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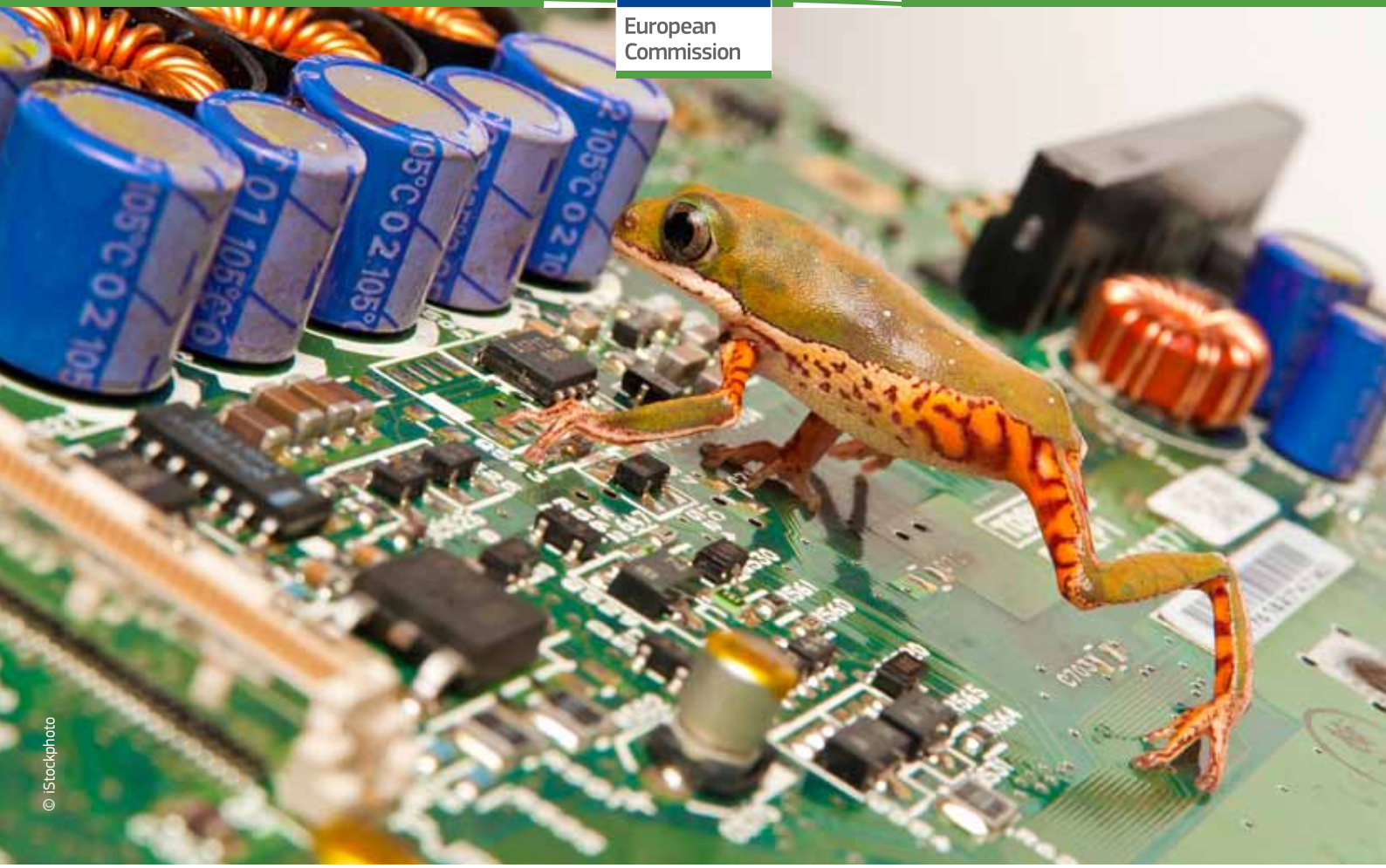

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EU Environmental Technology Verification pilot programme

General Verification Protocol

Version 1.1 – July 7th, 2014

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EU Environmental Technology
Verification pilot programme

General Verification Protocol

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Part A: Environmental Technology Verification pilot programme

A.I Introduction

Europe and the rest of the world are confronted with urgent environmental challenges such as climate change, the unsustainable use of resources and loss of biodiversity. Environmental technologies have a role to play in addressing these challenges and, at the same time, can contribute positively to competitiveness and growth.

The objective of Environmental Technology Verification (ETV) is to promote environmental technologies by providing technology developers, manufacturers and investors access to third-party validation of the performance of innovative environmental technologies. This helps manufacturers prove the reliability of their claims, and helps technology purchasers identify innovations that suit their needs. This expected impact on technology markets is to accelerate the acceptance and diffusion of innovative environmental technologies.

At a European level, the European Commission launched a voluntary scheme for ETV on an experimental basis: the EU ETV pilot programme. This programme is intended for innovative technologies presenting an added value for the environment and ready for the market.

This General Verification Protocol (GVP) has been drafted to support the development and implementation of this initiative. This GVP consists of three sections and supporting documents within appendices:

- Part A: Environmental Technology Verification pilot programme
- Part B: Verification procedure
- Part C: Quality management

The GVP is to serve as the main technical reference for the implementation of ETV procedures by participating entities and the coordination of the programme at a European level.

The purpose of the GVP is to provide an organisational and technical framework and procedures enabling the provision of independent and credible information on new environmental technologies, by verifying that performance claims put forward by technology developers and manufacturers are complete, fair and based on reliable test results. At the core of a verification process under ETV, test results produced before or during the process are reviewed in order to assess relevant parameters for the performance of the technology. Mutual recognition of verification results is ensured in the European Union by following the procedures as laid down in this GVP.

Established technologies are typically not subject to verification under ETV. Companies willing to prove the compliance of a technology with a product standard are advised to apply instead to product certification, as defined by the ISO/IEC Standard 17065 and implemented

by certification bodies accredited to fulfil the requirements of this standard[1]. ETV is recommended for technologies whose innovative features or technical and/or environmental performance are not fully reflected in existing product standards. For example, an innovative wastewater treatment technology could achieve discharge standards and use less energy than current technologies; ETV would consider all performance parameters together including energy consumption, enabling useful comparison with alternative technologies.

ETV focuses on parameters quantifiable and measurable through testing that are related to the performance of a technology and its environmental added value. The environmental added value is considered in a life-cycle perspective, i.e. considering the main benefits and impacts along the life cycle of the technology, using a simplified and limited life-cycle approach. However, ETV does not have the same objective and does not provide the same information as other specialised environmental tools based on life-cycle information such as Life-Cycle Analysis (LCA), Environmental Product Declaration (EPD) or Product Environmental Footprint (PEF).

The ETV pilot programme is to follow adequate standards of quality. Organisations undertaking the verification of environmental technologies under the ETV pilot programme, hereafter referred to as 'Verification Bodies', shall be accredited by national accreditation bodies, using the ISO/IEC Standard 17020 for type A inspection bodies and integrating this GVP in the documentation describing the accredited inspection activities of Verification Bodies. In other terms, this GVP defines an inspection scheme with the meaning of ISO/IEC 17020.

A.I.1 Scope

An innovative environmental technology may be presented for verification under the EU ETV pilot programme by any legal entity established in or outside the European Union, hereinafter referred to as 'the proposer', if the technology fulfils the following criteria:

- It is likely to correspond to the definition of an innovative environmental technology provided under Appendix 1 'Glossary of terms and definitions' with a potential to contribute to the efficient use of natural resources and a high level of environmental protection;

- It belongs to one of the technology areas contained in the list of technology areas referred to under Appendix 2 'List of technology areas in the EU ETV pilot programme';

- It is ready for the market or is already commercially available.

[1] ISO/IEC 17065 supersedes EN 45011/ISO/IEC Guide 65. The transition period extends to 1 September 2015.

A.II Entities in the EU ETV pilot programme

The EU ETV pilot programme consists of two groupings of entities. The first one is the main organisational framework for the management of the EU-ETV pilot programme outlined as "EU ETV pilot programme structure" in Figure 1. The second grouping is for entities involved in the individual verifications, outlined as "Verification structure" in Figure 1.

Main entities and relations are described subsequently.

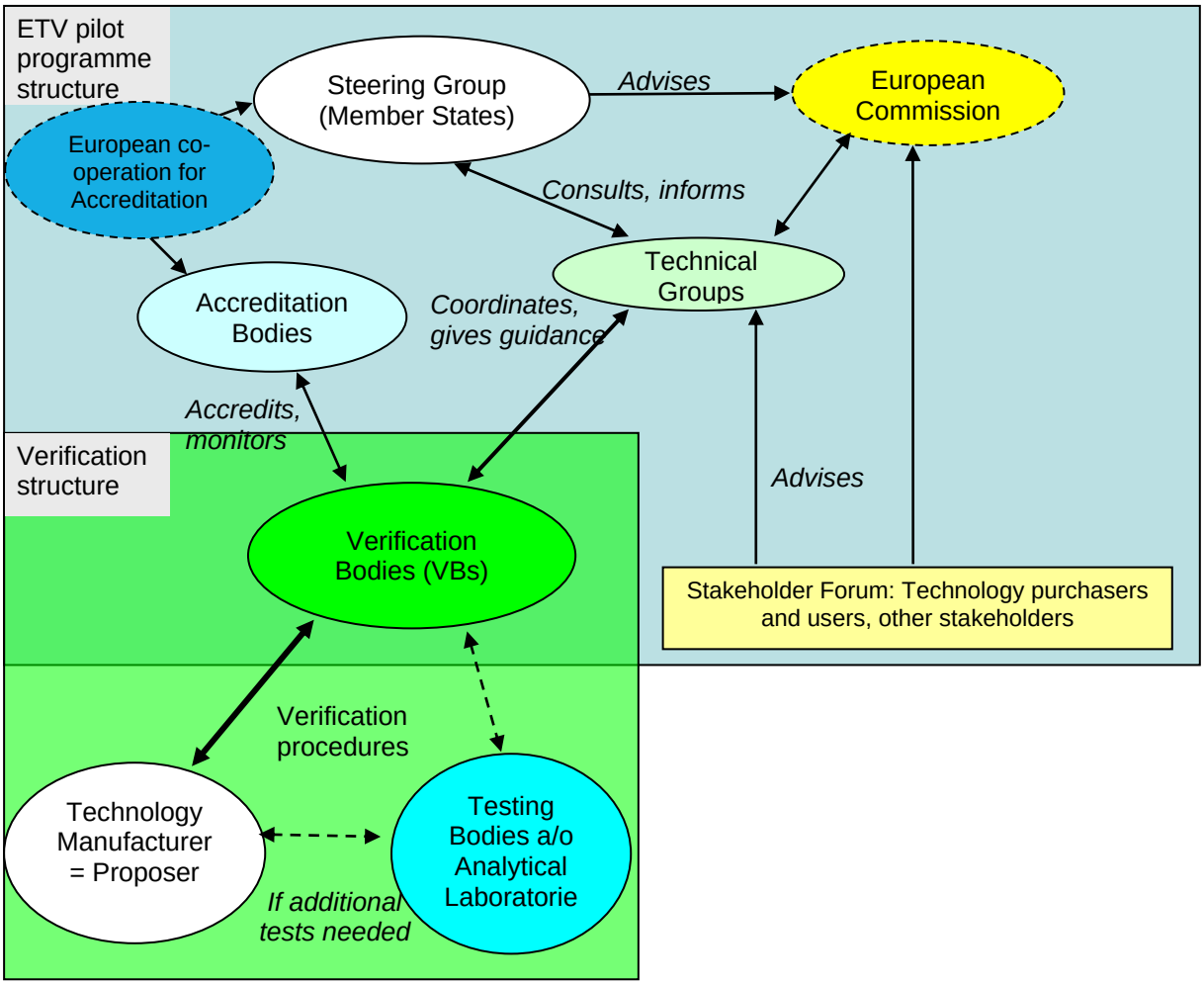

Figure 1 – ETV entities and relations

A.II.1 European Commission

The Commission services ensure the overall co-ordination and supervision of the EU ETV pilot programme. In consultation with the Steering Group, they define the rules governing the ETV pilot programme, including this GVP and the technology areas covered by the EU ETV pilot programme.

The Commission services convene and chair the Steering Group and the Technical working groups.

The Commission services register and publish the Statements of Verification issued by accredited Verification Bodies, or delegate the registration to another body.

Where appropriate the Commission services consult with the European cooperation for Accreditation on matters relating to the harmonisation of accreditation procedures, consistency of verification procedures across EA member bodies and mutual recognition of Statements of Verification.

A.II.2 Steering Group

A.II.2.1 Qualification and nomination

For the implementation of the EU ETV pilot programme, the Commission services will be assisted by a Steering Group composed of representatives of the participating EU Member States.

European Free Trade Association (EFTA) countries which are members of the European Economic Area (EEA) and third countries having signed an Association Agreement with the European Union are eligible to participate in the Steering Group.

The Steering Group may accept representatives of non-participating countries and international organisations as observers, as appropriate.

A.II.2.2 Roles and responsibilities

The Steering Group will advise the Commission services on the implementation of the EU ETV pilot programme, in particular on:

- Ensuring the due recognition of Verification Bodies in all ETV participating countries and the acceptance of ETV 'Statements of Verification' in all relevant markets.
- The technology areas to be covered by the EU ETV pilot programme;
- The General Verification Protocol and other reference documents where appropriate;
- The activities of Technical Working Groups, in particular on guidance documents;
- The evaluation of the EU ETV pilot programme;
- Any other subject, such as the participation of small and medium-sized enterprises, relevant for the EU ETV pilot programme.

A.II.3 Verification Bodies

A.II.3.1 Qualification

A Verification Body shall:

1. be established under national law and have legal personality.

