VERA

General VERA Guidelines (GVGs)

Version 2 – March 2022

For more information, refer to:
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Adapted from:

EU Environmental Technology Verification Pilot Programme
Version 1.1 – July 7th 2014 and Version 1.2 – July 27th 2016
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For more information, refer to: http://iet.jrc.ec.europa.eu/etv/ or ENV-ETV@ec.europa.eu

Table of contents

List of figures

List of tables

List of references

§ EU Environmental Technology Verification Pilot Programme, General Verification Guidelines, Version 1.1 – July 7th 2014 and Version 1.2 – July 27th 2016
§ EU Environmental Technology Verification Pilot Programme, Guidance Document 009/2016, Guidelines on Auditing Test Bodies, Version 1.0 – 06/06/2016
§ EU Environmental Technology Verification Pilot Programme, Guidance Document 005/2016, Guidelines on Acceptance of Existing Test Data, Version 1.0 – 07/06/2016
§ EN ISO 9001. Quality Management Systems – Requirements
§ ISO/DIS 14034:2016 (E). Environmental Management – Environmental Technology Verification (ETV)
§ ISO/IEC 17020. General Criteria for the Operation of Various Types of Bodies Performing Inspection
§ ISO/IEC 17025. General Requirements for the Competence of Testing and Calibration Laboratories
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§ International Working Group – Environmental Technology Verification, Guidance Document towards the Mutual Recognition of Environmental Technology Verification (ETV) Programmes, June 17th 2013

Part A: Verification of environmental technologies in agricultural production (VERA)

A.I Introduction

To meet the environmental challenges within livestock production, new technologies are being developed within the European Union (EU) member states and elsewhere. These so-called 'environmental technologies' are designed to potentially enhance the eco-efficiency of agricultural production by reducing material inputs, emissions of pollutants and energy consumption; recovering valuable by-products; and minimising waste disposal problems. Environmental technologies for agriculture can be introduced at different stages of the production chain; for example, techniques applied in animal houses, or for manure storage, processing or land application. However, central stakeholders such as farmers and authorities only have limited information on their performance, which hampers the diffusion of these environmental technologies in the agricultural sector.

Therefore, the Danish Ministry of the Environment, the Dutch Ministry of Infrastructure and the Environment, the German Federal Ministry of Food and Agriculture and the German Federal Environment Agency, in cooperation with international technical experts, have started the development of common test protocols for the testing and verification of these environmental technologies for agricultural production.

The standardised test protocols are designed to investigate the environmental performance and operational stability of a technology, and thus provide reliable and comparable information about the performance of technologies to farmers, authorities and other stakeholders. Currently, the Verification of Environmental Technologies for Agricultural Production (VERA) test protocols are available for technologies and management systems relating to livestock production, for air cleaning technologies, land application, manure separation and manure storage covers, and other mitigation technologies. Other application areas are planned for the future. Regular revisions of the existing test protocols will achieve a constantly high scientific level to ensure they remain state of the art.

This initiative is organised within VERA. The VERA cooperation was established in 2008 to promote an international market for environmental technologies for agricultural production. The overall purpose of VERA is to fill the information gap for central stakeholders by offering independent verification of the environmental performance and operational stability of environmental technologies, which is determined by applying specific VERA test protocols, and thereby prepare the ground for the increased use of these technologies to meet the environmental challenges of agricultural production within the EU.

A.I.1 Relation to the EU ETV and other ETV Programmes

History

Throughout the globe, several countries have started approaches to verify the performance of environmental technologies – mainly for industrial applications. The USA had already created their first efforts by 1995.

At a European level, the European Commission held the first meeting on Environmental Technology Verification (EU ETV) in 2005. Like the idea behind VERA, its objective is to promote environmental technologies by providing technology developers, manufacturers and investors with access to third-party validation of the performance of innovative environmental technologies. However, the European Commission launched this voluntary scheme for EU ETV on an experimental basis: the so-called 'EU ETV pilot programme'. This covers only some application areas, and agriculture has not been within the scope.

Denmark, Germany and the Netherlands, being European countries with regions that have intensive livestock production, intended to move forward regardless on enhancing environmental technologies by verification. Therefore, VERA was born, in 2008, as an initiative by these three countries to offer a verification programme also for agricultural application areas. As with the EU ETV programme, VERA is intended to accelerate the acceptance and diffusion of environmental technologies. Flanders became a member in 2018. In the beginning of 2021 Germany decided to end their participation in VERA, because of the low number of German applications. Switzerland is currently a guest member of VERA.

Deviations from ETV

In the EU ETV scheme, the verification protocols are developed by the experts of the individual verification bodies, and are subject to a consultation with the EU Commission Services Experts and the other verification bodies before they can be used as the basis for a verification statement. In the VERA scheme, the test protocols are developed by the international VERA experts on the receipt of a request from the International VERA Board. The focus of VERA is primarily on defined application areas within the agricultural sector, based on the standardised VERA test protocols, whereas the EU ETV pilot programme targets innovative technologies in three application areas. Additionally, the results obtained in VERA can be used in national approval processes to gain access to approved agricultural technology lists.[1]

The overall objective – to generate reliable data and gain comparable results for different technologies within an application area – is the same in both the EU ETV scheme and the VERA scheme. Also, as international product standards are rare for environmental technologies in agriculture, the overall idea behind EU ETV and VERA is very similar.

A.I.2 Structure of the General VERA Guidelines (GVGs)

The General VERA Guidelines (GVGs)Version 2 are based on the GVGs Version 1 and cross checked with the updated ETV General Verification Protocol published by the European Commission in 2020and adapted to the VERA needs.

[1] Examples of approved technology lists are:

The GVGs have been drafted to support the development and implementation of the VERA initiative. It consists of three sections, plus supporting documents within appendices, as follows:

Part A: VERA programme
Part B: Verification procedure
Part C: Quality management
Part D: Supporting documents

The purpose of the GVGs is to provide an organisational and technical framework with clear verification procedures, enabling reliable test results. At the core of a verification process under VERA, the test results produced before or during the process are reviewed in order to assess the relevant parameters for the performance of the technology. Mutual recognition of verification results is simplified within the participating countries by following the procedures as laid down in the GVGs and the approved VERA test protocols.

A.I.3 Scope

VERA focusses on parameters being quantifiable and measurable through testing that are related to the performance of a technology with regard to its environmental added value and its operational stability. The environmental added value is considered from a process-orientated perspective. However, the manufacturer should be motivated to take into consideration the lifecycle perspective and include it in the dossiers; e.g. considering the main benefits and impacts throughout the lifecycle of the technology, such as energy use, the reuse of parts and production processes. Nevertheless, it will neither be a requirement nor be assessed, and is therefore not mentioned in the VERA Verification Statements.

An environmental technology may be presented for VERA verification by any legal entity, hereinafter referred to as 'the applicant', if the technology fulfils the following criteria:

- It is likely to correspond to the definition of an environmental technology with the potential to contribute to the efficient use of natural resources and a high level of environmental protection.
- The main target is the reduction of emissions of substances such as NH_3, dust and odours.
- It belongs to one of the technology areas contained in the list of technology areas with an existing VERA test protocol.
- It is ready for the market or is already commercially available.

A.I.4 Interim period

As of the publication of the General VERA Guidelines Version 2, the interim period as described in the previous GVG Version 1 has expired. The VERA system has entered into a regular period as described further in Part B, C, and D of this GVG. Table 1 briefly outlines the original intended VERA components, the deviation during the interim period, and the current situation.

Table 1 – GVG Version 2 Deviations

	GVGs process in brief	Deviation during interim period	Current Situation
Verification body	Each country must have a national VERA secretariat, and should install a legal entity as the National VERA Secretariat; this will act as a verification body at the same time and fulfil all requirements in accordance with ISO 17020.	This does not need to be realised instantly, especially as the VERA cooperation is to be extended to a larger number of member countries and not all countries can nominate a candidate easily.	The International VERA Board decided not to mandate the member countries to establish a National VERA Secretariat to act as a verification body but rather to nominate existing independent bodies to act as verification bodies for VERA. ETA-Denmark and DLG Deutsche Landwirtschafts-Gesellschaft – German Agricultural Society have been nominated to act as verification bodies for VERA.
Accreditation of test bodies according to ISO 17025	The aim is to only allow accredited test bodies, in combination with their having sufficient expertise and knowledge in emission testing in agricultural applications, to perform VERA tests. (Whether the test institute should or shall be accredited according to a VERA test protocol will be clarified at a later stage.) The verification body may decide to audit the test institute. The VERA Board can decide to direct the participation in a VERA internal interlaboratory test.	Non-accredited test bodies might be allowed if they can demonstrate sufficient expertise and knowledge in both quality management and emission testing in agricultural applications. In addition, the laboratory needs to be audited by the verification body or another VERA entity. Analytical laboratories that perform standardised tests (e.g. for NH_3, dust or odour measurements) or that are acting as subcontractors, for instance, need to already be accredited in the interim period.	The interim period deviation is still valid.
Issuing of statements	The verification body issues statements.	The existing procedure with the International VERA Secretariat issuing VERA statements will remain possible until such	The verification body issues statements.

		time as all countries have an authorised verification body.	
Cost structure and funding of experts	In the medium-term, the verification should change to a user-paid-for system. The verification bodies will produce an individual offer based on the necessary effort, including funding for the experts.	Whilst the International VERA Secretariat is located in Germany and most experts (such as in Denmark and the Netherlands) are financed by the ministry, the verification costs are covered by VERA. In cases where the experts are fully user paid for (for example, in Denmark), all requests are processed by ETA Denmark, which handles the funding of Danish experts.	The verification bodies will produce an individual offer to the applicant based on the necessary effort, including funding for the experts where necessary.

