LIFE PROETV

Application of ISO/IEC 17020:2012 for the Accreditation of Verifiers Performing Environmental Technology Verification Compliant to ISO 14034.

A guidance document for National Accreditation Bodies.

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EXPLANATION OF ACRONYMS

Abbreviations and acronyms	Explanation
DanETV	national ETV programme in Denmark
EPD	Environmental Product Declaration
ETV	Environmental Technology Verification
GHG or GHGs	Greenhouse gas or Greenhouse gases
ILAC	International Laboratory Accreditation Cooperation
LCA	Life Cycle Assessment
NABs	National Accreditation Bodies
PEF	Product Environmental Footprint
TRL	Technology Readiness Level

1. INTRODUCTION

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

The requirements concerning the ETV process, its principles and procedures are specified in the technical standard ISO 14034, Environmental Management: Environmental Technology Verification. The standard defines the following normative references indispensable for its application:

- ISO/IEC 17020:2012, Conformity assessment — Requirements for the operation of various types of bodies performing inspection.
- ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

The standard ISO/IEC 17020:2012 specifies the requirements concerning competencies and impartiality that shall be applied and demonstrated by the bodies performing ETV (referred to in ISO 14034 as verifiers), whereas the standard ISO/IEC 17025 specifies the requirements for the generation of test data used to verify the performance of an environmental technology compliant to ISO 14034.

The standard ISO/IEC 17029:2019, Conformity assessment - General principles and requirements for validation and verification bodies are not considered as applicable to demonstrate the competencies of verifiers in the meaning of ISO 14034. ISO 14034 is not addressing conformity assessment and the verification outcome reflects only the verified performance at the point in time where the verification statement is issued. ISO 14034 constitutes the basis for verification of performance of a specific environmental technology based on a verification plan that is developed specifically for each verification process and therefore differs from case to case. The basis for the verification is the performance claim made by the manufacturer of the technology being verified. ISO/IEC 17029:2019 typically applies to verifiers using also ISO 14065:2020 General principles and requirements for bodies validating and verifying environmental information. The claims verified under ISO/IEC 17029 refer for example to reporting of Green House Gases (GHGs) emissions by organizations either for regulatory purposes or as part of an organization's public communication of environmental information, commodity trading, where greenhouse gas offset credits are bought and sold, statements associated with the issuance of green bonds or the origination of green loans, information about climate actions taken by financiers as subject matter, environmental labelling, product declarations and footprints, sustainability, or environmental reporting. See also section 6, which describes the applicability of ISO 17020 as a basis for accreditation to ISO 14034.

Annex A (Informative) to ISO 14034 explains the relationship between this standard and ISO/IEC 17020:2012. These explanations, however, may not be sufficient for the National Accreditation Bodies (NABs) to develop and implement accreditation schemes for verifiers wishing to perform environmental technology verification compliant with ISO 14034 due to the following reasons:

- environmental technologies whose performance is to be verified under ETV may differ a lot in terms of technology type, intended application and performance parameters and each of them requires an individual verification approach which may pose difficulties in the demonstration of competencies of the verifiers satisfying the requirements of ISO/IEC 17020:2012;

- Clause 4.1 of ISO 14034 defines the principles of ETV, including flexibility as one of them (Sub-clause 4.1.5): To maximize the utility of results, environmental technology verification allows for flexibility in the specification of the performance parameters and test methods. The flexibility principle and the innovation-oriented approach of ISO 14034 create challenges for NABs referring in particular to understanding the provisions and requirements specified in ISO 17020:2012: Clause 3 Terms and definitions, Clause 4 Impartiality and Independence, Clause 5 Structural requirements, Clause 6 Resource requirement, Clause 7 Process requirements when applying ISO 14034. These challenges address assessment of compliance to these requirements of potential verifiers requesting accreditation, accreditation surveillance of accredited verifiers or/and their requests for extension of accreditation scope.

In this guidance, the following verbal forms are used:

"shall" indicates a requirement;

"should" indicates a recommendation;

"may" indicates a permission;

"can" indicates a possibility or a capability.