2. be accredited to comply with the requirements of ISO/IEC 17020. The Verification Body shall be considered an inspection body within the meaning of ISO/IEC 17020. This GVP shall be part of the documentation describing the inspection activities of the Verification Body. The technical scope of these inspection activities shall cover one or more of the technology areas listed in Appendix 2, or a subdivision of these areas like the examples of technology groups or applications given in Appendix 2.

   The maintenance of accreditation under ISO/IEC 17020 shall include annual surveillance of compliance to the requirements of this GVP.

3. be a third-party body independent of the proposers (developers, vendors, purchasers and users of environmental technologies) submitting technologies to this body for verification. The Verification Body should meet the requirements for Type A inspection bodies as defined in the normative Annex A of ISO/IEC 17020.

   A body belonging to a business association or professional federation representing undertakings involved in the development, manufacturing, provision, use or maintenance of environmental technologies, may, on condition that its independence and the absence of any conflict of interest are demonstrated, be considered such a body.

4. not be directly involved in the design, manufacture or construction, the marketing, installation, use or maintenance of the specific environmental technologies submitted to this body for verification, or represent the parties engaged in those activities. This pertains to the Verification Body, its top level management and the personnel responsible for carrying out verification tasks. This shall not preclude the use of environmental technologies that are necessary for the operations of the Verification Body or the use of environmental technologies for personal purposes.

5. not engage in any activity that may conflict with their independence of judgment or integrity in relation to verification activities for which they are selected. This pertains to the Verification Body, its top level management and the personnel responsible for carrying out verification tasks and shall apply to consultancy services.

6. ensure that the activities of their subsidiaries or subcontractors do not affect the confidentiality, objectivity or impartiality of their verification activities.

7. carry out the verification activities with the highest degree of professional integrity and the requisite technical competence in the specific field and shall be free from all pressures and inducements, particularly financial, which might influence their judgement or the result of their verification activities, especially as regards persons or groups of persons with an interest in the results of those activities.

8. be capable of carrying out all the tasks assigned to it under Verification Bodies / *Role and responsibilities*, in the technology groups for which it is accredited, whether those tasks are carried out by the Verification Body itself or on its behalf and under its responsibility.

9. have in place a system of Quality Management and Quality Assurance documenting, coordinating and monitoring the measures taken to ensure that verification activities are implemented in conformity with the requirements of part C of this General

Protocol of the EU ETV pilot programme. In particular, at all times and for each verification procedure and each technology group for which it has been accredited, a Verification Body shall have in place the necessary:

- personnel with technical knowledge and sufficient and appropriate experience to perform the verification tasks;
- if the personnel referred to in the previous point includes external experts, the necessary agreements or conventions ensuring the availability of the personnel concerned by ETV procedures;
- description of procedures in accordance with which verification is carried out, ensuring the transparency and the ability of reproduction of those procedures. It shall have appropriate policies and procedures in place to distinguish between tasks it carries out as a Verification Body and other activities;
- appropriate reviewing and recording procedures of the products of verification activities ensuring their high level of quality and reliability.

Documents referred to above shall be made available on request to the relevant services of the European Commission and of national administrations.

10. ensure that the personnel responsible for carrying out verification activities have the following qualifications:
    - sound technical and vocational training covering all the verification activities in relation to which the Verification Body has been selected;
    - satisfactory knowledge of the requirements of the verification procedures they carry out and adequate authority to carry out these procedures;
    - appropriate knowledge and understanding of the potential environmental impacts associated with the use of technologies in relation to which the Verification Body is accredited, throughout the life cycle of related products, of key environmental aspects of these technologies and of the main technical factors influencing environmental impacts;
    - expertise in test methods and measurements (analyses) needed for the test methods; appropriate knowledge of statistical methods used in the context of tests, measurements and related calculations;
    - appropriate knowledge of the market aspects of the technology groups for which it is accredited, including users' needs and usual practices in the sector, main actors, regulatory framework;
    - the ability to draw up reports, records and Statements of Verification demonstrating that verification procedures have been carried out and ETV requirements have been satisfied.
11. guarantee the impartiality for carrying out verification activities. This pertains to the Verification Body, its top level management and the personnel responsible for carrying out verification tasks.

The remuneration of the top level management of Verification Bodies and personnel responsible for carrying out verification activities shall not depend on the number of verifications carried out or on the results of those verifications.

12. take out liability insurance for verification activities.

13. observe professional secrecy with regard to all information obtained in carrying out their tasks during verification activities according to part B of this protocol, except in relation to the Commission, to the European Court of Auditors, to the Technical Working Groups defined in A.II.4 and to the competent authorities of the Member States in which its activities are carried out. Proprietary rights shall be protected.

14. where a Verification Body subcontracts specific tasks connected with verification or has recourse to a subsidiary, it shall ensure that the subcontractor or the subsidiary meets the requirements set out in items 3 to 13 and shall inform the Accreditation Body accordingly. Activities may be subcontracted or carried out by a subsidiary only with agreement of the proposer.

15. take full responsibility for the tasks performed by subcontractors or subsidiaries wherever they are established. Verification Bodies shall keep at the disposal of the Commission services, the competent authorities of the Member States in which its activities are carried out and the Accreditation Body the relevant documents concerning the assessment of the qualifications of the subcontractor or the subsidiary and the work carried out by them under *Roles and responsibilities of Verification Bodies*.

Where a Verification Body demonstrates its conformity with the criteria laid down in the harmonised standards relevant for conformity assessment bodies or part thereof the references of which have been published in the *Official Journal of the European Union*, it shall be presumed to comply with the requirements set out in items 1 to 15 in so far as the applicable harmonised standards cover those requirements.

A.II.3.2 Nomination

Verification bodies are considered nominated under the ETV pilot programme as soon as they are accredited by national accreditation bodies to perform verification activities for specified groups of technologies as defined in Annex 2 to this GVP.

Verification bodies shall inform the Commission services of their accreditation, of the renewal or non-renewal of accreditation and of any other information related to their accreditation status regarding ETV, providing relevant documentation where appropriate.

A.II.3.3 Roles and responsibilities

Verification bodies shall implement this General Verification Protocol for the technology scope for which they are accredited following any guidance provided by the Technical Working Groups. This includes in particular:

- Receiving and processing proposals for verification in their technical scope, up to the publication and post-verification phases;

- Ensuring compliance with the quality management requirements of this GVP of any test bodies involved in their verifications, taking account of the possible accreditation or certification of the test bodies as provided under A.II.6.1;

- Where appropriate, requiring or validating test methods, assessing and accepting test data provided by a test body as compliant with the requirements set in this GVP and the specific verification protocol;

- Where appropriate, requiring or validating test methods, witnessing tests, assessing and accepting test data performed by the proposer in-house as compliant with the requirements set in this GVP and the specific verification protocol, and/or reporting on tests and test data in case this is not done by a test body;

- Participating in the Technical Working Groups relevant for their technology scope, including contributing actively and loyally to their activities and products, and sharing relevant information required by the work of the groups, including quick scans, specific verification protocols and verification reports developed under ETV;

- Providing technical advice to the proposers, in particular to the small and medium-sized enterprises applying to the EU ETV pilot programme, in the context of ETV procedures and in particular as regards the definition of the performance claim, choice of test bodies and use of the Statement of Verification, within the limits acceptable under A.II.3.1, Paragraph 4;

- Reporting annually to the Commission services and the national accreditation body on the activities implemented in the framework of the ETV pilot programme, including on post-verification as provided under B.VIII.

A.II.4 Technical Working Groups

A.II.4.1 Qualification

Technical Working Groups, at least one per technology area of the ETV pilot programme, are established in order to harmonise the implementation of ETV procedures by Verification Bodies and to ensure the same level of performance in terms of verification results, in particular Statements of Verification.

The members of the Technical Working Groups shall meet the requirements of independence, absence of conflicts of interest, professional impartiality and professional secrecy, as required from the personnel of Verification Bodies under Section A.II.3.1 'Qualification', paragraphs 4, 5, 7, 11 and 13. Those members of the Technical Working Groups which are not employed by Verification Bodies shall provide an undertaking covering these requirements.

A.II.4.2 Nomination

The Technical Working Groups altogether shall include at least one representative of each Verification Body and a similar number of other experts, the list of which shall be approved by the Commission services after consultation of the Steering Group. The composition of the Technical Working Groups shall be balanced from the point of view of technical, scientific and market expertise and from the point of view of representing the various parties interested in ETV, as far as possible.

A.II.4.3 Roles and responsibilities

The role of Technical Working Groups is to provide:

- Guidance on the application of ETV procedures, in particular through drafting guidance documents for use by Verification Bodies when implementing this GVP;

- Screening of potential environmental impacts associated with the use of technologies in the scope of the ETV pilot programme, throughout their life-cycle; identification of relevant key environmental aspects and technical factors influencing these impacts; drafting of guidance documents summarising the information resulting from this paragraph for use by the proposers and Verification Bodies; for the purpose of this paragraph, the technology areas of ETV may be detailed into groups of technologies or applications as appropriate;

- Exchange of good practice and experience concerning the implementation of ETV, providing mutual advice, sharing of information on relevant market aspects for the technology area and dialogue with relevant stakeholders, including technology users.

The Technical Working Groups shall inform regularly the Steering Group of their activities and they shall consult the Steering Group on guidance documents.

In case of disagreement between a verification body and a proposer, another verification body or another stakeholder, the relevant Technical Working Group shall give an opinion on specific cases or procedures, at the request of the Commission services or one of the parties concerned.

A.II.5 Accreditation bodies

A.II.5.1 Qualification and nomination

National accreditation bodies are established under law in each of the Member States in application of Regulation (EC) No765/2008. They shall comply with the requirements of ISO/IEC 17011 and hold signatory status in the Multi-Lateral Agreement for accreditation of inspection bodies to ISO/IEC 17020.

The participation of national accreditation bodies in the EU ETV pilot programme is co-ordinated by the European cooperation for Accreditation, which ensures EU wide recognition of the procedure for the accreditation of Verification Bodies.

A.II.5.2 Roles and responsibilities

The role of national accreditation bodies in the EU ETV pilot programme is to accredit Verification Bodies to apply ISO/IEC 17020 to Environmental Technology Verification as described in this GVP. This has the following consequences, among others, regarding ETV:

- to ensure the technical competence and capacity of Verification Bodies to implement ETV procedures for specified technology groups;

- to ensure that an adequate quality management system is in place, in order to guarantee the required level of quality and reliability for ETV deliverables;

- to ensure the due recognition of Verification Bodies in the European Union, in order to ensure the acceptance of ETV 'Statements of Verification' in all relevant markets.

A.II.6 Test bodies and analytical laboratories

Test bodies are organisations responsible for performing and reporting the testing of an environmental technology in accordance with the specific verification protocol.

Analytical laboratories are organisations performing laboratory analyses[2] of test samples when required in a verification process.

A.II.6.1 Qualification

a) Test bodies

Test bodies shall fulfil the relevant requirements described in part C *Quality management*, regarding their role in the verification process (C.I), quality management (C.III) and quality assurance and control on tests and analyses (C.IV). The specific verification protocol established for the technology to be tested, in application of Chapter B.IV, may add further requirements on test bodies, in particular in relation to quality assurance and control, when this is necessary to ensure the quality of tests and test data for the technology in question. The Verification Body shall control the fulfilment of all requirements in accordance with Part C.

A test body qualifies for participation in a verification process under ETV if it meets one of the following requirements:

- Accreditation according to ISO/IEC 17025 - General requirements for the competence of testing and calibration laboratories, for the methods of testing and calibration relevant for the verification process,

- Certification according to EN ISO 9001 - Quality management systems – Requirements, with a reference to ETV in the scope of certified quality management system,

- A quality management system in place following the principles of EN ISO 9001; as a minimum, the quality management system shall comply with the requirements of the GVP Chapter C.III.

Depending on the requirements met by the test body in the list above, the Verification Body shall supervise or undertake specific audits, as mentioned in Chapter C.I, to control that all requirements of this GVP and of the specific verification protocol are met. However:

[2] Analyses are distinguished from tests and other measurements when they follow highly standardized methods, independent of the innovation or specific features of the technology at the origin of test samples.

- Where a test body demonstrates its conformity by way of accreditation according to ISO/IEC 17025, it shall be presumed to comply with the requirements of the GVP for quality management (Chapter C.III) and for general test requirements;

- Where a test body demonstrates its conformity by way of certification according to EN ISO 9001, it shall be presumed to comply with the requirements of the GVP for quality management (Chapter C.III).

The staff of the test body shall not be the same as those responsible for the evaluation of the test results in the Verification Body and they shall not be dependent upon these.

In the case where the proposer performs the necessary tests in-house, in accordance with the provisions of B.V, the proposer shall fulfil the requirements described above for test bodies and this is to be controlled by the Verification Body in the same way.

b) analytical laboratories

An analytical laboratory qualifies for participating in a verification process under ETV if it is accredited to applying ISO/IEC 17025 for methods in the area of analysis relevant for the verification process.

This provision applies also in case of in-house testing by the proposer.

The staff undertaking the analysis of test samples shall not be the same as those responsible for the evaluation of the analytical results in the test body and they shall not be dependent upon these.

A.II.6.2 Nomination

Test bodies shall be designated by the proposer to perform tests if required, in consultation with the Verification Body. The consultation of the Verification Body is intended to facilitate the control of the qualification of designated test bodies. The designation of the test bodies is a decision made by the proposer, even when the Verification Body has itself the qualification to act also as a test body.

Where analysis of test samples is required for a verification process, analytical laboratories shall be designated by the proposer, in consultation with the testing body concerned or with the Verification Body if there is no testing body concerned.

The proposer is responsible for contracting with test bodies and analytical laboratories, and for payment of the services provided by them.

A.II.6.3 Roles and responsibilities - tests

A Test body is responsible for:

- drafting the test plan, in accordance with the relevant procedures of this GVP, the specific verification protocol and in agreement with the Verification Body and the proposer;

- performing the tests according to the test plan, ensuring the level of quality required in the specific verification protocol;

- ensuring quality of analysis used in the test and, when applicable, the compliance of analytical laboratories with the requirements of this GVP;

- drafting the report on the tests performed, for transmission to the proposer and to the Verification Body.