A.II Entities in the VERA programme

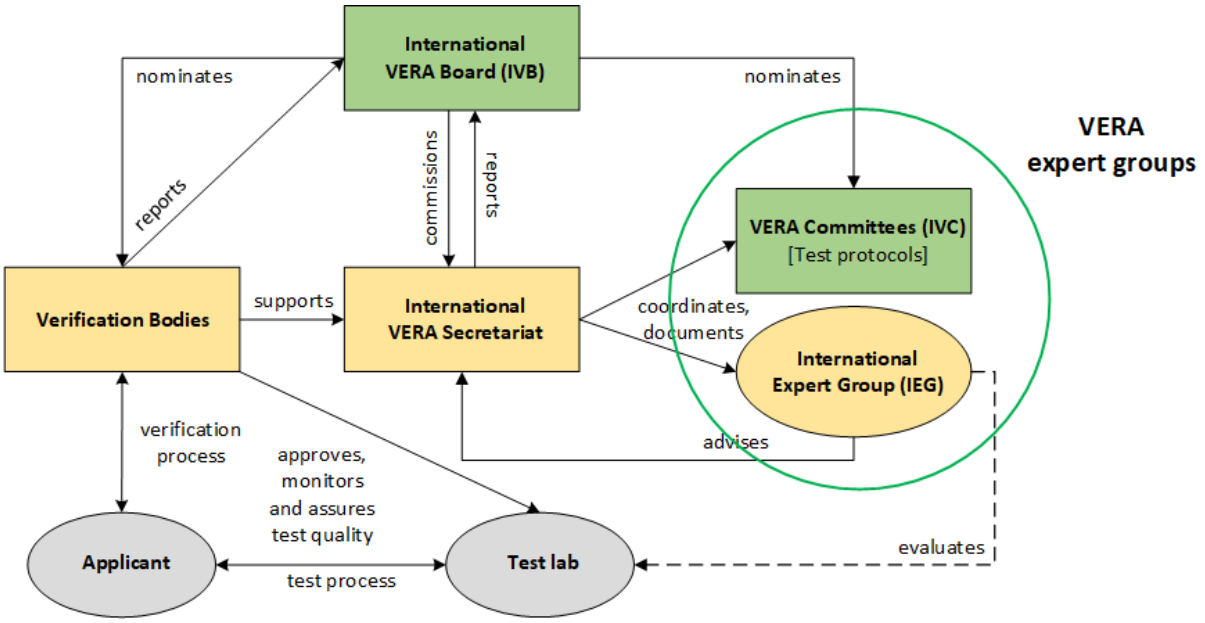

Figure 1 – VERA entities and relations

A.II.1 International VERA Board

A.II.1.1 Qualification and nomination

The International VERA Board acts as the steering group and advisory board for the implementation of the VERA programme, and is composed of representatives of the participating member states.

European Free Trade Association (EFTA) countries, countries that are members of the European Economic Area (EEA) and a third group of countries (Iceland, Liechtenstein, Norway and Switzerland) that have signed an Association Agreement with the EU are eligible to participate in this steering group. The International VERA Board may also accept representatives of non-participating countries and international organisations, as appropriate.

A.II.1.2 Roles and responsibilities

The International VERA Board will advise the International VERA Secretariat on the implementation of the VERA programme; in particular, on:

1. agreeing a general structure within the VERA framework, specifically by approving the GVGs and other reference documents where appropriate;
2. defining the technology areas to be covered by the VERA programme;
3. initiating the preparation of new test protocols or their revisions;

4. prioritising the activities of the International VERA Committees (IVCs), specifically on approval of guidance documents such as test protocols;
5. nominating national experts for the IVCs and the International Expert Groups (IEGs);
6. establishing a National VERA Secretariat in all participating countries;
7. nominating Verification Bodies;
8. promoting the acceptance of VERA Verification Statements in all relevant markets;
9. evaluating the VERA programme;
10. keeping in contact with the EU ETV, and other regulatory or verification processes;
11. inviting new member countries; and
12. any other strategic or organisational subjects.

A.II.2 International VERA Secretariat

A.II.2.1 General tasks

The International VERA Secretariat ensures the overall coordination and support of the VERA programme.

As well as convening and organising all internal VERA meetings, it will promote any public relations activities. In the verification process, it will ensure the involvement of the IEGs and observe the compliance of all parties with the quality management procedures laid down in the GVG and on behalf of the International VERA Board.

A.II.2.2 Qualification

The International VERA Secretariat shall:

1. be nominated by the International VERA Board;
2. rotate to another member country every four years in order to share the costs of the international coordination of the VERA cooperation, if not otherwise reorganised by the International VERA Board;
3. have sufficient qualification for the verification activities in relation to the VERA process and management;
4. be independent and free of any conflicts of interest; and
5. observe professional secrecy with regard to all information obtained by carrying out its tasks during any VERA activity.

A.II.2.3 Roles and responsibilities

The International VERA Secretariat shall implement the GVG following any guidance provided by the International VERA Board.
This includes, in particular:

1. realising decisions and assignments of the International VERA Board;
2. drafting the rules governing the VERA programme, including the general guidelines;
3. convening and organising all internal VERA meetings;
4. reporting regularly to the International VERA Board on all activities within the VERA framework;
5. supporting and organising the VERA expert groups (IVCs and IEGs), including convening and documenting meetings, summarising decisions and supporting revisions, and preparing VERA test protocols;
6. providing advice to the applicants in the context of the VERA procedures;

7. stimulating the communication between the verification;
8. supporting applications for verification according to its responsibilities as laid down in Part B of the GVG;
9. ensuring the involvement of VERA experts (IEG), and supervising international approval of the test plan, test results and VERA Verification Statement by all members of the IEG in each verification process (in the case of disagreements within the IEG, it can support the Verification Body in finding solutions);
10. registering and publishing VERA Verification Statements on the official VERA website;
11. completing follow up in the post-verification phases (e.g. control of the appropriate use of the VERA Statements in the market);
12. ensuring any verification bodies involved in the verification comply with the quality management requirements of the GVG (e.g. by auditing or organising ring tests in consultation with the VERA expert groups on behalf of the International VERA Board); and
13. handling complaints from any internal or external stakeholders.

A.II.3 Verification Body

A.II.3.1 Nomination

The Verification Body – shall be nominated accordingly:

1. by the International VERA Board;
2. shall be authorised as a Verification Body by the International VERA Board.

A.II.3.2 Qualification

The **Verification Body** shall hold the following qualifications:

1. It shall have sufficient qualification for the verification activities in relation to the VERA process.
2. It shall be established under national law and have legal personality.
3. It shall be a third-party body independent of the applicants (developers, vendors, purchasers and users of environmental technologies) submitting technologies to this body for verification. It should meet the requirements for Type-A inspection bodies as defined in the normative Annex A of ISO/IEC 17020, especially by demonstrating its independence and the absence of any conflicts of interest.
4. It shall not be directly involved in the design, manufacture, construction, 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 any environmental technologies that are necessary for the operations of the Verification Body or the use of environmental technologies for personal purposes.
5. It shall not be engaged in any activity that may conflict with its independence of judgement or integrity in relation to the verification activities. This pertains to the Verification Body, its top level management and the personnel responsible for carrying out verification tasks, and shall also apply when summarising experts' opinions.
6. It shall ensure that the activities of its subsidiaries, subcontractors and experts do not affect the confidentiality, objectivity or impartiality of its verification activities.

7. It shall carry out the verification activities with the highest degree of professional integrity and the requisite technical competence. It shall be free from all pressures and inducements, particularly financial, which might influence its judgement or the result of its verification activities, especially as regards persons or groups of persons with an interest in the results of those activities, such as test laboratories and members of the VERA expert groups.
8. It shall be capable of carrying out all the tasks assigned to it under Section A.II.3.3.
9. It shall have in place a system of quality management and quality assurance documentation, with coordinating and monitoring of the measures taken to ensure that verification activities are implemented in conformity with the requirements of Part C of the GVG. In particular, at all times, and for each verification procedure and each technology group, the Verification Body shall have in place the necessary personnel with appropriate technical knowledge, and sufficient and appropriate experience to perform the verification tasks:
    - If the personnel referred to in this point includes external experts, it shall arrange the necessary agreements or conventions to ensure the availability of the personnel concerned with VERA procedures.
    - It shall have a description of the procedures in accordance with which the verification is carried out, ensuring transparency and the ability to reproduce those procedures.
    - It shall have appropriate policies and procedures in place to distinguish between the tasks it carries out as a VERA Verification Body and other activities.
    - It shall have in place appropriate reviewing and recording procedures for the products of verification and its activities, ensuring a high level of quality and reliability. The aforementioned documents shall be made available upon request to the International VERA Secretariat and the International VERA Board.
10. It shall ensure that the personnel responsible for carrying out verification activities have the following qualifications and skills:
    - Sound technical and vocational training covering all the verification activities.
    - Good knowledge of the requirements of the verification procedures it carries out and the adequate authority to carry out these procedures.
    - Appropriate knowledge and understanding of the potential environmental impacts associated with the use of the technologies and of the main technical factors influencing environmental impacts.
    - Expertise in test methods and appropriate knowledge of the statistical methods used in the context of tests, measurements and the related calculations.
    - Appropriate knowledge of the market aspects of the technology, including users' needs and usual practices in the sector, the main actors, and the regulatory framework.
    - The ability to draw up reports, records and VERA Verification Statements, demonstrating that the verification procedures have been carried out and the VERA requirements have been satisfied.
11. It shall guarantee impartiality for carrying out the verification activities. The remuneration for the management of the Verification Bodies and the 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. It shall take out liability insurance for the verification activities.
13. It shall observe professional secrecy with regard to all information obtained in carrying out its tasks during verification activities, according to Part B of these guidelines, except in relation to the International VERA Board, the International VERA Secretariat, the European Court of Auditors, the VERA expert groups defined in Section A.II.4, and the competent authorities of the member states in which its activities are carried out. Proprietary rights shall be protected.
14. It shall take full responsibility for the tasks performed by subcontractors or subsidiaries, wherever they are established.

A.II.3.3 Roles and responsibilities

The **Verification Body** shall be responsible for:

1. Receiving and processing applications for verification, according to its responsibilities laid down in Part B of the GVG, up to the publication and post-verification phases and concluding contracts for verifications.
2. Assessment and approval of VERA test plans during any VERA verification process;
3. Organising an international VERA test, following the official procedures according to the GVG, by involving the International VERA Secretariat to ensure the international approval of the test plan, test results and VERA Verification Statement by all members of the IEG. **Important:** Verifications that are not approved and commented on by the whole IEG cannot be an official VERA Statement and therefore may not carry a VERA logo. This measure is to prevent disturbances in the market and to promote mutual recognition.
4. Ensuring the compliance of any test bodies involved in the verifications with the quality management requirements of the GVG, taking account of the possible accreditations of the test bodies, as provided under Section A.II.5.1.
5. Assessing, summarising, and approving the test results provided by a test
6. body in compliance with the requirements set in the GVG and the specific VERA test protocol, and sharing them with the IEG and including the International VERA Secretariat in the communication.
7. Drafting and approving the VERA Verification Statement.
8. Giving advice and suggestions for improvement to other VERA partners, relating activities and sharing the relevant information required for the work of the groups, including any documentation developed under VERA.
9. Providing technical advice to the applicants in the context of VERA procedures, and in particular with regard to the choice of test bodies and the use of the VERA Verification Statement.
10. Informing the International VERA Secretariat of any ongoing verification requests and the status of the verifications.
11. Annually reporting to the International VERA Board on the activities implemented in the framework of the VERA programme, including in post-verification.
12. Providing the International VERA Board and Secretariat with a termination notice of their verification duties (as referred to under A.II.3.3) for the VERA system at least 6 month prior to the termination date. The Verification Body shall complete the verification step that they are currently involved in before the termination date. In any case the Verification Body is responsible to legally handover the application to another

available Verification Body in order to not cause any unnecessary delays for the applicant.