2. PURPOSE

This document provides information and explanations concerning the application of ISO/IEC 17020:2012 Conformity assessment – Requirements for the operation of various types of bodies performing inspection for accreditation of inspection bodies (verifiers in the meaning of ISO 14034) to perform environmental technology verification compliant to ISO 14034.

The document is intended to be used by the NABs intending to establish accreditation programmes conforming to ISO/IEC 17011:2017 for verifiers, for assessment of their competencies under accreditation surveillance or in relation to requests for extension of the accreditation scope. It is aimed to ensure a harmonised and consistent approach to the development and implementation of the ETV accreditation requirements and surveillance of verifiers.

The document is neither intended to specify the accreditation requirements to ISO/IEC 17020:2012 for inspection bodies type A nor subtract from or modify the provisions of this standard, but only further explain and detail these provisions and requirements which are specific to the accreditation of ETV verifiers.

The document supplements the information provided in the International Laboratory Accreditation Cooperation (ILAC) document ILAC-P15:05/2020 Application of ISO/IEC 17020:2012 for the Accreditation of Inspection Bodies and ILAC-G28:07/2018 Guideline for the Formulation of Accreditation Scopes of Inspection Bodies. Section 5 addresses specific clauses of this standard that require additional explanation due to the specificity of ETV and considers the following Clauses of ISO/IEC 17020:2012:

- Clause 1 Introduction
- Clause 3 Terms and definitions:
  - 3.1 inspection
  - 3.2 product
  - 3.3 process
  - 3.4 service
  - 3.5 inspection body
  - 3.6 inspection system
  - 3.7 inspection scheme
- Clause 4 General requirements
  - 4.1. Impartiality and independence

- Clause 5 Structural requirements
  - 5.2 Organization and management
- Clause 6 Resource requirements
  - 6.1 Personnel
- Clause 7. Process requirements
  - 7.4 Inspection reports and inspection certificates

Section 6 of this document provides guidelines and explanations concerning the requirements related to the defintion of the scope of accreditation of the verifier as specified in point b of Sub-clause 7.8.3 of ISO/IEC 17011:2017.

3. AUTHORSHIP

This document has been prepared in the framework of the LIFEproETV[1] project by the following beneficiaries: the Institute for Ecology of Industrial Areas, Poland and ETA Danmark, Denmark who are accredited ETV verifiers.

4. TERMINOLOGY

For the purposes of this document, the terms and definitions given in ISO 14034 and ISO/IEC 17020:2012 and ISO/IEC 17011:2017 apply.

5. APPLICATION OF ISO/IEC 17020:2012 TO ISO 14034

This section provides explanations to the selected Clauses and/or Sub-clauses of ISO 17020:2012 concerning their application to ISO 14034. The clause numbers in this section follow those of ISO/IEC 17020: 2012 but, since not all clauses require interpretation, the numbering may not be consecutive.

Clause 1 (Informative): Introduction

The Introduction explains that ISO/IEC 17020:2012 covers the activities of inspection bodies whose work can include the examination of materials, products, installations, plants, processes, work procedures or services, and the determination of their conformity with requirements and the subsequent reporting of results of these activities to clients and, when required, to authorities. In the meaning of ISO 14034, these activities cover the examination of environmental technologies to verify their performance declared by applicants i.e. technology providers, manufacturers, developers and other parties legally authorised by them to apply for ETV. The conformity with the requirements shall be understood as the verification of an environmental technology performance claim proposed by the applicants following the process defined in the standard ISO 14034.

Moreover, Clause 1 of ISO/IEC 17020:2012 provides that inspection can concern all stages during the lifetime of the inspection items, including the design stage and can overlap with testing and certification activities where these activities have common characteristics. Such work normally requires the exercise of professional judgement in performing inspection, in particular when assessing conformity with general requirements. Professional judgement is understood to entail decision making that is supported by a

[1] LIFEproETV project: Promotion and implementation of ETV as an EU voluntary scheme for verifying performance of environmental technologies. The project has been co-financed by the European Union's LIFE Programme under grant number LIFE19 GIE/PL/0078, the National Fund for Environmental Protection and Water Management, Poland and the Ministry of Agriculture of Hungary.

