testing to generate test data for performance verification. They can also be used to provide additional information on calibration needs or potential environmental aspects/impacts related to technology maintenance and

servicing. For example, maintenance of microfiltration membranes to avoid fouling may require cleaning with the use of chemical substances which eventually may become hazardous waste.

Additionally, precisely defined service and maintenance requirements may serve as evidence supporting the market readiness of the technology. If they are not available as a formal document, they should – as a minimum – be defined and described before applying for verification.

### 4.12.3 Expected length of time for which the technology functions under normal operating conditions

This may include information that refers to its lifespan or how long it performs as declared in its intended application, technical assistance needed to ensure that the technology remains functional and secure over time, etc.

### 4.12.4 Applicable health and safety requirements and considerations

Health and safety requirements may be required for training the personnel involved in technology testing, if relevant, as well as for on-site visits of the Verification Body personnel conducting the verification process.

## 5. Review of the application by the Verification Body

The Verification Body performs a formal and technical review of the application file. The formal review includes determining whether the information and supporting documents are complete, relevant and sufficient to perform the technical review.

The technical review focuses on:

- determining the eligibility of the technology for verification, which includes the assessment of the environmental added value and compliance with the definition of an environmental technology
- checking the quality of the performance claim
- determining whether the performance and environmental impact information needs of the interested parties are satisfied
- indicative assessment of the test data from the viewpoint of their applicability for verification
- defining the conditions for verification planning

When reviewing the performance claim, the Verification Body will assess its quality, considering in particular:

- ✓ if the parameters are relevant and complete to meet the stakeholder's needs (e.g. some additional parameters may be included in the claim to describe environmental aspects of the technology or an expected result of its application)
- ✓ if there is a need to supplement the set of the performance parameters with some additional parameters which may be non-verifiable but relevant for the interested parties to make an informed choice (e.g. a drinking water disinfection technology may allow achieving an extra purity level of drinking water, however this process may be more energy consuming, so the energy parameter should be provided as an additional information)
- ✓ if the claimed performance meets the requirements imposed by a regulatory framework specific for the candidate technology (e.g. if a standard determining relevant performance parameters for the technology under verification and its verified application is available, reference to this standard can replace the precise definition of the performance parameter)
- ✓ how does the claim refer to the state-of-the-art performance of similar technologies so as to enable useful comparison where relevant (e.g. knowledge of comparable technologies and users' needs may indicate that a given parameter could be expressed differently)
- ✓ if the parameters are quantitatively verifiable and expressed in a specific and unambiguous way using absolute measurable figures
- ✓ if the specified operating conditions valid for the claimed performance are described in a relevant and adequate way

The Verification Body may request to provide additional technical documentation supporting the description of the technology to assess the adequacy of the technology design, its operation and performance, in relation to the performance claim.

Based on the application assessment the Verification Body makes the decision:

- to recommend the technology for verification

- to refuse to verify the technology with an explanation justifying the decision or
- not to recommend the technology for verification but allow the Applicant to proceed with the verification at their own risk

The Verification Body communicates the result of the assessment and the decision to the Applicant.

## 6. Pre-verification

Once the technology is recommended for verification by the Verification Body or the Applicant decides to proceed with the verification at their own risk without the recommendation, the verification process needs to be specifically tailored to the performance claim and the technology.

### 6.1 Specification of performance parameters to be verified

Based on the performance claim revised as a result of the technical review of the application file, the Verification Body in consultation with the Applicant develops a specification of the performance parameters to be verified.

Depending on the claim, the specification may include the following types of parameters:

- **performance parameters** related to the performance of the technology in fulfilling its purpose (also referred to as technical or functional performance)
- **operational parameters** related to the technical conditions of the intended application, taking into account the scale and readiness level of the technology. The operational parameters shall be used to determine the testing conditions. Examples of operational parameters include ambient temperature and concentrations of non-target compounds in the matrix. These parameters are typically measured, controlled/monitored during the testing
- **environmental parameters** related to potentially significant impacts and benefits on the environment, directly and indirectly, along the life cycle (e.g. raw materials, production, use, recycling, end-of-life disposal). These may include, for example, energy consumption or emission of pollutants to air or water. The definition of environmental parameters should be based on the assessment of the environmental added value in the proposal. Environmental parameters directly linked to the purpose of the technology should be considered as performance parameters
- **additional parameters** related to information about the technology that is useful for users but that may not necessarily be measurable through tests and, therefore, not included in the list of verification parameters above. Examples of the possible additional parameters include the expected service time during which the claimed performance is respected<sup>5</sup>, overall service life, health and safety issues, installation and maintenance requirements as well as operating costs. They may also include other indicators like water footprint, etc. In the Statement of Verification, the additional parameters are to be listed under "Additional Information"