A.II.4 VERA expert groups

A.II.4.1 Qualification and nomination

For each application aera of the VERA programme, a VERA expert group exist. These expert groups have two roles, one as International VERA Committee ('IVC') and one as International Expert Group ('IEG'). They have been established in order to ensure a prevailing and highly scientific level of testing in terms of the performance identified in the concluded verification results, in particular the VERA Verification Statements. Members of a VERA expert group can serve in both the IEG and in the corresponding IVC. These expert roles are split to be able to distribute the workload for the national experts to several people.

a) **International VERA Committee (IVC)**
   These are established in order to develop the harmonised test protocols, which define all test parameters, the test regime and the test conditions. The VERA test protocols ensure the same level of performance in terms of the verification results.

b) **International Expert Group (IEG)**
   The IEGs act as the scientific evaluation bodies in terms of addressing technical questions within the individual verification processes. They ensure the highest level of technical competence in the verification process.

The members of the VERA expert groups shall meet the requirements of independence, absence of conflicts of interest, professional impartiality and professional secrecy, as is required from the personnel of the Verification Bodies, and the International VERA Secretariat.

A.II.4.2 Nomination

The VERA expert groups should include experts from all participating countries – normally one or two per committee or group and country. Each participating country can nominate and delegate the experts it finds appropriate for the corresponding committee or group based on their fields of experience. Experts from other countries can be invited as guests, but with no right to vote in case of decisions. Guests have to sign a confidentiality agreement before a meeting.

The list of permanent IVC and IEG members shall be approved by the International VERA Board.

A.II.4.3 Roles and responsibilities

The role of **all VERA experts** is to provide:

- screening of potential environmental impacts associated with the use of technologies in the scope of the VERA programme, identification of relevant key environmental aspects and technical factors influencing these impacts;

- an exchange of good practice and experience concerning the implementation of VERA, offering mutual advice, sharing of information on relevant market aspects for the technology area and dialogue with relevant stakeholders;
- initiatives for their own research projects on VERA related topics; and
- consultation to the International VERA Board on guidance documents.

In particular and in addition, the role of the **IVCs** is to:

- draft the VERA test protocols to ensure standardised VERA tests, which will provide comparable results based on a well-defined test setup and validated test methods.

In particular and in addition, the role of the **IEGs** is to provide:

- possible assessment of existing data;
- assessment and approval of VERA test plans during any VERA verification process;
- assessment and approval of VERA test results for a VERA verification process, focussing on environmental performance and operational stability; and
- approval of the VERA Verification Statement.

In the case of a disagreement between a Verification Body and an applicant or another stakeholder, the relevant IEG shall give an expert opinion on specific cases or procedures, upon request from the International VERA Secretariat or one of the parties concerned.

The International VERA Secretariat shall inform the International VERA Board regularly about the activities of all VERA expert groups.

In the case of disagreements within the IVCs, the International VERA Secretariat will help to find a suitable compromise. If that is not possible, the International VERA Secretariat will summarise the information and inform the International VERA Board, which will act as an arbitration board for the topic.

A.II.6 Test bodies

Test bodies are organisations responsible for performing and reporting the testing of an environmental technology in accordance with the specific VERA test protocol. A test body may subcontract to qualified analytical laboratories for performing specialised laboratory analyses of test samples when required.

A.II.6.1 Approvement

The Verification Body shall control the fulfilment of all requirements of the GVG, including the quality management and general test requirements. To ensure the appropriateness of the test system and of the quality management system, the Verification Body has to perform a test system assessment in accordance with Part C, including a test system audit where applicable.

Test Body with ISO/IEC 17025 accreditation:
Where a test body proves its conformity by way of receiving accreditation for ISO/IEC 17025 with respect to all the methods of testing and calibration relevant for the verification process,

it can be presumed to comply with the requirements of the GVG for quality management and for the general test requirements for those methods.

In the absence accreditation for ISO/IEC 17025:
With respect to all the methods of testing and calibration relevant for the verification process, the GVG explicitly requires the Verification Body to perform a test system audit to assess the suitability of the test system and a quality management system. The ISO/IEC 17025 is the reference for the audit, and the GVG specifies that the Verification Body is responsible for deciding which requirements of ISO/IEC 17025 are relevant. The Verification Body should use the "EU ETV TWG Guidance 009 on auditing of test bodies " document and develop a protocol which fits their QA process.

The Test Body shall undertake the following steps:

- The test lab needs to state which VERA protocols they would like to quality for.
- The test lab needs to provide an explanation and an English translation where necessary of the test methods which they are accredited to as listed in the ISO 17025 certificate.
- The test lab needs to provide an explanation in an explanatory note of how they can perform the non-accredited test methods under ISO 17025 in the chosen protocols.
- The test lab needs to state how they apply quality assurance based on ISO 17025 to the non-accredited test methods.

The Verification Body is responsible to assess the information submitted during the nomination steps described above.

The test body and the Verification Body shall enter into a contract for the approvement assessment and the final report shall be submitted to the International VERA Secretariat and the International VERA Board for approval to be a test body for VERA. The test body can then be listed on the VERA website as an approved test body.

A.II.6.2 Qualification
The test body or organisation of which it is part shall be an entity that can be held legally responsible. Test bodies shall fulfil the relevant requirements described in Part C of this document (quality management), with respect to their role in the verification process (C.I) and quality assurance (C.III), as well as the quality management and general test requirements of the GVG.

The quality management and general test requirements of the GVG are those requirements of ISO/IEC Standard 17025 (general requirements for the competence of testing and calibration laboratories) that are considered relevant for the tests to be performed. The Verification Body is responsible for ensuring that the testing quality of the test body meets the requirements of ISO/IEC 17025, the relevant VERA test protocol and the GVG.

If tests consist of analyses with standardised methods, the test body performing those analyses shall be accredited to ISO/IEC 17025 for the relevant analytical methods. Routine

analytical quality control data, participation in proficiency tests for the analysis used and the relevant period shall be made available to the Verification Body upon request.

All test bodies shall demonstrate their competence and experience in testing in an agricultural environment. The International VERA Board may ask the test body to take part in an interlaboratory test to evaluate their performance in fulfilling specific VERA demands.

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. This is to be controlled by the International VERA Secretariat.

A.II.6.3 Selection
Test bodies shall be designated by the applicant to perform tests in consultation with the Verification Body.

Where the analysis of test samples is required for a verification process, analytical laboratories shall be designated by the applicant, in consultation with the test body and verification body concerned, or it can be subcontracted by the test body.
The applicant is responsible for contracting with test bodies and analytical laboratories, as well as for payment for the services provided by them.

A.II.6.4 Roles and responsibilities
A **test body** is responsible for:

- drafting the test plan, in accordance with the relevant procedures of the GVG, the relevant VERA test protocol in agreement with the applicant and in consultation with the Verification Body;
- performing the tests according to the test plan, ensuring the level of quality required in the specific VERA test protocol and, in case of measurements, also ensuring the requirements of ISO/IEC 17025 are met;
- performing analyses according to ISO/IEC 17025; and
- drafting the report on the tests performed, for transmission to the applicant and to the Verification Body; where applicable, the report of analytical data shall include the relevant measurement uncertainties and limits of detection.

A.II.7 Applicant

A.II.7.1 Qualification
The applicant 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 applicant can be another stakeholder that is undertaking a verification process involving several technologies (e.g. as part of pre-procurement procedures).

A.II.7.2 Roles and responsibilities
The applicant initiates and supports the verification of a technology from the first contact with the International VERA Secretariat or the Verification Body until the use of the VERA

Verification Statement after completion of the VERA process, or earlier termination of this process, where appropriate.

The **applicant** is responsible for:

- applying for a verification, and providing all data and information necessary to plan and implement the verification process;
- contracting with the Verification Body for the verification process, and with test bodies, where appropriate, and paying for contracted services;
- reviewing and approving the test plan;
- reviewing the test report(s) and VERA Verification Statement;
- providing timely access to a working example of the technology, accessories, user manuals, and training for the verification and test bodies; and
- complying with the rules for using the VERA Verification Statement.

If further tests are needed after the assessment of already existing test data, the applicant may need to perform additional tests following the GVG.

Part B: Verification procedure

B.I Introduction

The verification procedure is divided into a number of sequential steps. Figure 2 shows the general procedure as a brief illustration. A detailed flow chart of the verification process is provided in figure 3. The exact requirements are explained in the following chapters.