In the case where the proposer performs the necessary tests in-house, in accordance with the provisions of Chapter B.V, it may contract a test body to:

- draft the test plans or review the test plans drafted by the proposer, in accordance with the relevant procedures of this GVP, the specific verification protocol and in agreement with the Verification Body;

- witness testing done by the proposer, where appropriate;

- approve the test report drafted by the proposer.

A.II.6.4 Roles and responsibilities – analyses of test samples

An analytical laboratory is responsible for:

- planning analysis and selecting analytical methods in accordance with the requirements of the test plan and in agreement with the test body and the proposer; if there is no test body concerned, drafting a specific document detailing the planning of analysis and selection of analytical methods in accordance with the specific verification protocol and in agreement with the Verification Body and the proposer;

- performing the analysis, ensuring the level of quality assurance required by ISO/IEC 17025;

- reporting the analytical data to the proposer and to the test body, or to the Verification Body if there is no test body concerned, in the agreed format and stating the methods applied and relevant analytical uncertainty.

A.II.7 Proposer

A.II.7.1 Qualification

The proposer can be any legal entity or natural person, which can be the technology owner, the technology manufacturer or an authorised representative of either. If the concerned technology owners and manufacturers agree, the proposer can be another stakeholder undertaking a specific verification programme involving several technologies (e.g. as part of pre-procurement procedures).

A.II.7.2 Roles and responsibilities

The proposer initiates and supports the verification of a technology from the first contact with the Verification Body until the use of the Statement of Verification after completion of the ETV process, or earlier termination of this process where appropriate.

The proposer is responsible for:

- drafting the 'quick scan' and the proposal for verification, providing the information necessary to plan and implement the verification process,

- contracting with the Verification Body for the verification process, and with test bodies and analytical laboratories where appropriate, and paying for contracted services,

- reviewing and approving the specific verification protocol and the test plan,

- reviewing the test report(s), verification report and Statement of Verification,

- providing timely access to technology, accessories, user manuals and training for the Verification Body and test bodies,

- complying with the rules for using the Statement of Verification.

If further tests are needed after assessment of existing test data, the proposer may need to perform the necessary tests in-house, in which case the proposer shall comply with the requirements on qualification described in A.II.6.1 and shall follow the process provided in Chapter B.V.

A.II.9 Stakeholder forum

A.II.9.1 Qualification

Stakeholders with a justified interest in the ETV pilot programme may apply to join the stakeholder forum. Stakeholders may include industrial associations, environmental non-governmental organisations, public or private technology centres, organisations representing public or private purchasers of technologies, public authorities, individual companies or persons.

A.II.9.2 Nomination

The Commission services will convene the stakeholder forum with a view to reach progressively a balanced representation of interests.

A.II.9.3 Roles and responsibilities

The stakeholder forum will advise on general issues relevant for the implementation of EU ETV pilot programme.

Thematic meetings or sub-groups of the stakeholder forum may be convened to advise on specific issues. In particular, sub-groups may give advice to the ETV Technical Working Groups on the needs of technology users, investors and regulators in specific technology areas.

Part B: Verification procedure

B.I Introduction

The verification procedure is divided in a number of (sequential) steps or phases. Figure 2 shows the overall procedure[3].

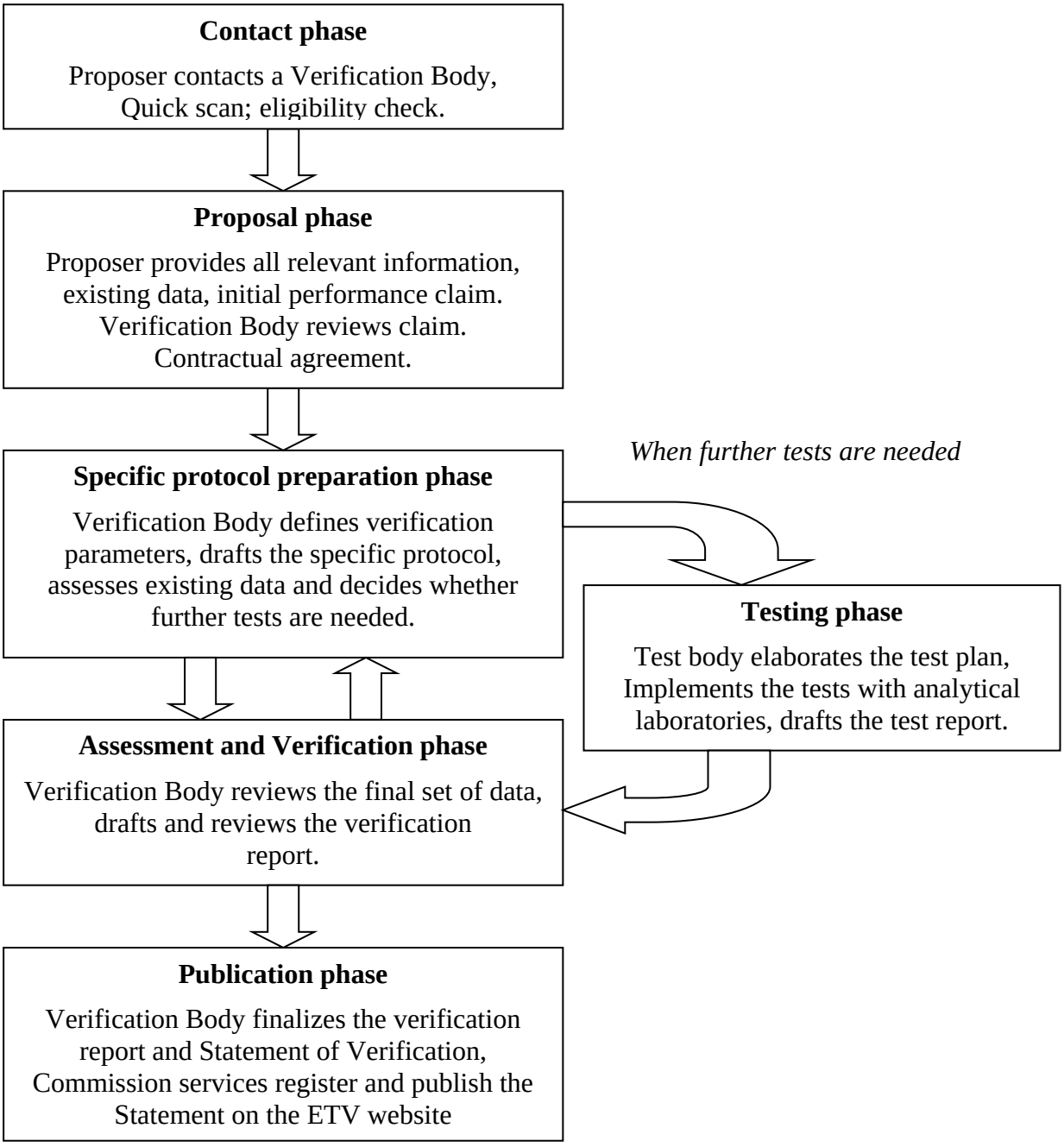

Figure 2: Steps of ETV verification procedure

[3] The short description of each step in the boxes is given for illustration only, please refer to the following chapters for the exact requirements.

B.II Contact phase

The starting point for verification is a contact between the proposer and a Verification Body. General information about ETV can also be provided by many organisations, e.g. national authorities for development in small and medium-sized enterprises, branch organisations etc. However, for a specific application the information should be checked with a Verification Body competent for the relevant technologies.

B.II.1 Quick scan and eligibility assessment

Before sending a full proposal for verification, the proposer provides a quick scan document with the main characteristics of the technology to be verified, following the template provided in Appendix 3.

The aim of the quick scan is to enable the Verification Body to assess the eligibility of the technology for verification and to give a first indication about the complexity and range of costs for a full verification. Where appropriate, the Verification Body first provides advice on the drafting and completeness of the quick scan. The quick scan is assessed by the Verification Body using the following eligibility criteria (not necessarily in the order indicated):

- Is the technology description sufficiently clear? Are the preliminary elements for the performance claim specific to the technology and verifiable?

- Does the technology fall within the scope of the EU ETV pilot programme, as provided in Appendix 2 list of technology areas? If the technology falls in the scope of ETV but not in the accreditation scope of the contacted Verification Body, the Verification Body shall refer the proposer to other Verification Bodies whose accreditation scope is likely to include the relevant technology group, where possible.

- Is the technology ready for the market? I.e. is the technology available on the market, or if not, is it available at a stage where no change affecting performance is likely to be implemented before introducing the technology onto the market (e.g. full-scale or prototype scale with direct and clear scale-up instructions)?

- Does the technology present an environmental added value?

- Does the technology meet user needs in terms of functionality, claimed performance and environmental added value?

- Does it perform in line with applicable legal requirements?

- Does it show a sufficient level of technological innovation?

The answer from the Verification Body includes information on the eligibility of the technology and on the corresponding technology area. The Verification Body makes a recommendation on performing a full verification or not and a first indication of the range of costs.

The Verification Body shall exclude a technology from verification if it does not fall within the scope of ETV, if it is not ready to market or if its performance, environmental added value and innovation levels are obviously too low and would harm the reputation of the ETV scheme. Apart from these cases, the decision to proceed is made by the proposer, even when the Verification Body does not recommend to perform the verification.

B.III Proposal phase

After the contact phase, if the technology is considered to be eligible and if the proposer decides to perform the verification, the second step is the proposal phase. In this step the proposer provides the information needed by the Verification Body to conclude a verification contract and, under the following step, draft the specific verification protocol.

It should be noted that, if the information provided at this stage lead the Verification Body to change its assessment of the technology eligibility, the Verification Body shall revise this assessment, inform the proposer of the new assessment and of consequences for the verification process.

B.III.1 Proposal

The proposer submits a proposal for verification to the Verification Body, following the template provided in Appendix 4.

The proposal shall include:

- Name and address of the proposer and, if the proposal is lodged by the authorised representative of the technology owner or manufacturer, their name and address.

- Technical documentation. The technical documentation shall make it possible for the Verification Body to understand the technology, to review the performance claim and to assess the conformity of the technology design with the performance claim. It shall contain at least the following elements:

    - a general description of the technology, including its unique identifier e.g. the commercial name under which the technology shall be available on the market,

    - user manual if available,

    - the conceptual design and if necessary to explain in more detail, technical or scientific principles, manufacturing drawings and schemes of components, sub-assemblies, circuits, etc.

    - descriptions and explanations necessary for the understanding of those drawings and schemes and operation of the technology,

    - where relevant, standards or technical specifications applied in full or in part,

    - results of design calculations made, examinations carried out, etc.

    - test reports, if available, and

- a description of the measures taken to ensure the quality and traceability of the technology under normal conditions of production, when the technology is available on the market.

- The intended application of the technology specified in terms of matrix, purpose and technical conditions, as explained in Table 1.

Matrix	The type of material that the technology is intended for. Matrices could be soil, drinking water, ground water, alkaline degreasing bath etc.
Purpose	The measurable property that is affected by the technology and how it is affected. It is possible to define more than one purpose. The matrix and purpose will translate into performance parameters as described below. This could be a given reduction of nitrate concentration, separation of volatile organic compounds, reduction of energy use (MW/kg) etc.
Technologies	The practical application of the technical or scientific principles in the environmental area to achieve the purpose. The term 'technology' covers a variety of products, processes, systems and services. The technology could be for example a heat exchanger, a recycling process, a membrane technology etc.
Technical conditions	All other information related to the technical conditions of operation or test of the technology for the matrix and purpose described above. The technical conditions will translate into operational parameters, environmental parameters and additional parameters as described below.

Table 1: Intended application of technology

- The initial performance claim consisting of a set of parameters and values, which are:

  - describing the functioning or performance of the technology in the intended application described above, mentioning any relevant assumption made;

  - related to the technology itself, and not e.g. to the environmental management of the company, to the origin of raw material or to the information provided to users (unless this information is the purpose of the technology);

  - highlighting the advantages and innovative features of the technology, in terms of the environmental added value as well as other advantages relevant for users of the technology;

  - reflecting direct environmental impacts of the technology in the intended application described above and, to the degree possible, including relevant indirect impacts on the environment from a life cycle perspective;

    - quantifiable and verifiable through tests, when they relate to the purpose and operational conditions of the technology; measurable as far as possible when they relate to environmental impacts or other aspects.

- Available information and data on the environmental added value, focussing on those stages of the technology life-cycle where environmental pressures are significant or significantly different from a relevant alternative identified for comparison in the case where a relevant alternative is available.

- The supporting evidence for the adequacy of the technology design. The supporting evidence shall mention any document that has been used in or results from tests carried out by the proposer or by a test body on his behalf and under his responsibility.

- The legal requirements applicable to the technology on the target market for which the verification is performed and evidence that the technology performs in line with these requirements.

- If the technology was already evaluated or verified under an EU or non-EU environmental technology verification programme, a research or pilot project implementing all or part of the procedures provided under ETV, another evaluation or certification programme implementing the same or similar procedures, the proposer is invited to provide all related documents (including information on quality assurance and management) as supporting evidence; this will be used by the Verification Body to simplify the ETV procedure as much as possible for the technology.

The Verification Body shall review the proposal and the initial performance claim on the basis of the technical documentation, implementing:

- the relevant provisions of this General Verification Protocol (GVP),

- where relevant, the guidance prepared by the ETV Technical Working Groups,

and taking due account of:

- appropriate technical standards or reference documents for the related technology group; performance of state-of-the-art alternative technologies;

- key environmental factors (in a life-cycle perspective) identified by the related Technical Working Group;

- protocols prepared for similar technologies in the EU ETV pilot programme and, where appropriate, the relevant part of protocols prepared in non-EU ETV programmes or in research and pilot projects;

- advice of the stakeholder forum where appropriate.