When specifying the performance parameters and their numerical values together with the Verification Body, the Applicant should pay attention to:

- ✓ the legal requirements of the target market, e.g. if the values of performance parameters to be verified comply with these requirements, if the units proposed to quantify the value correspond with the units proposed in the regulation, if the proposed parameter should be measured by a test method specified in the requirements or provided by a standard or norm (possibly international standard) referred to in the requirements
- ✓ the needs of the interested parties, for example, e.g. regulatory and/or permitting bodies, end-users, funding bodies, policy makers, industrial associations, etc. These needs may pertain to some specific parameters that should be considered, for example:
  - minimum requirements defined in the technical specifications and environmental criteria specified in green public procurement rules, if applicable to the target market
  - parameters and their values that need to be demonstrated and supported by evidence by the technology user applying for an environmental permit relevant for the operation of an installation involving or based on the technology
  - parameters and their values referred to in the technical screening criteria involving technology performance and relevant for a specific type of economic activity, e.g. the economic activity of the technology user, to demonstrate its compliance with the classification of environmentally sustainable economic activity provided by the EU Green Taxonomy regulations or as evidence to prove a sustainable investment

Considering parameters to be verified which correspond directly to the information needs of the interested parties increases the utility of the verification and the market value of the Statements of Verification.

<sup>5</sup> If the expected service time of the technology can be estimated through tests, this can be included as an operational parameter rather than an additional parameter.

The tables below show examples of how an initial performance claim is converted into a set of performance parameters to be verified:

	Performance claim and operational parameters in the application	Specification of parameters to be verified in the verification plan	Comment
<b>Example of technology</b>	Disinfection technology		
<b>Matrix</b>	Industrial process water from reusable water bottles washing	Industrial process water from reusable water bottles washing	
<b>Purpose</b>	Disinfect industrial process water to the standard required for food contact surfaces	Disinfect industrial process water to the standard required for food contact surfaces	
<b>Example of performance parameters</b>	1) Removal of 99.9 % of bacteria	1) Removal of 99.9 % of bacteria 2) Chloride in output < 0.5 mg/L 3) Trihalomethanes in output < 100 µg/L	2) For this purpose it is required that the output water fulfils the drinking water criteria of 0.5 mg chloride/L 3) During the treatment process there is a risk of trihalomethane formation The listed criterion is the EU drinking water criterion
<b>Operational parameters (operating conditions)</b>	1) Conductivity above 250 µS/m 2) Ambient temperature: 5-35°C	1) Conductivity above 250 µS/m 2) Ambient temperature: 5-35°C 3) Chloride in input above 15 ppm	3) Conductivity and chloride often follow each other, but after revision of the technology it was clear that a certain level of chloride needs to be controlled separately

	Performance claim and operational parameters in the application	Specification of parameters to be verified in the verification plan	Comment
<b>Example of technology</b>	Separation technology		
<b>Matrix</b>	Used artificial turf	Used artificial turf	
<b>Purpose</b>	Recycling of used artificial turf	Recycling of used artificial turf to achieve clean fractions of sand, rubber granulate, grass fibres and backing that can be used for various purposes	A more concise description of how the technology affects the matrix
<b>Example of performance parameters</b>	Total recovery of the components in artificial turf: 95%	Recovery level of the input fractions: <ul style="list-style-type: none"> <li>• sand: 95 %.</li> <li>• rubber granulate: 95%</li> <li>• fibre: 85 %</li> <li>• backing: 75 %</li> </ul>	Specification of the claim
	High purity of sand, rubber granulate, grass fibres, backing	Purity of the output fractions <ul style="list-style-type: none"> <li>• sand: 97 %.</li> <li>• rubber granulate: 97%</li> <li>• fibre: 90 %</li> <li>• backing: 80 %</li> </ul>	Specification of the claim
		Electricity consumption <250kWh/ton	Quantify the total energy consumption per ton of waste (environmental parameter important for user)

<b>Operational parameters (operating conditions)</b>	None	Capacity of the plant - 7 tons/hour	The amount of fractions contained in a sheet of artificial turf may vary. Therefore weighing of the material must be made before feeding it into the machinery to avoid overfilling.
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Specification of parameters to be verified determines the development of the verification plan, including the testing requirements and, if applicable, the need to generate additional test data.