body of rigorous and objective analysis of test data. In the meaning of ISO 14034, it involves the assessment of the conformity of the technology design with its performance declared by the applicant under specified technical conditions of its intended application based on the interpretation and assessment of test data. It is achieved by specification and verification of parameters quantifiable and measurable through testing under specified conditions relevant to the performance claim that refer to:

- performance of the technology in fulfilling its purpose (also referred to as technical or functional performance parameters);
- potentially significant impacts of the technology on the environment, direct and indirect, along its life cycle (e.g. raw materials, production, use, recycling, end-of-life scenario). These parameters, referred to as environmental parameters, may include, for example, energy consumption or emission of pollutants to air or water. The definition of environmental parameters shall be based on the assessment of the environmental added value at the technical review of the application when the compliance of the technology to the definition of environmental technology is checked (ISO 14034, Sub-clause 5.2.2.2, point a);

NOTE 1: Environmental parameters directly linked to the purpose of the technology shall be considered as technical/functional performance parameters.

NOTE 2: ETV does not have the same objective or provide the same information concerning the overall environmental performance of technology as specialised environmental tools based on a life-cycle approach such as Life-Cycle Assessment (LCA) reports, Environmental Product Declaration (EPD) or Product Environmental Footprint (PEF). However, when information about the potentially significant impacts on the environment about the environmental impacts of the technology provided by these tools/assessments is available, it can be used when assessing the environmental added value.

- technical conditions of the intended application (operational parameters), for example, ambient temperature and concentrations of non-target compounds in the matrix, etc.

As described in Clause 1, Inspection can be an activity embedded in a larger process for example as a surveillance activity in a product certification scheme, an activity that precedes maintenance or simply provides information about the inspected item with no determination of conformity with requirements. ISO 14034 refers to an activity which provides information about the inspected item. It does not involve a surveillance activity of the inspected item e.g. on-going consistency of the manufacturing process. Therefore, no competences of verifiers in this area are required.

Clause 3: Terms and definitions

3.1 inspection

In the meaning of ISO 17020:2012, the term "verification" defined in ISO 14034 Clause 3.2.1 shall be understood as "inspection".

3.2 product, 3.3 process, 3.4 service

The term "technology" is not defined in ISO 17020:2012. In the meaning of ISO 14034 (Clause 3.3.1), the term "technology" means process, product or service with the same meaning as in ISO 17020:2012.

3.5 inspection body

The term "inspection body" defined in ISO 17020:2012 refers to "verifier" in the meaning of ISO 14034 Clause 3.1.2. It is a legal entity performing verification of environmental technologies.

NOTE: Many ETV sources refer to the verifier as the "verification body". This term is also defined in ISO 17029:2019 as a body that performs verification (Sub-clause 3.5). In the context of ISO 14034, the term "verification body" is used as an equivalent to "inspection body" to demonstrate compliance with ISO 17020 Clause 5.1.1 requiring that the verifier shall be a legal entity, not a physical person.

3.6 inspection system

In the meaning of ISO17020:2012, technical standard ISO 14034 shall be understood as an inspection system.

3.7 inspection scheme

In the meaning of ISO 17020:2012, any programme which applies in full ISO 14034 shall be understood as an "inspection scheme". These programmes may contain additional requirements set by the programme owner/operator, however, shall not subtract from the principles and procedures of ISO 14034. The ETV programmes can operate at an international, national level (e.g. national programme in Denmark DanETV) or even for a specific sector (e.g. operated by a sector industry association).

NOTE: If the accreditation of the verifier is related to a programme which applies in full ISO 14034 but specifies additional requirements, these requirements shall be also subject to compliance demonstration of the verifier. The NAB shall ensure that the programme requirements are known and understood by the personnel involved in the accreditation process.

Clause 4: General requirements

Sub-clause 4.1 Impartiality and independence

Point 4.6.1 of ISO 17020:2012 states that the inspection body shall be independent to the extent that is required with regard to the conditions under which it performs its services. ETV process and procedures as defined in ISO 14034 are designed as third-party verification of performance of environmental technologies. To ensure this condition, Annex A (informative) to ISO 14034 states that to perform ETV, it is recommended that the verifier comply with the requirements defined in ISO/IEC 17020:2012, Clause A.1 (Type A, inspection bodies). It means, that unless compliance with the ISO/IEC 17020:2012 requirements for type A inspection bodies is demonstrated by means of accreditation by a relevant NAB, the verifier shall not perform ETV.