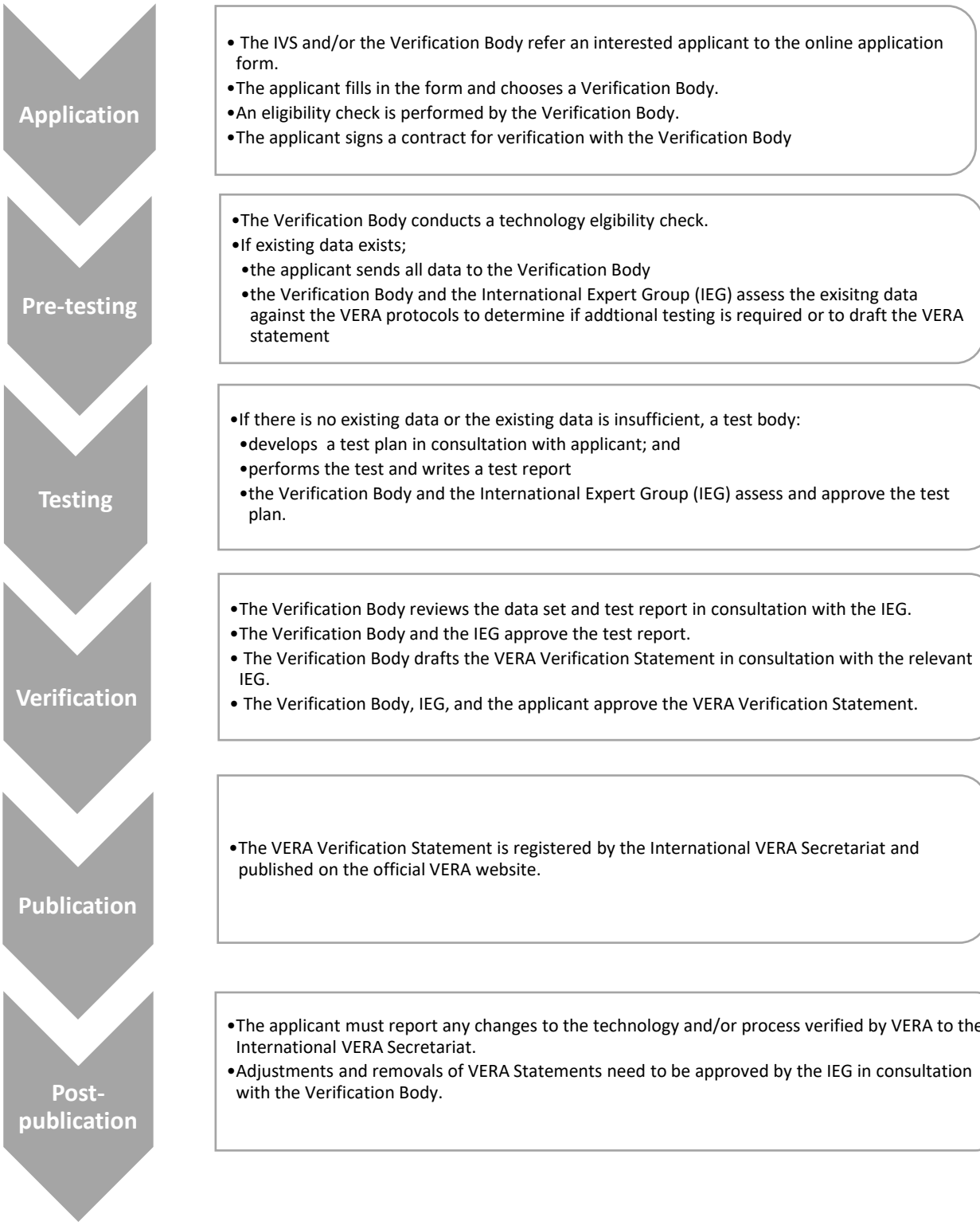

Figure 2 – Steps of the VERA verification procedure

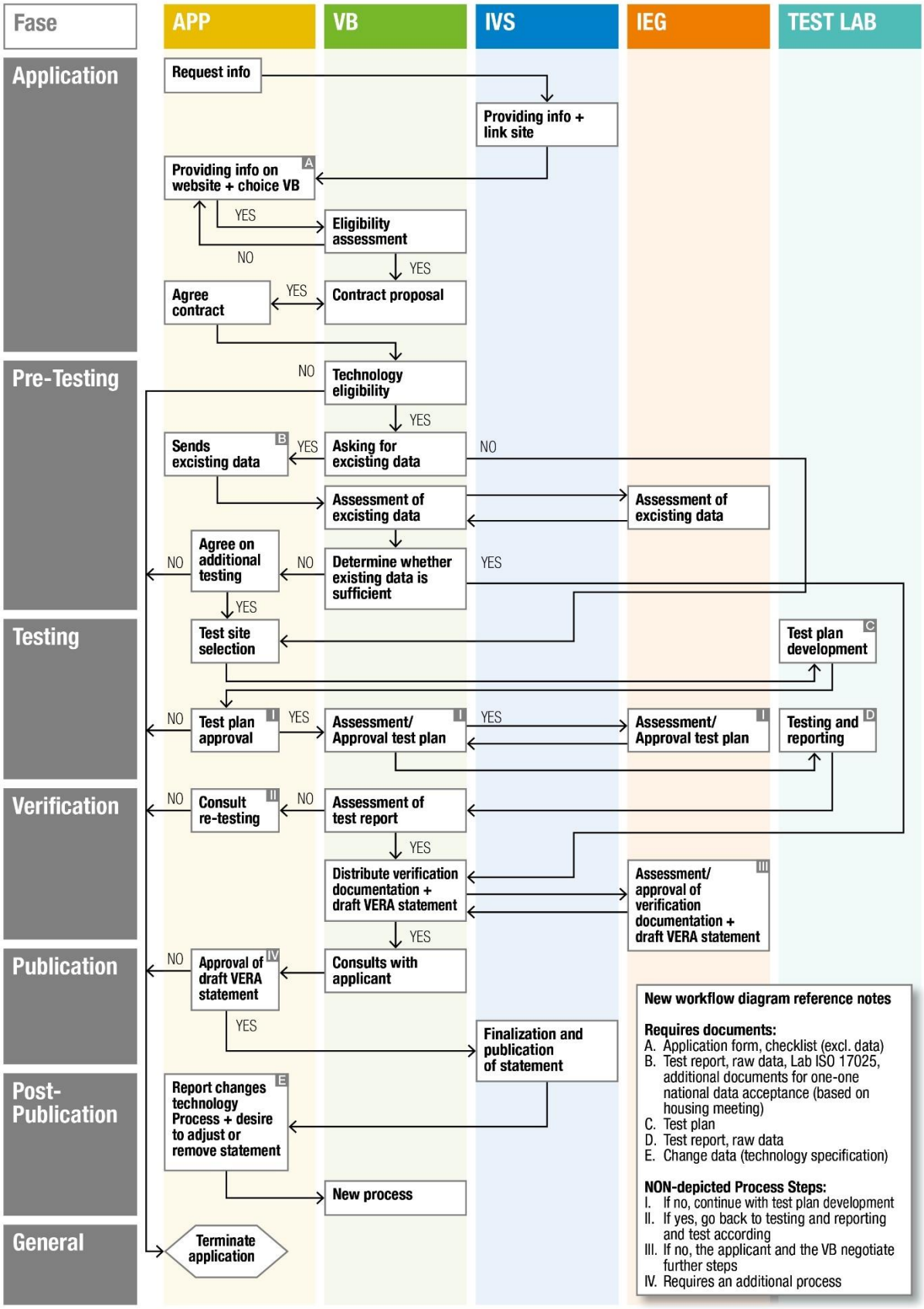

Figure 3 - Flow chart of VERA Verification

B.II Application

As the starting point for the verification, the applicant contacts the International VERA Secretariat and/or the Verification Body, and fills in the online application form for starting the eligibility assessment.

B.II.1 Application form and eligibility assessment

Before sending the full documentation for the verification, the applicant fills out the online application form with details of the main characteristics of the technology to be verified, following the template as provided in Appendix 3.

The Verification Body will decide if the technology meets the scope of the VERA framework and if it can be accepted for a VERA verification by using the following eligibility criteria:

- ✓ Is the technology description sufficiently clear?
- ✓ Does the technology fall within the scope of VERA, and is it verifiable under VERA?
- ✓ Does the technology present any environmental added value?
- ✓ 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?
- ✓ Does the technology meet user needs in terms of functionality, claimed performance and environmental added value?
- ✓ Can the technology confirm sufficient operational reliability?
- ✓ Does it perform in line with the applicable legal requirements?

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

Additionally, the Verification Body shall discuss the possibility to access the different VERA member countries' markets with the applicant upon request. Additional testing and reporting requirements may be required to achieve approval in the different countries. These additional requirements should be explained to the applicant and further discussed in collaboration with the International VERA Secretariat in order to include any national requirements and/or restrictions.

Note: any existing data forwarded by the applicant will not be assessed yet. This will happen in the Pre-testing phase, as described in B.III.2.

Verification Body turnaround time for the eligibility check: 10 working days after the request has been received.

B.II.2 Contractual agreement

If the applicant decides to proceed with verification, the Verification Body may provide a detailed cost estimate for the verification procedure (excluding tests) together with a list of the potential tests and analyses to be performed. Based upon the cost estimate, a verification

contract is drafted, and signed by the applicant and the Verification Body, and, subsequently, the verification procedure can be initiated.

Please see Appendix 6 for the type of information that should be included in the verification contract.

B.III Pre-testing

B.III.1 Technology Eligibility Assessment

If the application is considered to be eligible and if the applicant decides to perform the verification, the full application follows.

It should be noted that if the information provided at this stage leads the Verification Body to change its assessment of the technology's eligibility, the Verification Body shall revise this assessment, and inform the applicant and the International VERA Secretariat of this and of the consequences for the verification process.

The full application shall include:

- ✓ The **name and address** of the applicant, and if the application is lodged by the authorised representative of the technology owner or manufacturer, the authorised representative's name and address.

Technical documentation. The technical documentation will make it possible for the Verification Body and the VERA experts to understand the technology. It must be in the English language, if not requested otherwise. Please see Appendix 6 for the type of information that should be included in the technical documentation.

Verification Body turnaround time for the assessment: 10 working days.

B.III.2 Assessment of existing data

As part of the development process and market implementation activities, the applicant may already have at its disposal a set of test data that is relevant to the verification procedure and that may serve (in full or in part) as the basis for the verification. These data can be submitted to the Verification Body for assessment in view of determining their acceptability to the verification process.

The existing data submitted shall include:

- The full address and status (independent/dependent, certifications and accreditations, etc.) of the data supplier and of any third parties involved (test design, witnesses, etc.).
- The test plan supplied in a format that allows assessment against the relevant VERA test protocol. A table of contents for the test plan is given in the appendix of each VERA test protocol. This shall be followed.
- The raw test data and test report. The format of the test report to be used is given in each VERA test protocol.

The necessary quality control for existing data is described in Section C.II.

In order to facilitate the acceptability of the existing test data, it is necessary that tests carried out before a VERA application are performed by organisations accredited as complying with the requirements of ISO/IEC 17025 for the relevant test methods.

The Verification Body shall assess the existing test data against the parameters, methods, quality requirements and target values defined in the relevant VERA test protocol. After consultation with the International Expert Group (IEG), the Verification Body shall conclude if the existing data comply with the requirements of the VERA protocol. If the existing data is incomplete additional testing is required and the applicant must follow the steps as described in the testing phase detailed in section B.IV If the existing data is compliant to the VERA protocol and is presented in a test report pursuant to VERA the applicant may skip the testing phase and enter the verification phase as described in section B.V.2.

Verification Body turnaround time for the assessment: 10 working days
IEG turnaround time for the assessment: 10 working days.

B.IV Testing

After the evaluation of existing data and the decision whether additional tests are required, the testing phase is entered.

The steps to be undertaken as part of the testing phase are as follows:

1. **Test site selection**
2. **Test plan development**
3. **Testing**
4. **Test reporting**

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

The tests shall be planned and performed in accordance with the relevant VERA test protocol and the GVG. The test plan and the test report must be written in English.