During the claim revision phase carried out by the Verification Body the Applicant is requested to comment and approve the modifications of the revised performance parameters proposed by the Verification Body as a part of the verification plan approval.

## 6.2 Verification planning

When the performance parameters to be verified are specified, as the next step, the Verification Body develops a verification plan.

The plan defines how a specific verification of an individual technology will be carried out. The key elements of the plan include:

- a specified list of performance parameters to be verified, their assigned numerical values and the description of how they will be verified (i.e. test methods to be used, including sampling and equipment requirements)
- technical and operational details of the planned verification including overall description of testing activities (e.g. continuous or batch tests, test scale: laboratory/field, site requirements)
- specification of requirements for the test data, including quality and quantity, test conditions, matrix parameters, etc.
- description of methods for the assessment of the test data and their quality, including, e.g. calculation methods, determination of uncertainty and statistical methods, data management, etc.
- whenever possible, the test methods used should be standardised internationally or nationally or provided in specifications recognised otherwise. In the absence of such standards, the test method should be determined by other means in a dialogue with the Applicant, the Verification Body and the test body

During the verification plan development, the Applicant may be requested to assist the Verification Body in specifying the requirements for testing and/or for the test data, defining the testing methods and any specific requirements which shall be fulfilled (e.g. for laboratory analyses) to be included in the plan.

The requirements concerning the testing site should be defined in the verification plan and then in the test plan.

The general requirements which must be considered when choosing the testing site include:

- ▶ the site must be clearly related to the matrix, purpose and operational parameters defined for the verification
- ▶ it must be accessible (e.g. the Applicant must either provide access to the technology if installed at a field site or provide a requested number of its pieces when tested at the test body's site, etc.)
- ▶ if the technology is installed and used at the field site, the site should be free from any commercial or other interests which could influence the test results (the field site should not be dependent upon the Applicant). For example, the Applicant must ensure that the test site is secured against access by unauthorised persons. If a test setup is left unattended, there is a potential risk that the setup may be altered

## 7. Verification

Verification of the performance involves:

- acceptance of the existing test data for verification
- testing if additional test data are needed
- confirmation of performance based on the analysis and assessment of the test data

### 7.1 Acceptance of existing test data for verification

At the application stage, the Applicant is encouraged to provide as much of the existing test data from technology tests as available together with test plans and test reports. This test data is indicatively assessed for applicability to verify the performance during the technical review of the application with the aim to inform the Applicant whether additional testing will potentially be needed. If the provided data sets have been initially recognised by the Verification Body as applicable to verify the performance claim, they are assessed in full at this stage, once the parameters to be verified are defined and agreed with the Applicant together with the test methods and any other information relevant to the testing requirements (e.g. testing conditions, quality assurance and control measures).

The Verification Body assesses the existing test data to qualify for performance verification considering the following requirements:

- test data are relevant, sufficient and adequate for the performance to be verified, i.e. they correspond to the parameters, methods and target values of the specified performance parameters to be verified
- test data are produced and reported according to the requirements of ISO/IEC 17025, for example, a detailed test plan that was followed during the testing and a test report are available, the quality assurance and control measures implemented during the testing comply with the requirements of ISO/IEC 17025, the testing was performed in a way ensuring its impartiality, etc.
- test data meet the requirements specified in the verification plan, e.g. they were produced with the same test methods as the ones specified for performance parameters to be verified and generated under testing conditions that correspond to the intended application (as well as purpose and matrix) defined for the verified technology and its performance together with the operational parameters, assumptions, constraints and limitations applying to the performance claim
- test data are provided in a format that allows assessment against the above mentioned requirements

In order to accept the existing test data, the Verification Body may need to perform their quality control by assessing the test system which generated them. The Verification Body will determine whether the test system and quality management system applied by a test body to generate the test data for verification purposes comply with the requirements of ISO/IEC 17025 and the verification plan. Depending on whether the testing was performed by an accredited laboratory or not, the test system may include the review of the relevant accreditations, or an in-depth audit including the review of relevant procedures, observation of actual practices and evaluation of the test performance. Where applicable, the audit may also include examination of control data for the relevant period, participation in proficiency testing and/or control of measurement device calibration. It is aimed to provide the necessary evidence for the test system assessment.

In order to facilitate the acceptability of the existing test data, it is recommended that tests carried out before an ETV proposal should be performed by organisations accredited as complying with the requirements of ISO/IEC 17025 for the relevant test methods.