Based on the review, the Verification Body may request the proposer to revise or complete the proposal. If the review does not lead to halting the verification process, the preparation and conclusion of the contractual agreement follow on.

B.III.2 Contractual agreement

If the proposer decides to proceed with verification, the Verification Body shall provide a detailed cost estimate for the verification procedure (excluding tests) together with a list of potential tests and analyses to be performed. Based upon the cost estimate, a verification contract is drafted and signed by the proposer and the Verification Body and subsequently, the verification procedure can be initiated.

When drafting the verification contract, the template found in *Appendix 5: Template proposed for the Verification Contract* may be applied and/or adapted as necessary. It is recognised that parts of the verification contract may in some cases need to be prepared after elaborating the first parts of the specific verification protocol (e.g. application and parameter definition, requirements on test design and data quality, assessment of existing data). In such cases, a contract may be entered for these first parts only, leaving the remaining parts for a second contract.

The contact phase including eligibility check (see B.II above) may be included in the verification contract, in which case it is recommended to proceed with a fixed fee for this step.

The verification contract shall in any case cover the following items included in Appendix 5:

- Limitations of the verification report and Statement of Verification to the specific technology and conditions of verification; they cannot be considered as endorsement or guaranty of the technology;

- Obligation of the proposer to inform the Verification Body of any change made to the technology before the conclusion of the verification process;

- Confidentiality issues, including the access to information by external experts and by ETV Technical Working Groups[4] and the publication of the Statement of Verification;

- Intellectual Property Right (IPR) issues; if some parts of the technology are owned by other organisations (e.g. used under licence), this should be mentioned. It is recognised that some proprietary elements may not be protected through patents but have to be respected as intellectual property nevertheless;

- Post-verification issues: use of the ETV report, of the Statement of Verification and ETV logo; reporting by the proposer on the impact of ETV; handling of changes to the technology, to the application or other changes potentially affecting the conditions of verification; how these changes have to be reported and evaluated. The cost of evaluating these changes may be left to future agreements;

- Provisions on the legal regime applicable and the competent legal authorities in the case of a dispute related to the verification procedure.

[4] Before signature of the verification contract, any communication of information to external experts or to ETV Technical Working Groups requires the explicit consent of the proposer.

B.IV Specific verification protocol phase

Upon successful completion of the contact phase and proposal phase the next steps in the procedure are related to the development of the specific verification protocol, which shall include the following:

- Summary description of the technology, its intended application and associated environmental impacts
- Definition of verification parameters (revised performance claim)
- Requirements on test design and data quality
- Requirements on test and measurement methods, definition of calculation methods for performance parameters
- Description of the way in which operational, environmental and additional parameters are to be dealt with in the verification process
- Assessment of existing data and conclusions on the need or not for additional tests or measures

The Verification Body is responsible for the development of the specific verification protocol, following the provisions of this GVP and any relevant guidance provided by the Technical Working Groups.

The Verification Body and the proposer shall reach an agreement on the verification parameters (i.e. the revised performance claim), on requirements on test data, on testing, measurement and calculation methods, and on the way other parameters are to be dealt with in the verification process.

Once agreed, the Verification Body shall assess the existing data provided by the proposer. The result of this assessment is a decision by the Verification Body on whether additional tests or measures are needed. The assessment of existing data and conclusions are included in the specific verification protocol.

The specific verification protocol shall follow the structure of the table of content provided in Appendix 6. If additional tests or measurements are needed, the procedure continues with the 'testing phase', otherwise the 'assessment and verification phase' should follow.

B.IV.1 Description of technology, application and impacts

To reach a clear understanding of the technology, its intended application and impacts, the matrices, purpose and technical conditions for the technology shall be reviewed and amended if appropriate, as specified in Table 1 in Section B.III ‘Proposal’.

B.IV.2 Definition of verification parameters (revised performance claim)

The definition of the verification parameters shall be carried out by the Verification Body in co-operation with the proposer, building on the initial performance claim and using the

template given for the parameter definition table (Table 7) in Appendix 6. All categories of parameters as mentioned in the parameter definition table shall be considered when setting up the verification parameters. Categories that are not relevant for a specific verification are excluded and this shall also be reported in the completed table.

The list of verification parameters, also called 'revised performance claim', shall be set to ensure that the technology is tested for parameters and in ranges that are relevant for the purchasers and users of the technology considering regulatory requirements, intended application based needs, key environmental factors and state of the art performance of technologies performing similar functions.

Verification parameters are classified following four types of parameters:

- **performance parameters** related to the performance of the technology in fulfilling its purpose (also referred to as technical or operational performance),

- **operational parameters** related to the technical conditions of the intended application and to the verification and test conditions; examples of operational parameters include production capacity, maximum temperature and concentrations of non-target compounds in matrix,

- **environmental parameters** related to important potential impacts on the environment, directly and indirectly, along the life cycle (including raw materials, production, use, recycling, end-of-life disposal),

- **additional parameters** related to other information about the technology that is useful for users but that may not necessarily be measurable through tests; examples of possible additional parameters include the expected service time during which the claimed performance is respected, overall service life, health and safety issues, installation and maintenance requirements and operating costs.

Furthermore, when defining the verification parameters, the Verification Body shall take into account:

- the guidance documents and protocols recommended by the ETV Technical Working Groups for the related technology group,

- appropriate technical standards or reference documents for the related technology group;

- advice of the stakeholder forum where appropriate.

If a standard giving relevant verification parameters for the technology under verification and its intended application is available, reference to this standard can substitute the definition of the verification parameters in question. This should not prevent the possible inclusion of other relevant parameters (in particular those related to environmental impacts).

The definition of verification parameters shall be done separately for each technology under verification in order to reflect the different requirements for different applications and technologies. However, if a specific protocol has been prepared under the EU ETV pilot programme for the same application and a comparable technology, the verification parameters

of this protocol shall be considered for inclusion in the new protocol if relevant for the new technology.

B.IV.3 Requirements on test design and data quality

The specific verification protocol shall describe the essential requirements for the test design and data quality for the technology under verification. These requirements include the main features of the test design, e.g. continuous or batch tests, scale, test methods etc.

The requirements shall reflect the definition of verification parameters under B.IV.2, but specific requirements for the test design shall be given whenever necessary in order to ensure that the tests data will enable the final data assessment and completion of the verification procedures. The requirements on test design shall include:

- Overall test design
- Scale (laboratory/simulated environment/field) and actual matrix used for tests; it should be the same matrix for which the verification parameters have been defined
- Performance parameters and, where appropriate, operational, environmental and/or additional parameters to be measured
- Methods of reference analysis if relevant, including sampling, measurement and calculation methods
- Data management
- Quality assurance
- Test report contents.

Examples of requirements on the test data for different types of technology are given below and may be complemented in the guidance provided by the Technical Working Groups:

Monitoring techniques: Ensure limit of detection, range of application, precision (repeatability and reproducibility). Trueness and relevant robustness can also be verified. If relevant, make reference to conventional methods.

Treatment technologies: Ensure relevant treatment parameters as well as other relevant parameters available for verification, e.g. use of resources such as chemicals and energy. If relevant, make reference to conventional methods.

Materials: Ensure inclusion of all relevant properties, as well as environmental and health impacts, and lifetime. If relevant, make reference to conventional materials.

B.IV.4 Requirements on test and measurement methods

Where appropriate, the specific verification protocol shall include specific requirements on the choice of the test and measurement methods. If available and relevant, existing standard methods (ISO, CEN) should be used. If specific requirements for analytical methods or their performance have been identified as necessary, these shall be given.

Where no standard methods exist, documented methods shall be used.

The specific verification protocol shall also:

- define the requirements for the management of test data with respect to the format of data storage;
- define or make a reference to appropriate methods for the processing of measurements into performance parameters and, where appropriate, operational, environmental and/or additional parameters;
- specify appropriate statistical methods and, where appropriate, define required levels of confidence consistent with the professional practice for the technology group in question.

B.IV.5 Operational, environmental and additional parameters

Operational, environmental and additional parameters relevant for the technology, as defined in B.IV.2, shall be listed and discussed in the specific protocol, with conclusions on which parameters should be considered for the final report, which ones can and should be verified, what information is available and useful for the user.

Where relevant, operational, environmental and additional parameters can be the object of test or measurement. The relevant methods shall be described as indicated under B.IV.4, together with performance parameters.

Where this cannot be the case, the specific verification protocol shall describe how these parameters will be considered and, where appropriate, verified. In particular:

- Important (direct and indirect) environmental impacts that cannot be measured shall be mentioned qualitatively and verified as far as possible;
- Where quantified values are given, the origin of figures, calculation method and assumptions made where appropriate, quality and levels of confidence where appropriate, shall be mentioned and verified as far as possible;
- Qualitative information shall be carefully presented, limited to the information useful for the technology purchaser and users, avoiding any ambiguous or misleading statement, and verified as far as possible;
- Comparative statements and relative values shall be avoided unless absolutely necessary, in which case this shall be justified and carefully presented in the specific verification protocol and later on, in the Statement of Verification, to prevent any misunderstanding on their meaning and on the role of ETV.

B.IV.6 Assessment of existing data

As part of the development process and market implementation activities the proposer may already have at its disposal a set of test data that are relevant to the verification procedure and may serve (or serve in part) as the basis for verification of the performance parameters

defined. The data can be submitted to the Verification Body for assessment in view of determining their acceptability in the verification process.

This shall include sufficient information for assessment, i.e. in addition to the data itself, full address and status (independent/dependent, certifications and accreditations) of the data supplier and of third parties who were involved (test design, witnesses…). Data must be supplied in a format that allows assessment against the requirements for verification provided in B.IV.3 and B.IV.4. The test plan and test report shall be provided and any other information covering in substance the content provided in Appendix 7 'Table of content for the test plan and test report'. The necessary quality control for existing data is described in part C.II 'Quality of existing data'.

In order to facilitate the acceptability of the existing test data, it is recommended that tests performed before an ETV proposal are performed by organisations accredited as complying with the requirements of ISO/IEC 17025 for the relevant test methods or, failing that, certified as complying with the criteria laid down in EN ISO 9001 with a reference to ETV in the scope of certified quality management system.

The Verification Body shall assess the existing test data against the parameters, methods, quality requirements and target values defined for this specific verification in application of B.IV.3, B.IV.4 and B.IV.5. The Verification Bodies shall conclude whether additional tests or measures are needed to comply with the requirements of the specific verification protocol. The accepted existing data are summarized in the format to be used when reporting test data.

B.V Testing including test plan

After completion of the specific verification protocol preparation phase and if additional tests are needed, the testing phase is entered.

Steps to be undertaken as part of the testing phase are:

- Test site selection
- Test plan
- Testing
- Test report.

The proposer shall designate one or more test bodies to perform the tests in accordance with A.II.6.2.

Alternatively and where appropriate, the proposer may perform the necessary tests in-house. This may be the case in particular when the necessary test equipments or skills are not easily available outside of the proposer. In this case, the proposer shall fulfil the requirements provided for test bodies in A.II.6.1 and the test plans, all preparatory measures such as sampling and the tests per se shall be prepared and implemented by the proposer in agreement with, and where appropriate witnessed by, the Verification Body or an independent test body as defined in A.II.6.1.

The tests shall be planned and performed in accordance with the specific verification protocol.

B.V.1 Test site selection

The test sites shall be defined by the test body in accordance with the requirements set in the specific verification protocol.

The test plan provided in B.V.2 shall include a description of the test sites enabling the reader to understand the selection of the site in relation to the matrix/matrices, purpose and operation parameters defined for the verification. The description will include any information required for the test staff to access the site.

If the technology under verification is installed and operated at a field site, the test body shall ensure that the selection of the site implies no commercial or other interests possibly influencing the test results. In particular, the field site shall not be dependent upon the proposer. If a site dependent upon the proposer is the only option available, the use of that site shall be justified in the test plan, and precautions such as access logging shall be applied to ensure and document that the test results were not under undue influence.

B.V.2 Test plan

The test plan is the implementation of the specific verification protocol in tests producing the required measurements and data. The test plan is unique for each test occasion and gives the exact information required by the test staff to conduct the tests. Reference to the specific verification protocol used shall be given. A table of contents for the test plan is given in *Appendix 7* and shall be followed.

The test plan shall be drafted by the test body and approved by the proposer and the Verification Body. Where tests are performed in-house by the proposer, the test plan shall be drafted by the proposer and approved by the Verification Body.

The test method(s) used shall be given by reference to standards or equivalent public references. If in-house methods are used, the method shall be documented and referenced, outlined, or included in full in an appendix to the test plan. Appropriate selection and use of statistical procedures shall be justified.

The test plan shall describe the quality assurance for the specific test planned, as provided in C.IV.2

The test schedule shall be given.

The descriptions of test operation shall allow the test staff to perform the tests as required in the specific verification protocol and to replicate operations with the least possible variation during the test. The description shall allow tracing of any errors back to sources with equipment, methods, operations or staff.

B.V.3 Testing

Testing shall be done according to the test plan.

Amendments to and deviations from the test plan shall be recorded and approved by the proposer and the Verification Body. The amendment and deviation forms shall be recorded as part of the records of testing.

B.V.4 Test report

The format of the test report to be used is given in Appendix 7. The test report is drafted by the test body and communicated to the proposer and to the Verification Body. Where tests are performed in-house by the proposer, the test report is drafted by the proposer and approved by the Verification Body or by an independent test body.

The format and location for archiving the raw data shall be indicated in the test report. The list and summary of any amendments to the test plan and deviations recorded during tests shall be included.

The test data report shall include all analytical and calculated data as well as a reference to the staff that performed the test. The methods of calculation, test measurements and performance parameters from raw data shall be described, if not given in the analytical and test methods used. If relevant, details on equipment and software used shall be included.

B.VI Assessment of all data and verification

Upon completion of the testing phase and the collection of all relevant data, the assessment and verification phase is entered. It consists of two steps:

- Assessment of data and review of test procedure,
- Verification.