B.IV.1 Test site selection

The test sites shall be defined by the test body after consultation with the applicant in accordance with the requirements set in the corresponding VERA test protocol.

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

The test body shall ensure that the selection of the site will result in no commercial or other interests possibly influencing the test results. The applicant may not have any commercial or technical interests in the test site. If a site that is dependent upon the applicant 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 achieved under undue influence.

In a case where there are any doubts, the Verification Body should be consulted to prevent unnecessary costs arising from testing at an inappropriate test location.

B.IV.2 Test plan development

The test plan documents the implementation of the VERA test protocol in the tests used to produce 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 version of the relevant VERA test protocol used shall be given. A table of contents for the test plan is given in the appendix of each VERA test protocol.

The test plan shall be drafted by the test body, and approved by both the applicant and the Verification Body. In addition, the IEG will have the opportunity to comment and will approve the test plan as well. This measure aims to ensure the correct application of the VERA test protocol on the test setup, and thus save costs by preventing the taking of unnecessary additional measurements.

The test method(s), and appropriate selection and use of statistical procedures used shall be given in reference to the standards or equivalent public references in accordance with the VERA test protocol.

The test schedule shall be given.

The description of the test operations shall allow the test staff to perform the tests as required under the VERA test protocol and to replicate operations with the least possible variation during the testing. In addition, it shall allow the tracing of any errors back to their source in terms of equipment, methods, operations or staff.

The test plan shall describe the quality assurance for the specific test planned, as provided in C.III.3.

Verification Body turnaround time for the assessment: 4 weeks
IEG turnaround for the assessment: 4 weeks

B.IV.3 Testing

Testing shall be done according to the test plan as provided in Section B.IV.2, based on the relevant VERA test protocol. Before the measurements start, the test body should clarify to the Verification Body on which days measurements will be executed.
Amendments to and deviations from the test plan shall be recorded and approved by the applicant and the Verification Body. The amendments and deviation reports shall be documented as part of the testing records. If they are not, it cannot be assumed that the verification body and/or the IEG experts will accept the test report as basis for a verification.

B.IV.4 Test report

The format of the test report to be used is given in each VERA test protocol. It must be written in the English language, but the raw data can be in a local language. The test report is drafted

by the test body, and sent to the to the applicant and to the Verification Body for approval. The verification and approval process is described in section B.V.

Data of all performed measurements should be made available in order to avoid data selection. 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 report shall include all analytical and calculated data, as well as a reference to the staff that performed the test. The methods of calculation, measurements and performance parameters from the raw data shall be described, including a comprehensive appraisal of measurement uncertainty. A thorough description of the test set up, including details on the equipment and software used, shall be given. A checklist might provide some guidance.

B.V Verification

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

1) **Verification Body assessment and approval of the data and test report**
2) **Drafting the VERA Statement**
3) **IEG assessment and approval of the test report and VERA Statement**
4) **Consultation with the applicant**
5) **Approval process**

When the performance data are considered accurate and complete by the Verification Body, it undertakes a general assessment of these data, reviews the procedures and includes the approval by the IEG before the verification is confirmed.

B.V.1 Verification Body assessment and approval of the data and test report

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

- existing data that is accepted after the assessment of existing data, as described in B.III.2;
- test data from the test report, as provided in Section B.IV.4;
- Data on operational and environmental performance and additional parameters, as provided in the full application, if they are not already included under existing data or test data above.

The Verification Body shall collect and evaluate all reports and documentation for the verification procedure in order to check that they are complete and consistent with each other. It shall assess whether the collected data satisfy the data quality requirements, as provided in the VERA test protocol, and the requirements of the GVG. This includes the quality assurance requirements described in the VERA test protocol and provided in Section C.III. For data from the test report, this includes a review of the procedures followed during testing and the assessment of the test data quality based on the test quality assurance described in the test plan.

The Verification Body shall assess the appropriateness and usefulness of the additional information for the VERA Verification Statement, and draft the necessary caveats to avoid confusion or a misleading interpretation of this additional information.
Any deviations to the VERA test protocol, the test plan, the test methods and the quality assurance procedures of the test body shall be described and summarised by the Verification Body in the draft VERA Statement. The Verification Body shall conclude whether there is a defendable and complete data set in order to draft the VERA Statement. If this is not the case, the assessment of the existing data and the testing phase may be iterated in consultation with the applicant.

Verification Body turnaround time for the assessment: 4 weeks.

B.V.2 Verification Body drafting the VERA Statement

When the Verification Body reaches a positive conclusion on the assessment of all data, the Verification Body shall draft the VERA Verification Statement for assessment and approval by the IEG. It shall summarise the verification results and include:

- a summary description of the technology verified, complete with the denomination or reference number, purpose and conditions of use;
- the verified parameters, including the field of application, conditions and assumptions under which the verified performance is met;
- the specific VERA test protocol applied, including its version; and
- a summary of the test set up, test procedures and results stated by the test bodies, including the relevant statistical parameters as described in the specific VERA test protocol.
- a summary of the deviations to the VERA test protocol, the test plan, the test methods and the quality assurance procedures of the test body

The test results should be given in terms of absolute numbers and also in relation to a common reference system, if it is applicable. The overall VERA Verification Statement should provide an emission reduction rate expressed as a percentage and may state an emission factor, if determined.

The cover page and the following pages of the VERA Verification Statement shall follow the template provided in Appendix 5. Each VERA Verification Statement shall be serially numbered and shall be signed by the Verification Body. The serial number for the VERA Verification Statement is provided by the International VERA Secretariat, which registers all VERA verifications.

Turnaround time Verification Body: 5 working days.

B.V.3 IEG assessment and approval of the test report and draft VERA Statement

The Verification Body informs and provides all documentation, including their assessment and VERA Statement, to the IEG for assessment and approval. The International VERA Secretariat, in its role as the guardian of the general process and requirements laid down in the GVG, shall always be included in the communication with the relevant IEG.

The main focus for the experts' assessment is the determination of compliance with the VERA test protocol in terms of:

- environmental added value (emission reduction);
- operational stability;
- the application of the correct measurement and statistical methods allowed by the VERA test protocol;
- description of dangerous side effects or other severe issues;
- fulfilment of the test requirements and conditions set out in the VERA test protocol; and
- plausibility of the data and results.

The experts can use the IEG evaluation form if it is helpful for them to do so.

If the experts distinguish dangerous side effects or other severe issues of any kind in relation to the tested technology, these aspects will be summarised by the International VERA Secretariat for further consideration. To give an example, although a technology might be suitable for reducing emissions, it might be harmful to people, livestock or the environment as a result of producing toxic by-products.
In a case where there are disagreements within the expert group about the severity of the side effect, the International VERA Board may decide if this technology can be verified at all and may exclude this type of technology from VERA verification. It is a case-by-case decision of the VERA experts on how to handle side-effects and if the International VERA Board should be involved. In any case, the side effects shall be described and highlighted in the VERA Verification Statement, including the measurement data and any known measures taken to prevent these side effects; e.g. by applying specific conditions during use of the technology. It must be possible to decide whether the side-effects are too severe or not.

The Verification Body shall record the experts' evaluation in the verification documentation and share it with the applicant as described in Section B.V.4. Any additional questions related to the technology to be verified and to the test setup shall be clarified with the applicant to assure a holistic view and a reliable assessment by the experts.

IEG turnaround time for the assessment: 4 weeks. If an IEG member does not respond before the deadline of the commenting period, it is considered to be an approval.

B.V.4 – Consultation with the applicant

The Verification Body shall consult with the applicant on the assessment of the verification documentation and the VERA Statement received from the IEG. The applicant shall answer any outstanding questions and submit an additional required information in order to complete the verification step and receive the approval from the verification body and the IEG. All requested information from the applicant shall be collected by the Verification Body and shared with the relevant IEG for approval.

Verification Body turnaround time to consult with the applicant: 5 working days.

IEG turnaround time to review answers: 10 working days. If an IEG member does not respond before the deadline of the commenting period, it is considered to be an agreement

B.V.5 – Approval Process

After the assessment and approval of the testing and technical data by both the Verification Body the relevant IEG, the assessment is considered to be final. The result of this stage shall be the completed VERA Statement justifying that the verified technology evaluation is considered to be complete, appropriate, and based on reliable test methods and test results.

In the case of unsolvable disagreements within the IEG, the topic has to be clarified by the International VERA Board representing the mediation body. The International VERA Secretariat will coordinate the exchange of information, and will provide a summary of the different issues and points of view in cooperation with the Verification Body involved.

In a case where the assessment leads to the conclusion that the data and documentation does not fulfil the requirements of the VERA test protocol or the GVG, the Verification Body will consult with the applicant to start additional measurements. If the applicant is not willing to do so, the verification process is then considered to be 'rejected' and ends immediately. If re-measurements are conducted, the process continues with the testing as described in Section B.IV.

After the final approval, the VERA Verification Statement shall be submitted to the applicant. The applicant should approve the publication of the statement in terms of the protection of his/her intellectual property.

In a case where there are any disagreements or deviations from the GVG, the International VERA Secretariat, in its coordinating function, can approach the International VERA Board for further inspection and clarification.

B.VI Publication

The full VERA Verification Statement, cover page and test summary shall be registered and published by the International VERA Secretariat on the official VERA website: http://www.vera-verification.eu.

The complete verification documentation, including the verification reports, remains within the VERA organisation and may not be made publicly available to protect proprietary rights.

B.VI.1 Languages

All VERA Verification Statements must be issued and published in the English language to ensure the transparency of each VERA verification. The results need to be easily accessible for all partners and stakeholders. On special request, the manufacturer can order VERA Verification Statements in any language of interest. In the case of a dispute, the English version of the VERA Verification Statement is the legally binding document.

All translations of VERA Verification Statements into local languages, no matter if translated by the company or by a professional translator (at a cost), have to be approved by at least one VERA expert from the relevant country.

Translated VERA Verification Statements can solely be approved and published via the International VERA Secretariat to prevent misunderstandings and the misreading of results. The issue date of each statement is the date of issue for the respective language version.

B.VII Post-Publication

B.VII.1 – Adjustment and Removal of the VERA Statement

Adjustment:
The applicant shall ensure that the verified technology conforms to the published VERA Verification Statement. If any of the following **changes to the verified technology** have occurred, the applicant shall report this to any International VERA Secretariat or the Verification Body with the data needed to evaluate whether the conditions for verification have changed:

- Change of ownership;
- A design change, or a change to the intended application or operational conditions;
- Other changes likely to modify the performance results reported in the VERA Verification Statement. Substitution of one part for another with the same documented specifications is not considered to be a change, unless it affects the environmental performance or one of the parameters reported in the VERA Verification Statement.