In some cases, the existing relevant test data developed by a test body, may have been generated for different conditions than those specified in the claim. This should be considered, if relevant, when specifying the performance parameters, as mutually agreed between the Verification Body and the Applicant, with the result that the performance claim including the conditions for which it is achieved could be modified so as to correspond to the existing data, in which case no additional testing may be needed.

### 7.2 Testing if additional test data are needed

Additional tests are needed when the Verification Body states that the existing test data provided by the Applicant do not meet the requirements defined in the section above.

The Verification Body typically does not perform the testing. The Applicant is responsible for designating one or more test bodies to perform the necessary tests and enter a contractual agreement concerning the testing.

It is essential that the Applicant coordinate the designation of the test body with the Verification Body who may also advise on the quality requirements which the test body shall fulfil to be a qualified test data provider for the needs of the verification.

In the case of difficulties with finding a test body accredited to ISO/IEC 17025 for the relevant methods of testing and calibration, other appropriate test body can be designated by the Applicant. However, in order to accept the test data generated by such a body, the Verification Body will perform a detailed audit of the test system provided by the test body to generate the required test data. The scope of such audit is based on the analysis of the ISO/IEC 17025 requirements that must be followed when performing the testing and depends on the types of tests performed and the risks identified by the Verification Body related to quality assurance and control as well as potential lack of compliance to the requirements of the verification plan concerning test data.

Alternatively and where appropriate, the Applicant may perform the necessary tests in-house. This may be the case when the necessary test equipment or skills are not easily available outside of the Applicant. In this case, the Applicant shall demonstrate the compliance to the requirements of the test bodies as specified in section 2.3. The test plans, all preparatory measures such as sampling and the actual tests shall be prepared and implemented by the Applicant in agreement with, and where appropriate - witnessed by, the Verification Body.

The tests shall be planned and performed in accordance with the requirements specified in the verification plan.

The Applicant is responsible for closing a contract with the test body for performance of tests. The contractual agreement should ensure that the following activities are executed by the test body:

- development of the test plan for test data generation following the requirements provided in the verification plan and in consultation with the Verification Body
- performance test following the test plan
- development of the test report following the requirements of the Verification Body
- any interaction with the Verification Body concerning requests to provide supplementing information and documentation about the performed testing activities and the quality control check of the performed tests including a test system audit, if relevant (e.g. when the test body is not an ISO/IEC 17025 accredited laboratory). Such activities may include, but are not limited to spot checks in which test performance data are collected at random and their quality is assessed and witness checks involving on-site visits of the Verification Body staff in which tests are witnessed, in full or in part

The Applicant plays an active role in drafting the test plan and performing the tests. It is the responsibility of the Applicant to review, provide comments and approve the test plan. For testing, the Applicant will be requested to ensure access to the technology (e.g. provide, if necessary, the number of technology/product units for testing, provide access to the field site, etc.) or accessories, to provide user manual and, if necessary, training to the test body on the operation of the technology including health and safety aspects, if relevant, etc.

Once the tests are completed, the test body summarises the results and presents them in the test report. The Applicant submits the test report to the Verification Body for review and approval. When approved, the test report including the test data is used for the final test data assessment and performance verification.

## 8. Confirmation of performance

The Verification Body analyses and assesses all test data, i.e. accepted existing data and test data from the additional tests related to the performance specified in the verification plan and concludes on the performance actually achieved by the technology under the same conditions, constraints and limitations as those specified for the generation of the test data used for verification. The achieved performance is then considered to be the verified performance.

In some cases, the technology performance achieved as verified using the test data qualified to be used for verification may not match the performance originally anticipated by the Applicant in the performance claim provided in the application.

## 9. Reporting

Reporting includes development of the verification report and the Statement of Verification by the Verification Body. The Verification Body submits both documents for review and comments to the Applicant to ensure that:

- the technology description and Applicant information included in the documents are accurate and complete
- the Applicant understands the results and details of the verification and that the documents are clear and concise
- the input from the Applicant is provided and considered

Although the Applicant can provide feedback and comments on the Statement of Verification and the verification report, it is solely up to the Verification Body to decide whether to incorporate the Applicant's input into the final documents. In making any changes to the report or Statement of Verification, the Verification Body considers the Applicant's comments with impartiality and transparency.

The Applicant either accepts the confirmed performance or may decide to alter the technology specification, design and/or operating conditions and to modify the values of the performance parameters from those specified in the verification plan. Any change to the technology or performance parameters would require modification of the verification plan and repetition of the verification procedure, if agreed to by both parties.