When performance data are considered accurate and complete by the Verification Body, the Verification Body undertakes a final assessment of these data, reviews the procedures followed, and determines whether the performance claim can be considered verified under the EU ETV pilot programme.

B.VI.1 Assessment of data and review of test procedure

The Verification Body shall collect all data relevant for the verification:

- Existing data accepted after assessment as provided in B.IV.6;
- Test data from the test report as provided in B.V.4;
- Data on operational, environmental and additional parameters, as provided in B.IV.5, if they are not already included under existing data or test data above.

The Verification Body shall assess whether collected data are complete and satisfy the data quality requirements as provided in the specific verification protocol. For data from the test report, this includes a review of procedures followed during testing and the assessment of test data quality based on the test quality assurance described in the test plan.

The Verification Body shall conclude whether there is a defendable and complete data set for verification and reporting. If this is not the case, previous steps of the verification procedure, including the specific verification protocol, assessment of existing data and testing phase, may be re-iterated. If applicable, the revised performance claim, i.e. verification parameters

defined in the specific verification protocol, can be further revised in order to reflect the test results.

When the Verification Body reaches a positive conclusion on the assessment of all data, the assessment is considered as final. The Verification Body shall report this assessment as part of the verification report.

B.VI.2 Verification

After the final assessment of data, the Verification Body shall collect and evaluate all reports and documentation of the verification procedure in order to check that they are complete, consistent with each other and with the requirements of this General Verification Protocol. This includes the quality assurance requirements described in the specific verification protocol, as provided in C.IV.1.

All additional information that could not be assessed as part of the final assessment of data under B.VI.1, are examined at this stage.

This includes in particular:

- Information on operating conditions that could not or were not considered for verification (e.g. limit temperatures or atmospheric moisture, maximum longevity…)

- Information on environmental impacts that could not or were not considered as environmental parameters under B.IV.5 (e.g. origin of raw materials, reference to complete life-cycle analysis or life cycle inventory, requirements on suppliers, instructions for re-use or recycling of materials)

- Other information, e.g. information about operating costs, provided by the proposer under its own responsibility.

The Verification Body shall assess the appropriateness and usefulness of this additional information for the Statement of Verification, and draft the necessary caveats to avoid confusion or misleading interpretation of this additional information.

The result of this stage shall be the complete documentation justifying that the verified performance claim is considered complete, fair and based on reliable test results.

B.VII Reporting and publication

Based on the outcome of the assessment of data and verification, and provided that the verification procedure is not interrupted by the proposer or the Verification Body, the next phase includes the following steps:

- Drafting the Verification report

- Drafting the Statement of Verification

- Publication of the Statement of Verification

The Verification Body shall draw up a full report on all the steps taken and results obtained in the implementation of the verification contract, and a draft Statement of Verification. After

possible revision and with the agreement of the proposer, the Verification Body shall approve the Statement of Verification and submit it to the Commission or to the body designated by the Commission for registering and publication.

B.VII.1 Verification report

At the end of each verification, the verification Body shall produce a verification report. This report shall follow the structure of the table of content provided in Appendix 8. The verification report shall compile or summarise all information relevant for the verification, as provided under B.VI.2, and it shall include all relevant documents produced during verification as appendices:

- The quick scan
- The proposal
- The specific verification protocol
- The test plan[5]
- The test report.

B.VII.2 Statement of Verification

Upon completion of the verification procedure, the Verification Body shall issue a Statement of Verification.

The Statement of Verification shall be a short document of around 4 pages, summarising the verification report. It shall include:

- A summary description of the technology verified, complete denomination or reference number, purpose and conditions of use;
- The verified parameters (or verified performance claim), including the field of application, conditions and assumptions under which the verified performance is met;
- A summary of the procedures followed by the Verification Body, and by test bodies where relevant, including the statistical confidence range on results where applicable;
- Any information necessary to understand and use the verified performance claim; if this includes information not verified during the ETV procedure, this should be clearly stated and explained.

The cover page of the Statement of Verification shall follow the template provided in Appendix 9. The other pages of the Statement of Verification shall follow the structure of the table of content provided in Appendix 9.

[5] If the Verification Body considers that all relevant information from the test plan is also included in the test report, the test plan may be omitted as appendix to the verification report.

The Statement shall be signed by the Verification Body and the proposer. The Verification Body shall submit the Statement of Verification to the Commission or to the body designated by the Commission for registering and publication.

B.VII.3 Publication

The verification report is delivered by the Verification Body to the proposer. For reasons of transparency it is recommended to the proposer to accept the publication of the report, possibly without appendices if the proposer considers that publishing the appendices would harm the protection of intellectual property.

The verification report without appendices shall be shared with the ETV Technical Working Groups under the same conditions of confidentiality applying to the verification body (see A.II.4.1). EU and national control authorities (including the EU Court of Auditors and Anti-Fraud Office) and national accreditation bodies can request access under relevant procedures.

The Statement of Verification and, where appropriate, the verification report, shall be published on the Internet at the following address: http://iet.jrc.ec.europa.eu/etv/ or on a dedicated website designated by the Commission services.

B.VIII Post verification

B.VIII.1 Use of the Statement of Verification and ETV logo

The Statement of Verification may be used by the proposer in any dealings with other organisations, for marketing purposes and for official approval and it may be included in the technical documentation of the verified technology. The proposer shall make the statement available in full and shall not use parts of the statement for any purpose.

The proposer may refer to the Statement of Verification as follows: *The XX technology was verified in the framework of the EU Environmental Technology Verification (ETV) pilot programme for the application AA (including purpose and matrix[6]) 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: http://iet.jrc.ec.europa.eu/etv/* (where appropriate, replace this address with the one of the dedicated website designated by the Commission services.)

The proposer shall not use the ETV logo alone either on products or on published (printed, web or other) matter other than the Statement of Verification. The ETV logo may be used on publications together with the reference to the Statement of Verification, as provided above, as long as the meaning of ETV is correctly reflected by the publication, avoiding in particular any confusion with endorsement or approval of the technology.

The proposer shall ensure that the verified technology is conforming to the published Statement of Verification. If any of the following changes to the verified technology have occurred, the proposer shall report to the Verification body with the data needed to evaluate whether the conditions for verification have changed: change of ownership; design changes; change of intended application or operational conditions; other changes likely to modify the

[6] See description in Table 1 in Section B.III.1

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 reported changes and data at the cost of the proposer. If, after evaluation, the Verification Body concludes that the conditions for verification have changed, a new verification procedure shall be engaged by the proposer 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 proposer. Misuse is defined as violation of the conditions of EU ETV pilot programme verification. In the case of withdrawal, the Statement of Verification and verification report shall be removed from the web.

The proposer may also ask the Statement of Verification and associated report to be withdrawn from the web, for example if the technology is no longer on the market. This should be requested by letter to the Verification Body, committing not to use anymore the Statement of Verification, any reference to it or the ETV logo. The verification Body shall transmit this request to the Commission services and the Statement of Verification and associated report are consequently withdrawn from the ETV website.

B.VIII.2 Follow-up on performed verifications

Customers' feedback on the usefulness of ETV when applying verified technologies and associated environmental added value, and proposers' feedback on the added-value of ETV in the marketing of verified technologies and the economic benefit, are needed to contribute to the continuous evaluation and improvement of the system. Verification Bodies shall seek and collect such feedback by surveying systematically proposers one year after completion of the verification process. In addition, the Commission services provide and operate the stakeholder forum for general exchange of experience among the community.

Complaints related to specific technology verifications under ETV should be addressed to the relevant Verification Body. In the case of a disagreement between the Verification Body and another party in relation to the ETV pilot programme, an opinion may be asked to the relevant Technical Working Group by the Commission services, the Verification Body or the other party. In case the Verification Body decides not to follow the opinion of the Technical Working Group, a detailed report justifying this decision should be addressed to the Commission services and to the accreditation body having accredited the Verification Body for the ETV pilot programme. The Commission services or the accreditation body may decide appropriate measures on the basis of this report.

The legal regime and competent legal authorities for the relations between the Verification Body and the proposer should be indicated in the contractual agreement signed by the two parties.

Complaints related to the competence or qualification of a Verification Body under the ETV pilot programme should be addressed to the national accreditation body having accredited the Verification Body for the ETV pilot programme, following the procedure indicated in the quality manual of the Verification Body.

Complaints related to the ETV pilot programme procedures should be addressed to the services of the European Commission co-ordinating the ETV pilot programme.

B.VIII.3 Outreach

The EU ETV pilot programme strives to support verified technologies. Verified technologies are published by the Commission services and are included in other ETV outreach materials. The ETV pilot programme will conduct targeted outreach activities and further encourage and support the Member States and other contact points in outreach activities at national level.

On a regular basis, activities will be implemented to evaluate success and effectiveness of the programme, its bodies and procedures.

Part C: Quality management

In order to ensure confidence in verification results, strict quality management of the involved organizations and quality assurance of the verification process are required. All bodies involved in verification (Verification Body, test body and analytical laboratory) shall have an implemented quality management system meeting the principles of EN ISO 9001 (Quality management systems – Requirements) or an equivalent standard and conforming to the requirements of this GVP. Verification Bodies shall be accredited as inspection bodies type A under ISO/IEC 17020 to applying this GVP and analytical laboratories shall be accredited according to ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories) for the relevant methods of analysis.

C.I Quality assurance and control for the verification process

Principles of quality assurance in all steps of verification, test and analysis are shown in Figure 3.

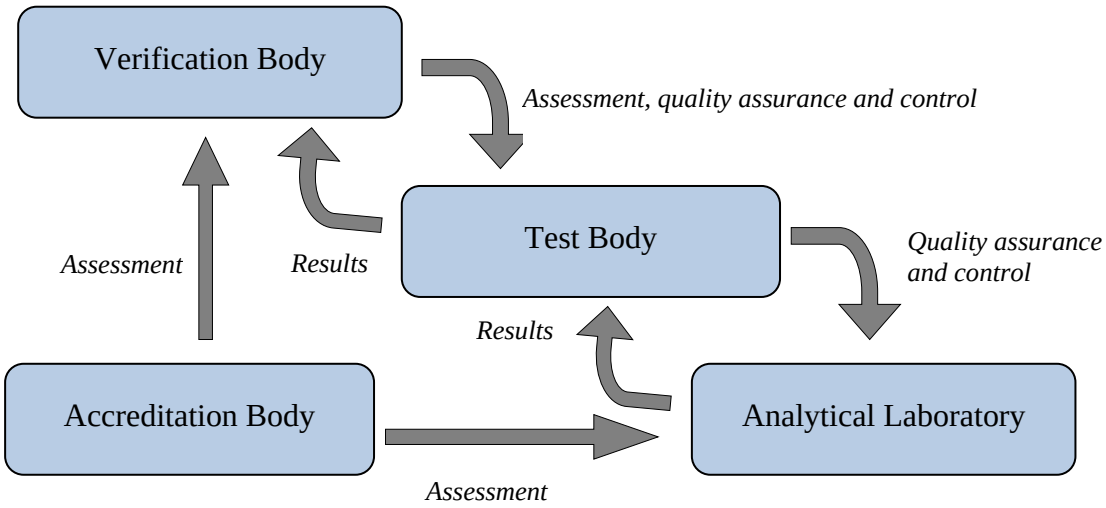

Figure 3: Principles of quality assurance in ETV (indicative only)

The national accreditation bodies shall ensure that ETV Verification Bodies conform to the requirements of ISO/IEC 17020 for inspection bodies type A and this General Verification Protocol, including the requirement for an implemented quality management system meeting the principles of EN ISO 9001, and that the analytical laboratories conform to the requirements of ISO/IEC 17025 for the relevant methods of testing and calibration.

The Verification Body has the overall responsibility to ensure that the verification is conducted according to this General Verification Protocol. The Verification Body shall control that the test body performs test planning, execution and reporting according to the procedures of this GVP and the relevant specific verification protocol.

The Verification Body shall ensure that the test bodies involved in a verification meet the quality management requirements and the general test requirements of this GVP. A test body can demonstrate meeting the quality management requirements and the general test requirements of this GVP by accreditation according to ISO/IEC 17025 for the relevant methods of testing and calibration, or it can demonstrate meeting the quality management requirements by certification according to EN ISO 9001 with a reference to ETV in the scope of certified quality management system (see Section A.II.6.1). As a minimum, the quality management system shall comply with the requirements set out in C.III. In order to ensure that all quality requirements provided in the GVP are met, the Verification Body may have to supervise or implement specific audits, in addition to or in place of the proof of compliance provided through accreditation or certification.

The test body has the overall responsibility to ensure that the tests are done according to this General Verification Protocol and to the requirements on test design and data quality of the relevant specific verification protocol. The test body controls that the analytical laboratory performs planning, performance and reporting of analyses according to the requirements of this GVP and the relevant test plan.

If deviations from the above stated requirements are observed by any of the entities involved in verification, the causes shall be investigated, the effects assessed, mitigated and reported, and measures taken to avoid repeating the deviations.

C.II Quality control for existing data

The quality of the existing data shall be evaluated by the Verification Body checking documentation, raw data and quality control data from the data production. The existing data shall meet the requirements on test design and data quality as set in the specific verification protocol. The existing test data must be produced under a quality management system meeting the principles of EN ISO 9001 and the analytical data under quality assurance compliant with ISO/IEC 17025. The test plan and test report shall be provided and any other information covering in substance the content provided in Appendix 7 'Table of content for the test plan and test report'.

In addition to checking documentation and data, the Verification Body may undertake one or more of the following actions to evaluate the quality and acceptability of the existing data, in particular in the absence of accreditation or certification or in the case of data produced by the proposer or by bodies dependent upon the proposer:

- spot checks (test report review)
- witness checks (retrospective test performance audit)
- test system audits (in combination with one of the above)
- conditional acceptance of existing data, in which case the conditions for acceptance shall be detailed in the specific verification protocol; these conditions may include the re-testing of specific requirements or essential measurements.