The Verification Body shall evaluate the reported changes and data at the cost of the applicant. If, after evaluation and where necessary in consultation with the IEG (if the changes are only editorial or do not have an influence on the performance of the technology, it may not be necessary to involve the IEG), the Verification Body concludes that the conditions for verification have changed, a new verification procedure shall be initiated by the applicant for this technology or, alternatively, the VERA Verification Statement shall be withdrawn.

Removal
The VERA Verification Statement shall be withdrawn by the International VERA Secretariat if misused by the applicant. '**Misuse**' is defined as the violation of the conditions of the VERA verification. In the case of **withdrawal**, the VERA Verification Statement shall be removed from the Internet.

The applicant may also ask for the VERA Verification Statement and associated report to be withdrawn from the Internet; for example, if the technology is no longer on the market. This should be requested by a letter sent to the Verification Body or to the International VERA Secretariat directly, with a commitment to not use the VERA Verification Statement, any reference to it and the VERA logo anymore. The Verification Body shall transmit this request to the International VERA Secretariat, and the VERA Verification Statement shall consequently be withdrawn from the VERA website.

B.VII.2 General VERA communication terms

B.VII.2.i Use of the VERA logo

The name and logo of VERA may be used without restrictions when reporting on the VERA programme as a whole; i.e. when it is not about the verified performance of a specific technology. Therefore, an article in the press, or a post in a blog or on a website may use the VERA logo to advertise the programme.

In a case where someone wants to report on the verification of a certain technology, especially when publicising its performance, all of the following elements must be included and mentioned:

- the name of the technology and manufacturer;
- the application area;
- the verified performance, including specific operational conditions; and
- an explicit reference to the VERA Verification Statement (number, date of verification and website).

The VERA name and logo may not be used:

- as part of a company name, product name, service name, domain name or website title – with the exception of VERA Verification Bodies, which are allowed to use them in the context of their VERA activities; or
- in association with a company or technology that has not obtained a VERA verification.

B.VII.2.ii Use of the VERA Verification Statement

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

The applicant may refer to the VERA Verification Statement as follows: '*The technology XX was verified in the framework of the VERA programme for the application AA (including the purpose and application conditions) by the VERA Secretariat/Verification Body on DD.MM.YYYY. The VERA Statement has been registered under number NN and is accessible at the following address: http://www.vera-verification.eu.*'

The applicant shall not use the **VERA logo** alone, either on products or on published (printed, website or other) matter, other than the VERA Verification Statement itself. The VERA logo may be used on publications together with the reference to the VERA Verification Statement, as detailed above, as long as the meaning of VERA is correctly reflected by the publication, avoiding, in particular, any confusion with endorsement or approval of the technology. The VERA logo should be reproduced according to the official artwork. The colour code is R=19, G=165, B=56.

B.VII.3 Complaint management

Complaints related to the quality of a VERA verification should be addressed to the relevant Verification Body or the International VERA Secretariat. In the case of a disagreement on a technical issue between the Verification Body and another party in relation to the VERA programme, an opinion may be asked of the relevant IEG by the International VERA Secretariat. In a case where the Verification Body decides not to follow the opinion of the IEG, a detailed report justifying this decision should be addressed to the International VERA Secretariat. The International VERA Secretariat, in consultation with the International VERA Board, may decide on appropriate measures on the basis of this report.

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

Complaints related to the competence or qualification of a VERA partner or **complaints related to VERA procedures** should be addressed to the International VERA Board via the International VERA Secretariat.

B.VII.4 Verification documentation

At the end of each verification, the Verification Body shall compile all records and produce documentation on the decisions such as the IEG evaluation form. This will be archived for at least 15 years by the Verification Body for quality assurance. The archive may be digital files and/or hard copies. In addition, it will be shared with the International VERA Secretariat and the applicant.

The verification report shall be compiled from all information relevant for the verification, as provided under Section B.IV, and it shall include all relevant documents produced during verification, such as the:

- eligibility check;
- application (including all technical descriptions of the technology);
- contract and any agreements;
- test plan (if it is not part of the test report issued by the test body);
- all test reports;
- experts' evaluation and summary;
- important correspondence with the applicant or any other partner involved (e.g. approvals or other agreements); and
- history of the verification process (i.e. a document that lists all individual steps and any incidents relating to the verification).

Part C: Quality management

In order to ensure confidence in the verification results, strict quality management of the involved organisations and quality assurance of the verification process are required. All bodies involved in verification (Verification Body, test body and subcontractor) shall have implemented a quality management system meeting at least the principles of EN ISO 9001 (Quality Management Systems – Requirements) or an equivalent standard, and shall conform to the requirements of the GVG.

The common language within VERA and for documentation is English.

Verification Bodies shall be authorised and approved by the International VERA Board and meet the requirements listed in Section A.II.3.1 of the GVG. An accreditation according to ISO/IEC 17020 is desirable but not obligatory, if the Verification Body fulfils all requirements described in the GVG.

Test bodies performing standardised analyses shall be accredited according to ISO/IEC 17025 (General Requirements for the Competence of Testing and Calibration Laboratories) for the relevant methods of analysis, if any. For other test bodies, analogous to the Verification Bodies, accreditation according to ISO/IEC 17025 is desirable but not obligatory , if the body fulfils all requirements described in Sections A.II.6.1 and A.II.6.2 of the GVG.

The following process map (Figure 4) indicates the major processes and gives an overview of the system.

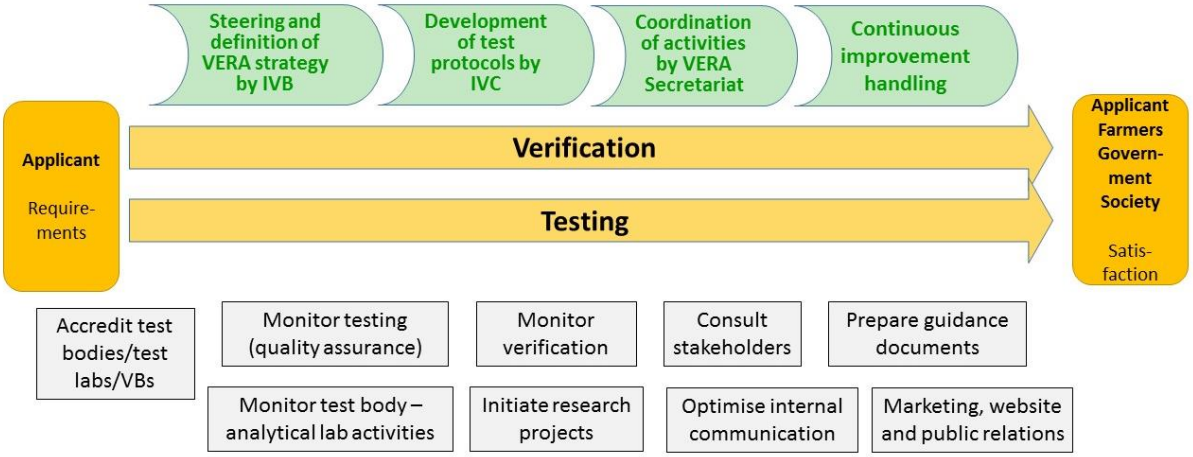

Figure 4 – Process map of the VERA programme

C.I Quality assurance of the verification process

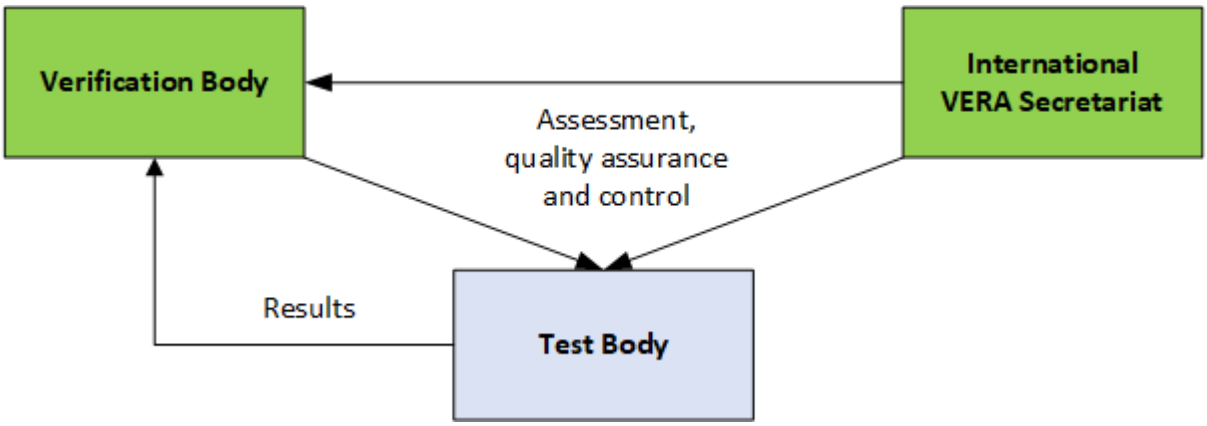

Figure 5 – Principles of quality assurance in VERA

The Verification body shall ensure that the test bodies 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 the GVG. The Verification Body shall warrant that the test body performs test planning, execution and reporting according to the procedures of the GVG and the relevant VERA test 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 the GVG. A test body can demonstrate meeting the quality management requirements and the general test requirements of the GVG through their accreditation according to ISO/IEC 17025 for the relevant methods of testing and calibration. In order to ensure that all quality requirements provided in the GVG are met, the Verification Body may have to supervise or implement specific audits in addition to or instead of the proof of compliance provided through accreditation. This shall be done in accordance to Section A.II.6.2 of the GVG.

The **test body** has the overall responsibility to ensure that the tests are done according to the GVG, and the requirements for test design and data quality of the relevant VERA test protocol. The test body shall warrant that the analytical laboratory performs planning, performance and reporting of analyses according to the requirements of the GVG and the relevant test plan, and provides sufficient quality assurance.

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

C.II Quality control for existing data

The quality of the existing data shall be evaluated by the Verification Body by checking the documentation, raw data and quality control data from the data production. For this, each

Verification Body should develop an own checklist which complies to the EU ETV document TWG 005 "Guidelines on the Acceptance of Existing Test Data". All actions and reasons for approval or rejection have to be clearly described and documented. Only data calculated without testing is not acceptable for verification.