### 9.1 Verification report

The verification report is a comprehensive summary of all verification activities carried out throughout the entire process. Its main parts include:

- a detailed description of the technology and its application
- the verified performance
- operating conditions, constraints, and limitations under which the verified performance is achieved
- all measurement uncertainties and relevant assumptions taken into consideration during the verification process
- description of the tests performed and the obtained results
- description of how the requirements for the verification of the performance and the test data, as specified in the verification plan, were met, including reporting of any deviations
- final assessment of all data from the test report and from the acceptable existing data prior to verification
- quality management and control procedures applied
- any other information necessary to understand and use the performance claim; this may include information not verified under the ETV, which should be clearly stated and explained

The report is owned by the Applicant. It may only be published by the Applicant themselves or by others including the Verification Body with the Applicant's consent. If the verification report is published, it should be published in full. In some cases, the Verification Body may accept the publication of some parts of the report; however, this may happen only if the legitimate interests of the Applicant in relation to the verified technology, in particular intellectual property, could suffer disproportionately great harm because of the full publication of the report. Before publishing the parts of the report, the Verification Body checks that the parts to be published may not lead to any misinterpretation of the meaning or results of verification. It must be clearly pointed out that it is an extract from the verification report.

## 9.2 Statement of Verification

The Statement of Verification is a summary of the verification report. The document shall contain as a minimum:

- a unique identification number and date of issuance
- a summary description of the technology verified, purpose and conditions of use
- the verified performance and the operating conditions, constraints and limitations under which it is achieved
- a summary of procedures followed by the Verification Body, and by test bodies, if relevant, to verify the claim, including the statistical confidence interval for specifications, where applicable
- description of how the requirements of the verification specified in the verification plan were met, including reporting of any deviations
- any other information necessary to understand and use the performance claim; this may include information not verified under the ETV, which should be clearly stated and explained

## 10. Post-verification

Post-verification includes publication of, as a minimum, the Statement of Verification and aspects of ensuring the validity of the statement.

### 10.1 Publication

Upon completion of the verification process, the Verification Body must, as a minimum, publish the Statement of Verification in a publicly accessible directory, e.g. on the Verification Body's website. For marketing purposes, it is also recommended that the Applicant publish the Statement on their own website. The Statement of Verification must be published in its entirety and cannot be used in part for any purpose.

Publication of the verification report is not obligatory. However, the Applicants are recommended to make the verification report publicly available for the sake of transparency of the verification result and thus make it more attractive for technology buyers and users as well as other stakeholders.

In the case when the Applicant misuses the Statement of Verification, i.e. violates the condition stated above, the Verification Body is authorised to withdraw the Statement. It will then be removed from the website on which it was published together with the verification report or parts of it, if published.

### 10.2 Rules for using the Statement of Verification

The Applicant may use the Statement of Verification for marketing purposes and official approvals. It may be included in the technical documentation of the verified technology. The Applicant must make the Statement of Verification available in its entirety and cannot use parts of the Statement for any purpose.

The Applicant may refer to the Statement of Verification as follows:

The XX technology was verified in the framework of ISO 14034 Environmental Technology Verification (ETV) scheme for the application of AA (including purpose and matrix) by BB Verification Body on DD.MM.YYYY. The Statement of Verification has been registered under number NN and is accessible at the following address: [https://\(provide the address where the Statement is published\)](https://(provide the address where the Statement is published)).

The Applicant may not use the ISO 14034 ETV logo itself neither on products nor on published materials (printed, online or otherwise) with the exception of the Statement of Verification. The ETV logo may be used in publications together with the reference to the Statement of Verification, as provided above, if the meaning of ETV is correctly reflected in the publication, avoiding in particular any confusion with endorsement or approval of the technology.

### 10.3 Validity of the Statement of Verification

In general, there is no validity period defined for the Statement of Verification or the verification report. The statement remains valid as long as the technology with the same unique identifier for which it was issued is in the market. However, the Applicant may request that the Statement of Verification and the associated report be removed from the website if, for example, the technology is no longer in the market. This request should be made in writing to the Verification Body, whereby the Applicant undertakes not to use the Statement of Verification, reference to it or the ISO 14034 ETV scheme logo in the future.

The Applicant shall ensure that the verified technology (i.e. the technology with the unique identifier indicated in the Statement) continues to comply with the published Statement of Verification.