C.III Quality management of test bodies

This section describes the required quality management for test bodies.

In particular, at all times and for each test procedure a test body shall have at its disposal the necessary documentation for the items given below.

C.III.1 Organisation

Appropriate policies, organisation and procedures shall be documented aiming at distinguishing between tasks carried out as a test body and other activities.

C.III.2 Personnel

A procedure on education, training and knowledge of new staff in the test body shall be included in a quality manual and shall describe how the test body ensures that tests are done by staff with adequate competences and knowledge of their responsibilities. The personnel responsible for carrying out the test activities shall have the following:

- sound technical and vocational training covering all the test activities done by the test body;
- satisfactory knowledge of the requirements of the test procedures they carry out and adequate authority to carry out those procedures;
- the ability to draw up reports and records demonstrating that test procedures have been carried out and requirements of this GVP and the specific verification protocol have been satisfied.

A list of functions in the test process with competence requirements and responsibilities and staff approved for the function shall be maintained.

C.III.3 Methods

Descriptions of procedures (methods) of test ensuring the transparency and the replicability of those procedures shall be available.

C.III.4 Documentation

The test body quality management system shall include a procedure which describes the process of drafting, revising and approving documentation such as the test body quality manual with the aim of ensuring that all staff involved in the test processes have access to and uses the latest approved version of the manual with process descriptions. The description of procedures shall ensure transparency and replicability of those procedures.

A list of documents shall be maintained with indication of the persons authorized to draft, revise and approve these documents.

C.III.5 Complaint management

The test body quality manual shall describe how proposer complaints are recorded, resolved and reported.

C.III.6 Management supervision

The test body quality manual shall describe how the management of the organisation hosting the test body is ensuring that the test body is working according to its quality manual through mechanisms such as e.g. an annual management review process. The quality manager of the test body is designated to be responsible for maintenance and development of the quality system and for the internal auditing of all aspects of the system.

C.IV Quality assurance

C.IV.1 Verification Body

The Verification Body must include in its quality manual appropriate procedures for ensuring that the plans for, performance of and products of verification activities are of the required level of quality and reliability, i.e. how the Verification Body plans quality assurance in terms of review and audit. This shall include the reviews and audits provided in Table 2 'Quality assurance steps for verification bodies' The procedure shall describe the process of test body audits and audit evaluation, including audit responsibilities and planning, auditor training and competences, and audit reporting.

Location	**Target task**	**Verification Body internal auditor**	**External technical expert**
Verification Body	Specific verification protocol	Review	Review
Test body	Test plan	Review	-
Test body	Test system performance and test body quality management system	Test system audit	-
Test body	Test performance	Test perfor-mance audit	-
Test body	Test report	Review	-
Verification Body	Verification report	Review	Review
Verification Body	Statement of verification	Review	Review

Table 2: Quality assurance steps for verification bodies.

The test system audit may not be needed if the test body is accredited according to ISO/IEC 17025 as stated in Chapter C.I.

The quality assurance planned for a specific verification must be described in the specific verification protocol, providing the names of experts and auditors, as well as the timing of reviews and audits. The quality assurance planned in the specific verification protocol may need amendment after completion of assessment of existing data.

The Verification Body recruits external experts for reviewing documents. The external experts shall not have permanent contracts or links with the Verification Body, they shall not belong to an organisation hosting or having a financial interest in the Verification Body or in the proposer and their competence shall be documented in a list of experts by the Verification Body. The Verification Body must document that the recruited external experts are free from any undue commercial, financial or other pressures that may adversely influence the judgement of the experts.

The reviewing process shall be documented to ensure an adequate level of quality and reliability. Description of the method for documenting reviews shall be included in the quality manual.

C.IV.2 Test body

The test body must include in its quality manual appropriate procedures for ensuring that the plans for the performance of and products of test activities are of the required level of quality and reliability, i.e. how the test body plans quality assurance in terms of review and audit. This shall include the reviews and audits provided in Table 3 'Quality assurance steps for test bodies', unless provided differently in the specific verification protocol. Where appropriate, the procedure shall describe the process of an analytical laboratory performance review.

Location	**Target task**	**Test body internal auditor**	**Test body staff responsible for test activities**
Test body	Test plan	Review	-
Test body	Test system performance and test body quality management system	Test system audit	-
Test body	Test performance	Test performance audit	Test system control
Analytical laboratory	Analytical performance	-	Review
Test body	Test report	Review	-

Table 3: Quality assurance steps for test bodies.

The quality assurance planned for a specific test must be described in the test plan, providing the names of experts and auditor, as well as the timing of reviews and audits. The review of analytical performance should include laboratory stated uncertainties and limits of detection,

analytical quality control data and participation in proficiency tests for the analysis used and the relevant period.

The reviewing process shall be documented to ensure an adequate level of quality and reliability. Description of the method for documenting reviews shall be included in the quality manual.

Non-analytical measurement methods have to be clearly described in the test plan, including required calibration and quality control.

The records of test data (raw data) shall be stored, transferred, maintained and controlled in order to ensure data integrity for a period defined in the test plan, but not shorter than 5 years from completion of the test.

Proposer complaints shall be addressed in accordance with the relevant procedures of the test body and reported to the Verification Body.

C.IV.3 Analytical laboratory

The analytical laboratory must include in its quality manual appropriate procedures for ensuring that the plans for selection methods, performance of and products of analytical activities are of the required quality, i.e. how the analytical laboratory plans quality assurance in terms of review and audit. This shall include the steps provided in Table 4 'Quality assurance steps for analytical laboratories'. The procedure shall describe the process of analytical laboratory quality assurance.

Location	**Target task**	**Laboratory staff**	**Laboratory internal auditor**
Analytical laboratory	Method performance	Validation	-
Analytical laboratory	Laboratory analytical system and quality management	-	Test system audit
Analytical laboratory	Analytical performance	Quality control	-

Table 4: Quality assurance steps for analytical laboratories

The report of analytical data shall include laboratory stated uncertainties and limits of detection. Routine analytical quality control data and participation in proficiency tests for the analysis used and the relevant period shall be available.

Part D: Supporting Documents (Appendices)

Appendix 1: Glossary of terms and definitions

(1) 'Technology' means the practical application of technical or scientific principles to achieve a given purpose. The term technology covers products, processes, systems and services.

(2) ‘Environmental technologies’ are all technologies which provide an environmental added value compared to relevant alternatives.

(3) 'Relevant alternatives' are commercially available technologies relevant for comparison with the technology under verification and performing the same or a similar function.

(4) ‘Innovative environmental technologies’ are environmental technologies presenting a novelty in terms of design, raw materials and energy involved, production process, use, recyclability or final disposal, when compared with relevant alternatives.

(5) 'Environmental added value' means the reduction of the environmental pressure or a positive impact on the environment including but not limited to removal, prevention, reduction, mitigation of pollutants released to the environment, restoration of environmental damages or use of natural resources in a more efficient and sustainable manner.

(6) 'Performance claim' means a set of quantified and measurable technical specifications representative of the technical performance and environmental added value of a technology in a specified application and under specified conditions of testing or use.

(7) 'Verification' means the provision of objective evidence that the technical design of a given environmental technology ensures the fulfilment of a given performance claim in a specified application, taking any measurement uncertainty and relevant assumptions into consideration.

(8) 'Operational parameters' means measurable parameters that define the application and the verification and test conditions.

(9) 'Environmental parameters' means measurable parameters related to potential environmental impacts or the environmental added value in a life-cycle perspective.

(10) '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.

(11) 'Additional parameter' means information on a technology, not covered by performance, operational or environmental parameters, but considered in the verification process because of its usefulness and relevance for technology users.

(12) 'Matrix' means the type of material that the technology is intended for.

(13) ‘Purpose’ means the measurable property that is affected by the technology and how it is affected.

(14) 'Technology group' means a class of technologies serving the same or closely related purposes (i.e. is used in the same application).

(15) 'Accreditation' shall have the meaning assigned to it by Regulation (EC) No 765/2008.

(16) 'National accreditation body' shall have the meaning assigned to it by Regulation (EC) No 765/2008.

(17) 'Harmonised standard' means a standard adopted by one of the European standardisation bodies listed in Annex I to Directive 98/34/EC on the basis of a request made by the Commission in accordance with Article 6 of that Directive.

(18) 'General verification protocol' (GVP) means the description of the principles and general procedure to be followed by the ETV pilot programme when verifying an environmental technology.

(19) ‘Specific verification protocol’ means the protocol describing the specific verification of a technology and applying the principles and procedures of the General verification protocol.

(20) ´Ready to market´ means that the technology is available on the market or at least available at a stage where no change affecting its performance will be implemented before introducing the technology on the market.

(21) ´Amendment´ is a change to a specific verification protocol or a test plan done before the verification or test step is performed.

(22) ´Deviation´ is a change to a specific verification protocol or a test plan done during the verification or test step performance.

(23) ‘Test performance audit’ means the quantitative evaluation of a measurement system as used in a specific test, e.g. evaluation of laboratory control data for relevant period, evaluation of data from laboratory participation in proficiency test and control of calibration of online measurement devices.

(24) ‘Test system audit’ is the qualitative on-site evaluation of test, sampling and/or measurement systems associated with a specific test. E.g. evaluation of the testing done against the requirements of the specific verification protocol, the test plan and the quality manual of the test body.

(25) ‘Test system control’ is the control of a test system as used in a specific test. E.g. test of stock solutions, evaluation of stability of operational and/or on-line analytical equipment, test of blanks and reference technology tests.

Appendix 2: List of technology areas in the EU ETV pilot programme

The technology areas covered by the ETV pilot programme are defined by the Commission services in consultation with the Steering Group where countries participating in the pilot programme are represented.

These technology areas (e.g. water treatment and monitoring) will be further detailed into specific technology groups or applications where ETV is most likely to add value (e.g. drinking water treatment), by the Technical Working Groups where Verification Bodies are represented.

Technical Working Groups shall keep the list of technology groups or applications updated, creating new groups or applications as needed, and possibly dividing groups further into subgroups if needed for the screening of environmental impacts and identification of key environmental aspects, as described in the General Verification Protocol.

The establishment and revisions of the list of technology groups or applications will take into account the following aspects:

- The existence or emergence of a significant number of innovative environmental technologies potentially suited to ETV,
- The demand of technology developers and users, in particular SMEs,
- The availability of specific protocols, technical standards, scientific studies or research providing a satisfactory basis for the verification procedures,
- The availability of a significant number of test bodies having the necessary capacity and quality standards to provide accurate and reliable test data,
- The needs, in terms of technological development or quality requirements, emerging from EU and international policy developments.

Table 5 shows the list of technology areas (first level) and some examples of technology groups or applications (second level) in the scope of the EU ETV pilot programme.

Technology areas	Examples of technology groups/ applications with illustrative technologies
1. Water treatment and monitoring	• Monitoring of water quality for microbial and chemical contaminants (e.g. test kits, probes, analysers) • Treatment of drinking water for microbial and chemical contaminants (e.g. filtration, chemical disinfection, advanced oxidation) and desalination of seawater • Treatment of wastewater for microbial and chemical contaminants (e.g. separation techniques, biological treatment, electrochemical methods, small-scale treatment systems for sparsely populated

Technology areas	Examples of technology groups/ applications with illustrative technologies
	areas) • Treatment of industrial water (e.g. disinfection, filtration, purification)
2. **Materials, waste and resources**	• Recycling of industrial by-products and waste into secondary materials, recycling of construction waste into building materials (e.g. reworking of bricks), recycling of agricultural waste and by-products for non-agricultural purposes • Improved resource efficiency through material substitution • Separation or sorting techniques for solid waste (e.g. reworking of plastics, mixed waste and metals), materials recovery • Recycling of batteries, accumulators and chemicals (e.g. metal reworking technologies) • Reduction of mercury contamination from solid waste (e.g. separation, waste mercury removal and safe storage technologies) • Products made of biomass (health products, fiberproducts, bioplastics, biofuels, enzymes)
3. **Energy technologies**	• Production of heat and power from renewable sources of energy[7] (e.g. wind, sea, geothermic and biomass) • Reuse of energy from waste, biomass or by-products (e.g. 3rd generation biofuels and combustion technologies) • Generic energy technologies (e.g. micro-turbines, hydrogen and fuel cells, heat pumps, combined heat and power production, heat exchangers), distribution, energy storage • Energy efficiency in industrial processes[8] and in buildings (e.g. thermal envelope, wall insulation, energy efficient windows, heating, ventilation and air conditioning systems)

Table 5: Technology areas in the scope of the EU ETV Pilot Programme

[7] More elaborated examples can be found in the IPCCC Fourth Assessment Report, Chapter 4: Climate change 2007, in particular the examples under technological developments with demonstrations or small-scale commercial application, but approaching market introduction.

[8] If the technology applied for energy efficiency is very specific to the industrial process, or if the competence needed to assess the technology is specific to the industrial sector and practices, the technology should be considered instead under 'cleaner production and processes'.

Table 6 shows areas that may be added to the technological scope of the EU ETV pilot programme by the Commission services, after consultation of the Steering Group and taking account of the results of the existing ETV or similar schemes in these areas.

4. Soil and groundwater monitoring and remediation	• Soil and groundwater monitoring (e.g. test kits, probes, analysers) • Soil pollution remediation in situ and on site (e.g. thermal treatment, air venting, chemical oxidation) • Management and de-pollution of sediments, sludge and excavated soils
5. Cleaner production and processes	• Savings of material resources by process optimisation, e.g. savings of chemicals or carbon • Improved energy efficiency by process optimisation (i.e. specific techniques applicable to particular industrial processes[9]) • Prevention and reduction of pollution and waste from industrial processes (e.g. new methods in surface coating)
6. Environmental technologies in agriculture	• Reduction of air contamination and odour (e.g. housing techniques, air treatment), efficient use of water • Recycling of nutrients and organic carbon from manure (e.g. separation, digestion), re-use of sewage sludge and re-use of waste water after treatment • Reduction of pesticide use and contamination (e.g. spreading equipment, precision application) , prevention of pollution from nitrates and phosphates
7. Air pollution monitoring and abatement	• Air emissions monitoring (e.g. sensors, analysers and monitors, including continuous emission monitors) • Abatement of pollution from stationary sources (e.g. filtration, scrubbers, stabilisation of by-products, leakage prevention)

Table 6: Potential additional technology areas in the EU ETV Pilot Programme scope

[9] When the processes in question are related to water treatment or waste treatment, then the relevant technological area is 'water treatment and monitoring' or 'materials, waste and resources' respectively.