The existing data shall meet the requirements on test design and data quality as set in the relevant VERA test protocol and the GVG. The test plan and test report shall be provided and any other information covering in substance the content as defined in the VERA test protocol.

The existing test data must be produced under quality assurance compliant with ISO/IEC 17025. Suitable and sufficient documentation, in terms of quality assurance, is to be provided on procedures and records; in particular, relating to staff training and qualifications, the calibration of instruments, measurement and data logs, tractability sheets, non-conformities, test methods and method validation reports, etc. If such documentation is not available, is not suitable or not sufficient, the data cannot be accepted.

In addition to checking the documentation and data in an in-depth desk review, the Verification Body may undertake one or more of the following actions to evaluate the quality, reliability and acceptability of the existing data; particularly, in the absence of accreditation:

- *Spot checks*; i.e. the random checking of a certain portion of the data, including all steps with potential errors. In a case with several mistakes, a complete check may eventually be necessary.
- *Witness checks*; i.e. an onsite audit with evaluation of the performance of the testing, focussing on accuracy of measurement, measurement devices/methods, repeatability, etc.
- *Conditional acceptance of existing data*, in which case the conditions for acceptance shall be approved by the IEG; these conditions may include re-testing.

C.III Quality assurance

C.III.1 International VERA Secretariat

The International VERA Secretariat shall have and apply the appropriate procedures for ensuring that any relevant VERA activity is reported to the International VERA Board. For VERA verifications, it must ensure that the required level of quality and reliability is applied by all parties involved; i.e. how the VERA Secretariat plans quality assurance in terms of review, audit or initiating interlaboratory tests. The selection of measures, its frequency and limitations have to be approved by the International VERA Board.

The International VERA Secretariat involves the experts of the IEG for reviewing documents. The experts shall not belong to an organisation hosting or having a financial interest in the VERA Secretariat, or in the applicant and its technology to be tested. Their competence shall be documented in a list of experts by the International VERA Secretariat. The national members of the International VERA Board must demonstrate that the recruited experts are free from any undue commercial, financial or other pressures that may adversely influence the judgement of the experts. The experts shall be nominated by the International VERA Board, as laid out in Section A.II.4.

The reviewing process followed by the international experts shall be documented by using the IEG evaluation form to ensure an adequate level of quality and reliability. This document file shall be archived and made available for relevant VERA actors.

C.III.2 Verification Body

The Verification Body shall have and apply the appropriate procedures for ensuring that the plans, performance and products of verification activities meet the required level of quality and reliability; i.e. how the Verification Body plans quality assurance in terms of review, assessment and audit. This shall include the reviews, assessments and audits detailed in Table 2 – Quality assurance steps for the Verification Bodies. The procedure shall describe the process of test body audits and audit evaluations, including audit responsibilities and planning, auditor training and competences, and audit reporting.

Entity	**Object**	**Verification Body (Internal Auditor)**	**External Auditor**
Test body	Test plan	Review and approve	International VERA Secretariat
Test body	Test system and test body quality management system	Assessment (with or without system audit)*	
Test body	Test report	Review and approve	
Verification Body	Verification documentation and VERA Verification Statement	Produce and approve	

Table 2 – Quality assurance steps for the Verification Bodies

*The test system assessment shall include a test system audit for test activities that are not covered by an ISO/IEC 17025 accreditation, if the test body has not already been audited by the Verification Body in the same year as stated in Section A.II.6.1.

The quality assurance planned for a specific verification must be described, providing the names of personnel and internal auditors – including their competences, as well as the timing of reviews and audits – where applicable. This may require amendment following the assessment of existing data.

The reviewing process by internal and external audits, and assessments shall be documented to ensure an adequate level of quality and reliability. Complaints by applicants, or by or about test bodies shall be addressed in accordance with the relevant procedures. A summary of all quality-assurance- and quality-management-related measures and activities shall be shared with the International VERA Secretariat on behalf of the International VERA Board in an annual report.

C.III.3 Test body

The test body shall have and apply appropriate procedures for ensuring that the plans for the performance 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 detailed in Table 3 – Quality assurance steps for test bodies, unless

provided differently in the VERA test protocol. Where appropriate, the procedure shall also describe the process for a performance review for subcontractors.

Entity	Object	Verification Body	Responsible test body staff
Test body	Test plan	Review and approve	-
Test body	Test system and test body quality management system	Test system control, via audit(s) if appropriate	-
Test body (analyses)	Method performance		Validation **
Test body (analyses)	Analytical performance		Quality control and review **
Test body	Test report	Review and approve	-

Table 3 – Quality assurance steps for test bodies

** This shall be part of the quality management system of the test body

The quality assurance planned for a specific test must be described in the test plan, and must provide the names of experts and auditor, as well as the timing of reviews and audits, if any.

The review of analytical performance shall include:

- Laboratory-stated measurement uncertainties and limits of detection;
- analytical quality control data; and
- information on 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. A description of the method for documenting reviews shall be included in the quality manual or in a dedicated quality plan.

Non-standard measurement methods have to be clearly described in the test plan, including required calibration and quality control procedures. Non-standard test methods have to be validated as per ISO/IEC 17025 section 5.4.5., if not described as a possible testing method in the specific VERA test protocol.

The records for 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, which is not shorter than ten years from the completion of the test.
Applicant complaints shall be addressed in accordance with the relevant procedures of the test body and reported to the Verification Body.

Part D: Supporting Documents (Appendices)

Appendix 1: Glossary of terms and definitions

Accreditation	This shall have the meaning assigned to it by Regulation (EC) No. 765/2008.
Additional parameter	Information on a technology, not covered by performance, operational or environmental parameters, but considered a part of the verification process because of its usefulness and relevance for technology users.
Amendment	This is a change to a test plan before the verification or test step is performed.
Deviation	This is a change to a VERA test protocol or a test plan that is done during the performance of a verification or test step.
Environmental added value	The reduction of an environmental pressure or a positive impact on the environment, including, but not limited to, the removal, prevention, reduction or mitigation of pollutants released to the environment; the restoration of environmental damages; or use of natural resources in a more efficient and sustainable manner.
Environmental parameters	These are measurable parameters related to potential environmental impacts or the environmental added value.
Environmental technologies (ET)	These are all technologies that provide an environmental added value compared to the relevant alternatives.
General VERA Guidelines (GVGs)	This is the description of the principles and general procedures to be followed when the VERA programme verifies an environmental technology in agriculture.
Harmonised standard	This is 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 European Commission in accordance with Article 6 of that directive.
International Expert Group (IEG)	This is a group of nominated experts from the participating countries for each VERA test protocol who will comment the VERA verifications.
International VERA Board (IVB)	This is the steering group of the VERA programme, composed of representatives of the participating member states.
International VERA Commission (IVC)	This comprises the nominated experts from the participating countries who develop and review the VERA test protocol. A corresponding IVC exists for each VERA test protocol.
International VERA Secretariat (IVS)	Ensures the overall coordination and support of the VERA programme. The IVS is nominated by the IVB.
Operational parameters	These are measurable parameters that define the application, and the verification and test conditions.
Performance claim	This is a set of quantified and measurable technical specifications, which are representative of the performance of a technology in a specified application and under specified conditions of use.

Purpose	This is the measurable property that is affected by the technology and details how it is affected.
Ready to market	This means that the technology is available on the market or is at least available at a stage where no change affecting its performance will be implemented before introducing the technology onto the market.
Spot check	The auditing of a laboratory through the random checking of a certain portion of test data, including all steps with potential errors.
Technology	This is the practical application of technical or scientific principles to achieve a given purpose. The term 'technology' covers products, processes, systems and services.
Technology group	This is a class of technologies serving the same or closely related purposes; i.e. used for the same application.
Test performance audit	This is the quantitative evaluation of a measurement system as used in a specific test; e.g. the evaluation of laboratory control data for relevant periods, results from interlaboratory tests and the control of calibration of measurement devices.
Test system	This is a system in which tests are carried out; e.g. the qualification of personnel, the calibration of instruments, sampling procedures, data handling, documentation, etc.
Test system assessment	Determining the suitability of the test system and quality management system of a test body in the form of a risk assessment associated with the test protocol and the general verification guidelines. A remote and/or onsite audit can be a part of it.
VERA test protocol	This is the test protocol elaborated by the IVC and approved by the IVB, which describes the specific process of testing a certain technology, and applying the principles and procedures of the GVGs.
Verification	This is the provision of objective evidence that the technical design of a given environmental technology will ensure the fulfilment of a given performance claim in a specified application, taking any measurement uncertainty and relevant assumptions into consideration.
Verification Body	An organisation that is authorised as such by the IVB to perform the verifications and issue the VERA Verification Statement. It can be identical to the National VERA Secretariat.
Witness checks	An onsite audit with the evaluation of the performance of the testing, focussing on the accuracy of measurement.

Appendix 2: List of Templates

Templates may be modified by the IVC, the IEG or IVB, and published as a guidance document, without the need to update the GVGs.

The templates are a suggestion, and are not mandatory if not stated otherwise in the GVG or in the VERA test protocol.

Template	File documentation (with latest versions)
Application form	VERA website Content in Appendix 3
Terms and conditions for VERA application	VERA website Content in Appendix 4
VERA Verification Statement	Content in Appendix 5
IEG evaluation form	Shared with all IEG members
Checklists for the test report for: - Air cleaners - Housing systems - Land-applied manure - Manure separation - Covers	Part of the VERA test protocol
Test plan for: - Air cleaners - Housing systems - Land-applied manure - Manure separation - Covers	Part of the VERA test protocol
Contract – test site – for: - Air cleaners - Housing systems - Land-applied manure - Manure separation - Covers	Part of the VERA test protocol VERA website

Appendix 3: Application form (template)

Application for a VERA Verification Statement

Application date: _____

Applicant	
Company	
Contact person	
Address	
ZIP Code	
City	
Phone	
Email	
Website	
Manufacturer	

Test	
Test protocol to be applied	☐ Housing and management systems ☐ Air cleaner ☐ Covers ☐ Slurry separation ☐ Land application
☐ The technology was applied for VERA before Date: _____ Institution: _____	
Existing test data available?	☐ Yes ☐ No
Date of completed test	
Test institute(s)	
Contact person	
Test institute accredited?	☐ Yes to ISO 17025 ☐ Yes to _____☐ No

Technology	
Product name	
Basic principle	
Animal category	☐ Pigs ☐ Cattle ☐ Poultry ☐ Fur ☐ Other:
Level of production	☐ Finishing pigs ☐ Piglets ☐ Dairy cows ☐ Calves ☐ Laying hens ☐ Broilers ☐ Others:_____
Main environmental effects	☐ Ammonia ☐ Odour ☐ Dust ☐ Other _____
Necessary conditions for environmental performance	
Limitations	
Side effects (e.g. noise, electricity consumption or GHG)	
Other benefits	
Relevant alternatives	
Natural resources (water, energy or other) are under direct control?	☐ Yes ☐ No
Main technical standards, regulations or references applicable to this technology	

Is the technology operationally stable?	☐ Yes ☐ No
Is the technology available on the market?	☐ No ☐ Yes, since …… (‘year’) ☐ Prototype ☐ Pilot scale demonstration unit
If prototype/pilot: list planned changes	
Intellectual property rights: Sole and full owner of technology?	☐ Yes ☐ No
Are there any intellectual property rights’ 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 VERA programme? ☐ Yes ☐ No	

Technology list

☐ Should the technology be admitted to the Danish Technology list?
☐ Should the technology be admitted to the Dutch Rav list?
☐ Should the technology be admitted to the Belgian AEA and/or PAS List?