If any changes listed below occur to the verified technology, the Applicant must promptly report to the Verification Body with the required data for assessing whether the verification conditions have been altered. These changes may include:

- change of ownership
- design changes
- change of intended application or operating conditions
- other changes likely to modify the performance results reported in the Statement of Verification

Substitution of one part with another with the same documented specifications is not considered a change unless it affects the environmental added value or one of the parameters reported in the Statement of Verification.

The Verification Body shall evaluate the reported changes and data at the cost of the Applicant. If, after evaluation, the Verification Body concludes that the conditions for verification have changed, the Applicant must initiate a new verification procedure for this technology or alternatively, the Statement of Verification shall be withdrawn.

The Statement of Verification shall be withdrawn by the Verification Body if misused by the Applicant. In the case of withdrawal, the Statement of Verification and the verification report shall be removed from all websites.

## 11. How to leverage the Statement of Verification in marketing

The Statement of Verification provides significant added value for the promotion of a new environmental technology. To maximise the utility of the Statement, the Applicant should present the Statement on the company's website, and a copy of the Statement should be available for download. The Applicant may also wish to present the verification report for transparency reasons.

When promoting a verified technology, the Applicant should emphasise the following points:

- **Independent Verification:** Highlight that the technology has undergone rigorous independent verification by accredited third-party organisations. Mention the ISO standards. This emphasises the reliability of the technology and confirms its performance claims
- **Credibility and Trustworthiness:** Emphasise that the performance of the technology has been validated by experts in the field whose competence has been confirmed by accreditation of a Type A inspection body in accordance with ISO/IEC 17020, enhancing its credibility and instilling trust among potential users, investors, and regulators
- **Compliance with Standards and Regulations:** Showcase how the technology meets or exceeds industry standards and regulatory requirements, ensuring that it complies with environmental and safety regulations
- **Performance and Efficiency:** Highlight the verified performance numerical values and benefits of the technology, such as its effectiveness in reducing emissions, conserving resources, improving efficiency, or mitigating environmental impacts
- **Cost Savings and Economic Benefits:** Demonstrate how the technology can lead to cost savings, increased productivity, or other economic benefits for users, making it a financially attractive investment
- **Reduced Environmental Impact:** Emphasise the less adverse or positive environmental impact of the technology compared to current solutions, such as reducing carbon footprint, minimising waste generation, or preserving natural resources
- **Market Differentiation:** Position the ETV verification as a unique selling point that sets the technology apart from competitors, giving it a competitive edge in the market
- **Risk Mitigation:** Highlight how ETV verification reduces the risk associated with technology adoption by providing objective, verified data on its performance and reliability
- **Testimonials:** Provide real-world examples of the verified technology application and testimonials from satisfied users or customers to illustrate the successful implementation and benefits of the technology

## 12. Glossary of key terms and definitions

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The use of this Guide requires knowing and understanding some key terms and definitions provided by the ISO 14034 ETV standard that apply to the verification process and its outputs.

**Technology** refers to the practical application of technical or scientific principles in the environmental area to achieve a given purpose. It covers a variety of products, processes, and services

**Environmental technology** is a technology that either results in an environmental added value or measures parameters that indicate an environmental impact

**Environmental added value** of an environmental technology means that the technology results in a more beneficial or less adverse environmental impact in comparison to the relevant alternative

**Environmental impact** is a change to the environment, whether adverse or beneficial, wholly or partially resulting from material acquisition, design, production, use or end-of-use of a technology

**A Relevant alternative** is a technology applied currently in a similar situation to an environmental technology

**Life cycle perspective** means the consideration of the main environmental benefits and pressures or impacts generated by a technology along its life cycle, from the extraction of raw materials, manufacturing process, use and maintenance, until the end of life of related equipment or products

**Quick Scan** is a contact form containing information about the technology submitted by the Applicant to the Verification Body in order to make an initial check if the environmental technology is eligible for ETV

**Performance claim** is a statement of performance of the environmental technology declared by the Applicant

**Verification plan** (sometimes also named **Specific Verification Protocol**) is a planning document detailing the implementation of environmental technology verification for the technology proposed for ETV; it is developed by the Verification Body upon completion of the technical and formal review of the application with a conclusion stating the eligibility of the proposed technology for verification

**Verification report** is a document detailing the performed environmental technology verification and its results, developed by the Verification Body and provided to the Applicant

**Statement of Verification** (or **Verification Statement**) is a document summarising the results of environmental technology verification developed and published on a public domain by the Verification Body and provided to the Applicant upon completion of the verification



# Guide for **ETV** applicants

**Prove your green  
technology performs!**

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