Appendix 3: Template for the Quick Scan

This template may be modified by the ETV Technical Working Groups and published as a guidance document, without need to update the General Verification Protocol.

VB logo

EU Environmental Technology Verification

Quick-Scan

Purpose: *This form intends to collect sufficient information about the technology you would like to propose for verification in order to evaluate whether* your technology is eligible for verification under the EU ETV Programme and to provide you *with a first indication of the costs involved. This Quick Scan is to be completed by the proposer and assessed by the Verification Body. The boxes for responses, in grey, may be extended but the responses should remain brief (no more than one half-page each).*

Verification Body	Proposer
Name: Contact person: Address: Telephone: Telefax: Email: Date Quick Scan:	Name: Contact person: Address: Code NACE: Number of employees: Telephone: Telefax: Email:

Quick-Scan date:	
Previous Quick Scan performed: ☐ No ☐ Yes, date:	*Indicate if you have already submitted a quick-scan on the same or similar technology to be evaluated by this Verification Body*

Identification of the Technology

Name of the Technology:

NB : A technology can be a product, a process or a service

Technology Area:

If the technology could fit in more than one area, please signal this and insert a clarification in the comment section.

☐ Water Treatment and Monitoring

☐ Materials, Waste and Resources

☐ Energy Technologies

☐ Other:

Comments:

General description of the Technology

Introduction or context:

Briefly explain the specific problem(s) or opportunities your technology wishes to address

Main purpose of the technology:

How does this technology address the problems or opportunities?

Relevant alternatives

The 'relevant alternative' helps to determine the environmental added-value and innovation level through a qualitative comparison (quantitative if data is available). It should perform an identical or similar function than the technology under verification but it can correspond to different technologies working in sequence, e.g. a sorting procedure including dismantlement can be an alternative to a crusher. It should be a technology that is both current and commercially available, it should be legal and accepted by the end-users on the specific targeted market, It should also be effective in achieving a reasonably high level of protection of the environment.

Principle used:

Which are the scientific or technical principles and techniques used by this technology

Which are the main claim(s) on the technology's performance that would need to be verified? (Preliminary elements for the performance claim)

Consider as much as possible verifiable, quantifiable features, expressed in absolute (i.e. not comparative) terms. Please note that the initial performance claim is starting point for the verification and may evolve during the verification process

Under which conditions is this performance(s) achieved?

Detail the key operational parameters and limits in order for the technology to perform as described in the claim.

Main technical standards, regulations or references applicable to this technology:

Are there already standards that cover (parts of) this technology? What would be the main regulations relevant for this technology? Are you aware of any guidelines that would be useful for the verification of this technology?

Market readiness

Is the technology already on the market?

☐ No ☐ Yes, number years:

If no, is there a prototype or a demonstration unit available?

☐ No ☐ Yes ☐ Pilot scale ☐ Full-scale

When transforming the prototype/ demonstration unit into a marketable product, will any changes affect the technology's performance?

☐ No reason:

☐ Yes How substantial will the changes be?

Comments:

A verification will check whether the technology matches the claimed performance. Ideally this verification should only be done once the product is finished, so as to reduce costs of new verifications with changes or upgrades to the technology.

The intention is to determine if the technology is ready to market: "is it available on the market or at least available at a stage where no substantial change affecting its performance will be implemented before introducing the technology on the market (e.g. full-scale or pilot scale with direct and clear scale-up instructions)".

Innovation level

Description of the innovation provided by the technology, in comparison with relevant alternatives on the market:

Novelty presented by the technology in terms of design, raw materials involved, energy used, production process, use, recyclability or final disposal, when compared with the alternatives identified above

Environmental added-value

Please provide a short overview of the major positive and negative environmental aspects resulting from your technology in each of the four main life-cycle stages identified below:

You are expected to provide as much information as possible, especially for the manufacturing and use phases. Qualitative or quantitative information may be given on emissions, waste streams, consumption or use of raw materials, energy and water. The information provided will help the Verification Body assess whether your technology would fit and benefit from an ETV. If you have no detailed information you are encouraged to provide any generic information you may have useful to the evaluation.

In some cases you may limit the amount of information, in particular when:
i) the technology will lead to environmental pressures/impacts that are not significantly different than those of the relevant alternative
ii) those environmental pressures/impacts are negligible compared to those of the other phases
iii) the information cannot be obtained – please provide a short justification in this case

Natural resources (raw materials, energy) extraction and transformation phase:

Is this stage under your direct control? ☐ Yes ☐ No

Do you have information concerning environmental aspects for this stage? ☐ Yes ☐ No ☐ Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

☐ Yes ☐ No

Major positive and negative environmental aspects:

Extraction, refining, processing, transformation and transport of natural resources including every aspect of all activities involved before the manufacture of the technology's equipment, sub-assemblies or products. By definition, this also includes all of the raw materials, the energy and water used and all waste or emissions released to the environment during these activities.

Manufacturing phase:

Is this stage under your direct control? ☐ Yes ☐ No

Do you have information concerning environmental aspects for this stage? ☐ Yes ☐ No ☐ Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

☐ Yes ☐ No

Major positive and negative environmental aspects:

Manufacturing of parts, components, machinery and of products including every aspect of the production of the technology. In general, it is expected that this will include the production of most if not all sub-assemblies. This also includes all of the water, energy and consumables used, together with all of the emissions and all of the products and wastes. This will generally occur on production sites under control of the proposer.

Use phase:

Is this stage under your direct control? ☐ Yes ☐ No

Do you have information concerning environmental aspects for this stage? ☐ Yes ☐ No ☐ Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

☐ Yes ☐ No

Major positive and negative environmental aspects:

Use and maintenance phase of a product, a process or a service including estimates of its use by the client/end-user refers to consumables, maintenance, and all raw materials, energy and water used for its functioning, as well as all the emissions, products and waste streams.

End of life phase:

Is this stage under your direct control? ☐ Yes ☐ No

Do you have information concerning environmental aspects for this stage? ☐ Yes ☐ No ☐ Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

☐ Yes ☐ No

Major positive and negative environmental aspects:

End of life of a technology including every aspect of all activities involved in the 'End of Life' of a product or an equipment, when it is discarded by the client/end-user, including its recycling, dismantling and/or disposal of all components. This also includes all of the water, energy and consumables used, together with all types of emissions, all of the products and wastes.

Potential to meet user needs

Does the technology have the potential to meet user needs?

☐ Yes ☐ No

What specific user needs is the technology addressing? How does this technology meet the user needs?

Does this technology address a need in the market? Are the advantages provided a real advantage to the user? If the technology is already on the market provide general information on its success in addressing user needs.

Fulfilment of legal requirements

What is the target market for this technology?

☐ EU ☐ Specific country/countries:

☐ Other:

Does the technology fulfil the legal requirements in the targeted market(s)?

☐ Yes ☐ No

Comments:

Intellectual Property Rights (IPR)

Are you the sole and full owner of the technology? ☐ Yes ☐ No

If no, do you detain intellectual property or other rights on the technology?

☐ Yes

Description of the license or other contractual arrangement giving you the legal right to ask for the technology to be subject to a verification procedure:

☐ No

Are there any Intellectual Property issues in respect of this technology or any part or aspect of the technology that might prevent its development and/or which could result in any legal or other issues for the ETV Programme?

☐ Yes ☐ No

Comments:

☐ Please tick here to authorize the Verification Body to share the information provided in the Quick Scan in a confidential way with the ETV Technical Working Groups.

The purpose of information sharing is harmonization and improvement of the EU-ETV programme. All members of the Technical Working Groups have the same confidentiality obligations as the Verification Body.

Please note that, once a verification contract is concluded, the main process documents including the Quick Scan, specific verification protocol and verification report, will be shared with the ETV Technical Working Groups in a confidential way.

Existing data

Are there available test results or other data to back-up the technology's performance?

☐ Yes ☐ No

Please include in our comments, if a test plan was followed, if standard methods were used, if testing was done by accredited testing bodies, i.e. ISO 17025 or EN ISO 9001.

Comments:

If test results are not available, please indicate if you have a test plan prepared and/or if there are test methods available, including standard methods.

Assessment of Quick-scan (for the Verification Body)

Assessment of the technology description

The technology fits in the scope of the EU ETV programme?

Comments:

☐ Yes ☐ No

Description/principles clear ? ☐ Yes ☐ No

Comments:

Clear and verifiable performance claim(s)? ☐ Yes ☐ No

Comments:

Ready-to-market? ☐ Yes ☐ No

Comments:

Prototype in advanced stage of development? ☐ Yes ☐ No

Comments:

Technology shows innovative characteristics? ☐ Yes ☐ No

Comments:

Potential to meet user needs? ☐ Yes ☐ No

Comments:

Fulfilling legal requirements (limited to VB's expertise)? ☐ Yes ☐ No

Comments:

Technology shows environmental benefits? ☐ Yes ☐ No

Comments:

Life-cycle aspects described? ☐ Yes ☐ No

Comments:

Test results are available? ☐ Yes ☐ No

Comments:

Further testing would/could be necessary? ☐ Yes ☐ No

Comments:

Conclusions of quick scan by the Verification Body

Enough information is provided to conclude? ☐ Yes ☐ No

If no, indicate the information that needs to be provided:

If yes, is the technology recommended for ETV? ☐ Yes ☐ No

Why?

Technology in the scope of VB ? ☐ Yes ☐ No

Comments / remarks / recommendations:

Estimated cost range for a verification (excluding tests):

Proposer:
Name:
Date:
Signature:

Verification body:
Name:
Date:
Signature:

Appendix 4: Template for the Verification Proposal

This template may be modified by the ETV Technical Working Groups and published as a guidance document, without need to update the General Verification Protocol.

VB logo

EU Environmental Technology Verification

Verification Proposal

Purpose: *This form intends to collect further information on the technology you would like to propose for verification after the first eligibility check. At this stage, all relevant information is exchanged between the proposer and the Verification Body in order to conclude a verification contract and allow for the preparation of the specific verification protocol. This Proposal is to be completed by the proposer and assessed by the Verification Body. The boxes for responses, in grey, may be extended. Additional information and documents may be attached, with references in the core text for clarity.*

Verification body	**Proposer**
Name: Contact: Address: Telephone: Telefax: Email: Date Quick Scan:	Name: Contact: Address: Telephone: Telefax: Email:

Previous Verification:

Previous Verification performed: ☐ No ☐ Yes, date:

Remarks out of Quick Scan to be considered (for Verification Body):

Technology Description– technical documentation

The technical documentation shall make it possible to understand the technology, to define the performance claim and to assess the conformity of the technology design with the performance claim. It shall contain at least the following elements:

- *Unique identifier of the technology, e.g. commercial name,*
- *a general description of the technology,*
- *conceptual design and manufacturing drawings and schemes of components, sub-assemblies, circuits, etc.*
- *descriptions and explanations necessary for the understanding of those drawings and schemes and operation of the technology,*
- *where relevant, standards or technical specifications applied in full or in part,*
- *results of design calculations made, examinations carried out, etc.*

Technology Description:

Intended application of the technology

The application of the technology should be defined by describing the matrix and the purpose(s) of the technology. The matrix refers to the type of material which the technology is intended for e.g., soil, drinking water, ground water, cooling water, alkaline degreasing bath, effluent from domestic wastewater treatment plant etc. The purpose(s) is a measurable property that is affected by the technology e.g., reduction of nitrate concentration, separation of volatile organic compounds, reduction of energy use (MW/kg), bacterial removal, monitoring of NO_x, improvement of heating value etc. It is important that the purpose describes the claimed effect in quantitative terms, e.g. reduction of nitrate concentration in mg NO_3/L. For further information on how to define the matrix and the purpose, please refer to the General Verification Protocol, Table 1 in Section B.III.1 or to the Guide for Proposers.

Matrix:

Purpose:

Technical conditions:

Initial performance claim

The specifications included in the initial performance claim shall relate to the technology itself and shall be quantitatively verifiable through tests. The initial performance claim shall state the conditions under which the specifications are applicable and mention any relevant assumption made. For further information on how to define a clear initial performance claim, please refer to the Guide for Proposers.

Initial performance claim:

Description of tests performed and existing data

The tests performed on performance parameters shall be described with all necessary details, including the qualification of testing bodies, test methods used (references to standards where appropriate), test plans and test reports. Consult the Verification Body if there are confidentiality issues related to the information on tests.

Are there available test results or other data to back-up the technology's performance?

☐ Yes

Description of test plan:

Description of test methods, including reference if standard methods were used:

Description of existing data:

Qualification of the test body:

☐ ISO 17025 ☐ ISO 9001 ☐ none ☐ other:

Qualification of analytical laboratory:

☐ ISO 17025 ☐ none ☐ other:

☐ No

Is there a test plan available? ☐ Yes ☐ No ☐ Unknown

Is there a test method available? ☐ Yes ☐ No ☐ Unknown

Full description:

Environmental added-value

Please provide as much information as possible on the positive and negative environmental aspects resulting from your technology First, please identify the technologies that constitute relevant alternative(s) to your technology since this may help to identify the environmental added-value of the technology. Then indicate the phases which are most relevant to your technology, in terms of environmental aspects. You may indicate that a particular phase is not relevant to assess the environmental aspects of your technology when:

- *the technology will lead to environmental pressures/impacts that are not significantly different than those of the relevant alternative(s)*
- *those environmental pressures/impacts are negligible compared to those of the other phases*
- *the information cannot be obtained – please provide a short justification in this case. It is expected that for the manufacturing and use stages the proposer will normally possess relevant information, as designer and manufacturer of the technology.*

For each of the identified phases, and especially for the manufacturing and use phases please indicate as much qualitative information as possible regarding each environmental parameter. When available, support the elements provided with quantitative information. You may present information based on a comparison with the relevant alternative, or you may present absolute values, if you are unable to compare the performance of your technology with the one of a relevant alternative(s).