Appendix

Please add the following documents to your application:

☐ User manual
☐ Test report(s), if available
☐ Additional documents
(e.g. technical documentation, licence/intellectual property rights, health and safety requirements and statements of fulfilment of regulatory requirements)

Conditions

☐ Applicant has read and agreed to the terms and conditions for the submission and processing of the application for a VERA Verification Statement, and the General VERA Guidelines.

Please note that, once a verification contract is concluded, the main process documents, including the application form and verification documents, will be shared with the International VERA Commission (IVC), the VERA Expert Group (IEG) and the International VERA Secretariat in a confidential manner. The purpose of information sharing is the harmonisation and improvement of a VERA Verification. All members of VERA have the same confidentiality obligations as the International VERA Secretariat and any Verification Body.

☐ Please tick here to authorise the Verification Body to share the information provided in a confidential manner with the VERA expert groups and the International VERA Secretariat.

Please send the completed application form together with the necessary documents either by email to your preferred verification body or Vera-Secretariat@nen.nl

Appendix 4: Terms and conditions (template)

Terms and Conditions for a VERA application

1. General terms

1.1. The VERA organisation does not endorse, certify or approve technologies. VERA verifications are based on an evaluation of the technology's performance under specific, predetermined criteria and the appropriate quality assurance procedures. VERA makes no expressed or implied warranties as to the performance of the technology, and does not certify that a technology will always operate as verified.

1.2. The end user is solely responsible for complying with any and all applicable federal, state and local requirements. Furthermore, the end user must be aware that the countries involved in VERA have different legal requirements, which will influence the status and use of this verification statement in each country.

2. Validity

2.1. A VERA Verification Statement is only valid for the specific verified product/technology and the tested animal category. There is no time limit for the validity of a VERA Verification Statement as long as the product/technology stays unmodified. The International VERA Secretariat can, however, at any time, invalidate the VERA Verification Statement if it is found to have been misused or if significant modifications have been made to the product/technology that are estimated to have a negative effect on the environmental efficiency or operational stability. With regard to the latter, the International VERA Secretariat can require that a new VERA test must be performed.

2.2. A VERA Verification Statement can provide access to the admission of the specific technology onto the Danish Technology List of environmentally efficient technologies for agricultural purposes, which is administered by the Danish Environmental Protection Agency, the Dutch Rav list administered by the Dutch Ministry of Infrastructure and the Environment, the PAS list administered by the research institute for agriculture, fishery and food (ILVO) and the AEA list administered by the Vlaamse Land Maatschappij (VLM) provided that any additional testing and reporting requirements have been included in the application. The final evaluation for admission onto these lists is solely a decision made by the individual ministries in question.

3. Processing an application

3.1. When the Verification Body receives the application, the applicant will be notified if the application meets the eligibility requirements and if the required documents are included.

3.2. The application is evaluated by the Verification Body in collaboration with the International VERA Experts Group. The involved parties are obliged to handle all information confidentially. Potential Intellectual Property Right issues have to be clarified together with the Verification Body when submitting the application.

3.3. The duration of the evaluation procedure depends on the quality of the application and the attached documentation. If additional information is needed, the processing period can be prolonged. The Verification Body aims to keep the applicant continuously informed about the status of the evaluation.

3.4. A VERA verification can be granted when it has been verified that a test has been carried out according to the demands in the applicable VERA test protocol. The VERA Verification Statement is ready for issuing after approval by the Verification Body handling the application and the International VERA Expert Group.

3.5. The VERA Verification Statement describes among other things which technology the statement is concerning, a description of the technology, the results from the test, focussing

on the environmental efficiency and operational stability and the terms and conditions for using the VERA Verification Statement.

3.6. The VERA Verification Statement issued in English is the legally binding document. Statements can be translated in other languages by a recognized translation company, cross-checked by an VERA expert and published on the VERA website alongside the original English version.

4. Terms of Use of the VERA Verification Statement

The use of this VERA Verification Statement must be in compliance with Section B.VII of the General VERA Guidelines (GVGs), amongst others:

4.1. The applicant must inform the International VERA Secretariat or the VERA Verification Body if any modifications are applied to the technology that may significantly influence the environmental efficiency and/or the operational stability.

4.2. This verification cannot be considered to be an endorsement, approval, authorisation or warranty of any kind, and the performance parameters provided cannot be extended to other applications or to other technologies.

4.3. The applicant agrees not to use the VERA Verification Statement or the test reports, or to refer to those for any other technology than the one specified in the statement.

4.4. The VERA Verification Statement will be made available for public access on the VERA website: www.vera-verification.eu. This also relates to any VERA-approved statements in any language besides English.

4.5. All other documentation obtained or produced during the verification process is considered confidential, and will not be made available to anyone outside the VERA organisation.

5. General terms when communicating about VERA

5.1. The name and logo of VERA may be used without restrictions when reporting on the VERA programme as a whole, i.e. when it is not about the verified performance of a specific technology. Therefore, an article in the press, or a post in a blog or on a website can use the VERA logo to advertise the programme.

5.2. In a case where the verification of a certain technology is to be reported, especially when publicising its performance, all of the following elements must be included and mentioned:

- The name of the technology and manufacturer
- The application area
- The verified performance, including specific operational conditions
- Explicit reference to the VERA Verification Statement (number, date of verification and website)

5.3. The VERA name and logo may not be used:

- as part of a company name, product name, service name, domain name or website title – with the exception of VERA Verification Bodies using them in the context of their VERA activities; or
- in association with a company or technology that has not obtained a VERA verification.

I agree to the terms and conditions for a VERA verification and the General VERA Guidelines.

_____ _____

Date Signature and stamp of applicant

Appendix 5: VERA Verification Statement (template)

Cover page

(Half VERA logo, transparent, covering the left of the cover page)

VERA VERIFICATION STATEMENT

VERIFICATION OF ENVIRONMENTAL TECHNOLOGIES
FOR AGRICULTURAL PRODUCTION

It is hereby stated that

TECHNOLOGY

[Title]

DELIVERED BY

[Company]

has been tested according to the VERA Test Protocol for

[System name]

The following main results have been documented through the test:

Verified environmental efficiency

[Text]

Verified operational stability

The tested technology combination has demonstrated
a satisfactory operational stability.

[Choose date]

[Name]

VERA Verification no [Number].
This VERA Verification Statement is only valid when including the full document. This is page 46 of 48.
A copy of all valid VERA statements can be found on www.vera-verification.eu

Format of all other pages of the VERA Verification Statement:

- **Footer:** VERA Verification Statement – Technology XYZ page x of n
- **Headlines:** 'VERA green': R=19, G=165, B=56.

Table of Contents:

Appendix 6: Tool Box

The Verification Contract:

The verification contract should cover the following items:

- ✓ The limitations of the VERA Verification to the specific technology, and the conditions of verification; they cannot be considered as an endorsement or guarantee of the technology. Therefore, the applicant has to sign the terms and conditions form, as provided in Appendix 4, and agree to respect the GVG.
- ✓ The obligation of the applicant to inform the Verification Body of any changes made to the technology before the conclusion of the verification process.
- ✓ The obligation of the applicant to inform the Verification Body of any amendments to and deviations from the test plan as the Verification Body needs to approve these.
- ✓ Any confidentiality issues, including the access to information by the International VERA Secretariat, the IEG and, if there are any, other external experts, and the publication of the VERA Statement. Before signing the verification contract, any communication of information except to the IEG and the International VERA Secretariat requires the explicit consent of the applicant.
- ✓ Intellectual property rights (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; the use of the VERA Verification Statement and VERA logo; reporting by the applicant on the impact of VERA; handling of changes to the technology, to the application or other changes potentially affecting the conditions of verification; and 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 relevant legal authorities in the case of a dispute related to the verification procedure.

Technical Documentation:

Technical documentation provided by the applicant should 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;
- the user manual (in English and the local language);
- the conceptual design, and if it is necessary to explain this in more detail, the technical or scientific principles, manufacturing drawings and schemes of components, sub-assemblies, circuits, etc.;
- the descriptions and explanations necessary for the understanding of those drawings and schemes, and the operation of the technology;
- where relevant, the standards or technical specifications applied in full or in part;
- the description of the development goals related to national norms and regulations;

- the results of the design calculations made, examinations carried out, etc.;
- a description of the measures taken to ensure the quality and traceability of the technology under the normal conditions of production when the technology is / will be available on the market;
- an explanation of the necessary frame conditions for the proper function of the technology; and
- all test reports and details of tests, including a confirmation of the qualification of the test body or analytical lab.

✓ The intended VERA test protocol to be applied on the technology.

✓ The main environmental effects, consisting of a set of parameters and values, which:
- describe the functioning or performance of the technology, mentioning any relevant assumption made;
- are related to the technology itself, and not, for example, 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);
- highlight the advantages and features of the technology, in terms of the environmental added value as well as the other advantages relevant for users of the technology;
- reflect the direct environmental impacts of the technology and, to the degree possible, include the relevant indirect impacts on the environment from a lifecycle perspective; and
- are quantifiable and verifiable through tests, when they relate to the purpose and operational conditions of the technology, and are measurable, as far as possible, when they relate to the environmental impacts or other aspects.

✓ The available information and data on the environmental added value, focussing on those stages of the technology lifecycle 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 or results from the tests carried out by the applicant, or by a test body on the applicant's behalf and under his/her responsibility.

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

✓ If the technology has already been evaluated under VERA or verified under another environmental technology verification programme, a research or pilot project implementing all or part of the procedures provided under VERA, or another evaluation or certification programme implementing the same or similar procedures, then the applicant 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 VERA procedure as much as possible.