Relevant alternatives (if available):

For the phases identified in the Quick Scan as different from the relevant alternative(s), please provide information as detailed as possible on the following environmental parameters:

Indicate relevant phase:

Emission of pollutants to air:

Identify or quantify air pollutants including those listed under the green-house gas emissions

Emission of pollutants to water:

Identify or quantify water pollutants

Emission of pollutants to soil:

Identify or quantify soil pollutants

Consumption of natural resources:

Identify consumption of natural resources, especially rare raw material required for the process Energy and water consumption will be addressed in the two following points.

Energy consumption:

Identify energy consumption and energy sources (indicate use of non-renewable or renewable energy)

Water consumption and related processes:

Identify the consumption or the use of water but also the quality of the water used and the necessary treatment before and after use, the consumption or the use of water. This section includes process water, but also water used in bulk such as cooling water.

Production of non-hazardous waste:

Identify or quantify non- hazardous waste

Production of hazardous waste:

Identify or quantify hazardous waste

If relevant, additional information on the overall productivity of the technology should also be provided, namely:

Production efficiency – productivity:

Indicate any significant differences in productivity of the technology vs. the relevant alternative (e.g. for recycling: ratio of substance recycled vs. quantity of substance contained in the waste).

Production efficiency – final quality:

Indicate the differences in the quality of the final product vs. the relevant alternative (e.g. for recycling: the level of purity of the recovered substance).

Other information (extra information that might be useful for the assessment relating to e.g., economic, social and safety aspects):

Indicate extra information that could justify or complement the information provided for environmental criteria. For example, a technology might be proposed that has little or none environmental benefits in comparison to the already commercially available alternatives but that provides greater social, economic or safety benefits

Assessment of Proposal (for the Verification Body)

Assessment of the technology

Performances parameters correctly described:	☐ Yes	☐ No
Innovative technology:	☐ Yes	☐ No
Ready-to-market:	☐ Yes	☐ No
Prototype in advanced stage of development:	☐ Yes	☐ No

Assessment of environmental aspects

Conclusions:

Assessment of existing data

Tests performed on technology:	☐ Yes	☐ No
Comments:		
Test body suitably qualified:	☐ Yes	☐ No
Comments:		
Test plan available:	☐ Yes	☐ No
Comments:		
Test plan suitable:	☐ Yes	☐ No
Comments:		
Test method available (standards):	☐ Yes	☐ No
Comments:		
Test methods described:	☐ Yes	☐ No
Comments:		
Test methods suitable:	☐ Yes	☐ No
Comments:		
Test methods reproducible:	☐ Yes	☐ No
Comments:		
Test methods accurate:	☐ Yes	☐ No
Comments:		
Test results available:	☐ Yes	☐ No
Comments:		
Test results in line with performance claim:	☐ Yes	☐ No
Comments:		
Test results can be used in the verification process	☐ Yes	☐ No
Comments:		

Conclusions on the Proposal:

Proposer:	**Verification body:**
Name:	Name:
Date:	Date:
Signature:	Signature:

Appendix 5: Indicative template for the Verification Contract

Verification contract

Technology name *(commercial name or name under which it will be available on the market)*	

Verification body		**Proposer**	
Name:		Name:	
Contact:		Contact:	
Address:		Address:	
Telephone:		Telephone:	
E-mail		E-mail	

{Verification body name} agrees to perform the verification of the above mentioned technology for the below defined application in accordance with the EU-ETV environmental technology verification method as described in the General Verification Protocol version 1.1.

Application

Matrices:

Purposes:

Costs and payments

The steps and the costs of the verification procedure includes {check parts and indicate costs as appropriate}:

Verification steps	**Costs {currency}**
Quick scan report and proposal review	
Specific verification protocol	
Verification assessment and verification report	
Statement of Verification	

Total costs	

Costs are all inclusive, VAT exclusive.

Example of the payment scheme is as follows:

Payment	**Time of payment**
10% advance payment	With signed contract
50% payment	After approval of specific verification protocol
40% final payment	After delivery of verification report and statement

Potential tests and analyses

On the basis of available information and as an indication, data from the following tests and analyses are considered necessary to complete the verification procedure. This will have to be confirmed or revised in the specific verification protocol. The cost of the tests and analyses is not included in the estimates above[10].

Tests	**Analyses**	**Comments**

Deliverables

{Proposer} agrees to provide without costs and delay for {Verification Body}:

- Contact person for the verification.
- Existing performance data of the technology.
- Information on technology and technology details and mode of action as required for a full understanding of the technology.
- Comments on documents submitted for commenting.

{Verification Body} agrees to provide within the contract:

- Verification of the technology as indicated in this contract.
- One original verification report and verification statement.

Information

{Verification Body} and {proposer} shall both inform the other part of any change in the conditions for the verification, in particular of any change made to the technology before the conclusion of the verification process.

[10] If appropriate, a cost estimate for the tests and analyses may be provided separately.

Intellectual property rights

{Proposer} warrants that the technology submitted for verification is owned or that intellectual property rights are controlled fully by {proposer}.
[Alternatively:] Statements by the owner(s) of the technology or related intellectual property rights, consenting explicitly to the verification, are annexed to this contract.

{Proposer} will retain all rights to technical data produced during the verification.

{Verification body} will retain all rights to the verification process, protocols, plans, methods and procedures developed by {Verification body}.

Schedule

A detailed schedule shall be part of the specific verification protocol. This will be available for commenting within 6 weeks from the date of signature of the contractual agreement or from the date of the first payment, whatever comes latest.

Limitations

{Verification Body} performs the verification as described for the application of the technology as defined in this contract. This verification cannot be considered an endorsement, approval, authorization or warranty of any kind, and the performance parameters provided cannot be extended to other applications or to other technologies. The verification results reflect the performance of the technology at the time and under the conditions of verification; they cannot be understood as guaranteeing the same level of performance in future or under other conditions.

{Proposer} agrees not to use the Statement of Verification or verification report, or to refer to those for any other technology or application, and not to use extracts of the Statement of Verification for any purpose.

Confidentiality

The final version of the Statement of Verification will be made available for public access by the EU ETV pilot programme through appropriate media such as the EU-ETV web site. The final versions of reports, protocols and plans may be made available for public access by the EU ETV pilot programme after agreement between {Verification Body} and {proposer}.

All other information obtained or produced during the verification is considered confidential for the part not owning the intellectual property rights.

During verification, {proposer} allows {verification Body} to give external auditors access to all information obtained or produced during the verification, as specified in the verification protocol.

{proposer} agrees that general information on the verification process and the following documents produced during the verification may be shared in a confidential way with the ETV Technical Working Groups for the purpose of co-ordination and improvement of the EU-ETV scheme: Quick scan without financial estimates, draft and final specific verification protocol, draft and final verification

report without appendices, draft and final Statement of Verification. It is reminded that all members of the Technical Working Groups share the same confidentiality obligations as the Verification Body.

In exceptional and justified cases where the sharing of specific pieces of information with the Technical Working Group, in the conditions of confidentiality indicated above, would appear to put at risk the reputation or commercial interests of {proposer} or third parties, {proposer} may ask {Verification Body} not to share these pieces of information or data. The Verification Body will then inform the Technical Working Group why this information cannot be shared.

Liability

{Verification Body} assumes no liability for any damages associated with the use of verification results, and {proposer} agrees to cover any costs that may be imposed upon {Verification body} in connection with claims raised with this respect.

{Verification Body} assumes no liability for delays or for verification results that damage the sales of the technology or the proposer.

Force majeure

The parties of this contract shall not be liable for failures beyond their control.

Termination

Either party may terminate this contract with a 15 days written notice. In the case of termination, any costs endured by {Verification Body} as part of the verification that cannot be averted shall be paid in full by the terminating part. If the termination is done by the {verification body} due to proposer's non-fulfilment of the obligations in this contract then the costs shall be paid in full by the proposer.

Disputes

Any dispute that may arise in relation with the verification procedure shall be governed by {Verification Body home country} law.

Signatures

Verification body		**Proposer**	
Name:		Name:	
Signature:		Signature:	
Title:		Title:	
Date:		Date:	

Appendix 6: Table of Contents and parameter definition table for the Specific Verification Protocol

The verification report shall contain at least the contents of the following table, in the order and numbering indicated in view of comparability.

Table of contents

1. Introduction
   1.1. Name of technology
   1.2. Name and contact of proposer
   1.3. Name of Verification Body and responsible of verification
   1.4. Organisation of verification including experts, and verification process
2. Description of the technology and application
   2.1. Summary description of the technology
   2.2. Intended application including matrix, purpose, technologies, technical conditions
   2.3. Associated environmental emissions and/or impacts
3. Verification parameters definition (revised performance claim)
   3.1. Performance parameters[11]
   3.2. Operational parameters
   3.3. Environmental parameters
   3.4. Additional parameters
   3.5. Parameter definition table
4. Requirements on test design and data quality
   4.1. Test design
   4.2. (if needed: Reference analysis and measurements)
   4.3. Data management
   4.4. Quality assurance
   4.5. Test report requirements
5. Evaluation methods
   5.1. Calculation of performance parameters
   5.2. Evaluation of test quality
   5.3. Comments on additional parameters
6. Existing data
   6.1. Summary of existing data
   6.2. Evaluation of existing data quality
   6.3. Accepted existing data
   6.4. Conclusion on the need or not for additional tests and measures

[11] Including the consideration of regulatory requirements, application based needs, key environmental factors and state of the art performance of similar technologies as provided under B.IV.2.

7. Verification schedule
8. Quality assurance
9. References

Appendix 1 Terms and definitions

Parameter definition table

This template may be modified by the ETV Technical Working Groups and published in a guidance document, without need to update the General Verification Protocol.

Parameter (list of parameters to be considered in the specific verification protocol)	Value	Existing legal requirements and/or BAT values	Test or measurement method(s)	Test /available data (+ performer of tests)
Performance parameters (functional performance) **Operational parameters** e.g. temperature **Environmental parameters** Resource use during production of equipment Resource use during use phase City water Electricity Raw materials Consumables Use of hazardous substances Waste generated Emissions (air, water) Reusability, recyclability (fully or in part) End of life decommissioning and disposal **Additional parameters** Man-power needed operation maintenance Space needed operation maintenance Service life Robustness/vulnerability to changing conditions of use or maintenance	e.g. max 80° C e.g. 600 m^3/year	e.g. Required in France, legal reference	e.g. ISO.... Installed flow meter type...	av. data + sample (lab) e.g. Verified (2 months) (subcontractor)

Table 7: Parameter definition table

Appendix 7: Table of Contents for the test plan and test report

The test plan shall contain at least the contents of the following table.

Test plan

1. Introduction
   - 1.1. Name of technology
   - 1.2. Name and contact of proposer
   - 1.3. Reference of the specific verification protocol
   - 1.4. Name of test body/test responsible
2. Test design
   - 2.1. Test site
     - 2.1.1. Types of test sites
     - 2.1.2. Addresses
     - 2.1.3. Descriptions
     - 2.1.4. Special needs (e.g. access restrictions or clearance, training needs)
   - 2.2. Tests
     - 2.2.1. Test methods
     - 2.2.2. Test staff
     - 2.2.3. Test schedule
     - 2.2.4. Test equipment
     - 2.2.5. Type and number of samples
     - 2.2.6. Operation conditions
     - 2.2.7. Operation measurements
     - 2.2.8. Technology maintenance
     - 2.2.9. Health, safety and wastes
3. Analysis and measurements
   - 3.1. Analytical laboratory
   - 3.2. Analytical and measurement parameters and methods
   - 3.3. Analytical and measurement performance requirements
   - 3.4. Preservation and storage of samples
   - 3.5. Data management
   - 3.6. Data storage, transfer and control
4. Quality assurance
   - 4.1. Test plan review
   - 4.2. Performance control – analysis and measurements
   - 4.3. Test system control
   - 4.4. Data integrity check procedures
   - 4.5. Test system audits
   - 4.6. Test report review
5. Test report
   - 5.1. Amendment report

5.2. Deviations report
6. References

Appendix 1 Terms and definitions
Appendix 2 References methods
Appendix 3 In-house test methods
Appendix 4 In-house analytical methods and measurements
Appendix 5 Data reporting forms

The test report shall contain at least the content of the following table.

Test report

Title page

Table of contents
1. Introduction
   1.1. Name of technology
   1.2. Name and contact of proposer
   1.3. Name of centre/test responsible
   1.4. Reference to test plan and specific verification protocol
2. Test design
3. Test results
   3.1. Test data summary
   3.2. Test performance observation
   3.3. Test quality assurance summary, incl. audit result
   3.4. Amendments to and deviations from test plan
4. References

Appendix 1 Terms and definitions
Appendix 2 Test data report
Appendix 3 Amendment and deviation reports for test

Appendix 8: Table of Contents for the Verification report

The verification report shall contain at least the contents of the following table.

Table of contents

Appendix 9: Template for the cover page and table of contents for the Statement of Verification

Verification Body logo(s)

Technology:

Registration number:

Date of issuance:

Verification Body	**Proposer**
Name:	Name:
Contact:	Contact:
Address:	Address:
Telephone:	Telephone:
E-mail	E-mail
Web	Web

Signatures

Verification Body	Proposer

Accreditation Mark
accreditation register or certificate number

Internet address where this Statement of Verification is available:
http://iet.jrc.ec.europa.eu/etv/

The Statement of Verification shall contain the contents of the following table, in the order and numbering indicated in view of comparability.

Table of Contents

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Publications Office