Clause 5: Structural requirements

Sub-clause 5.2 Organisation and management

Point 5.2.5 of ISO 17020:12 of Sub-clause 5.2. refers to the technical competencies of technical managers in the inspection body. It specifies that the technical manager should have overall responsibility to ensure that the inspection activities are carried out following this International Standard. In the case of the verifier, this requirement should refer to the technical competence of the manager to ensure an overall responsibility that ETV in performed accordance with the requirements of ISO 14034.

NOTE: The Verifier's activity may cover verification of performance of a broad range of technologies i.e. products, processes or services which can be categorised as environmental technologies in the meaning of ISO 14034. These may include different treatment technologies, processing technologies, materials as well as measurement equipment. For example, water treatment and monitoring technologies may include solutions ranging from treatment of chemical and microbiological contamination in wastewater, drinking water purification technologies up to devices for detection of pathogenic microorganisms in water, etc. Since the definition of environmental technology is broad and does not refer to any particular technical solution or equipment like in the case of other inspection schemes and systems (e.g. dedicated to elevators or cranes), it may be organisationally unfeasible for the verifier to define and ensure several technical managers demonstrating technical competence to cover all range of technology options.

Therefore, the technical manager should primarily demonstrate technical competence in the overall organisation and implementation of a verification process in line with ISO 14034 requirements including the selection, involvement and coordination of work of inspectors with expertise relevant and adequate to specific technologies whose performance is subject to verification.

Clause 6: Resource requirements

Sub-clause 6.1 Personnel

Point 6.1.5 refers to the procedures for selecting, training, formally authorizing, and monitoring inspectors and other personnel involved in inspection activities. The area of the verifier's activity can cover a broad range of environmental technologies even if their area of application is defined (for example environmental technologies for water treatment and monitoring). Although following the process and procedures of ISO 14034, each verification is unique and depends on the performance claim proposed by the applicant. The technology and its performance to be verified determine the selection of inspectors with specific competencies. Therefore, the competencies required in point 6.1.5 concerning inspectors shall refer to the verifier's ability to select, train, authorize and monitor inspectors competent to perform inspection specific to the performance claim of a technology to be verified. The NAB should evaluate first of all if the verifier has in place an appropriate documented policy and procedure for appointing personnel which ensures that the personnel (inspectors) appointed to perform a specific verification (whether covering the whole process or be limited to specifically identified, technical elements or process steps associated with the inspection) are competent in relation to this verification rather than evaluate the competences of the inspector(s) in general. The procedure for recruiting the inspectors shall guarantee that the personnel appointed to be involved in a specific verification process demonstrates adequate, sufficient and relevant knowledge and experience covering existing as well as emerging technical and environmental aspects concerning technologies in the area to which a specific technology which performance is to be verified belongs considering also the area of its application. Annex 1 provides guidance on the capabilities required from a verifier to demonstrate competence to conduct verifications compliant to ISO 14034.

NOTE: *ISO 14034, is dedicated to verification of performance of new environmental technologies which typically demonstrate innovative features, therefore one of the principles of this International Standard is flexibility in the specification of the performance parameters to be verified so as to enable a full demonstration of the unique performance features of new, even disruptive technologies (Clause 4.1.5). Furthermore, the performance of a technology to be verified is proposed by the applicant not by the verifier. It is therefore impossible for the verifier to define a priori what performance claims of technologies will be put forward by the applicants for verification, even if the technologies which are presented for verification fall in the scope of the verifier's inspection activity, and thus predict which specific competences of inspectors are needed to verify the performance. Therefore, in practice, the selection of experts (inspectors) is done on a case-by-case basis.*

Point 6.1.6 (c) refers to the training requirements of the inspection personnel concerning continuing training to keep pace with developing technology and inspection methods. For the needs of applying ISO 14034, this requirement should be limited to inspection methods as it is not the verifier's role to follow the developments in the area of environmental technologies. It is the responsibility of the inspectors to follow the technology developments and reflect this knowledge by means of updates of proofs (projects performed, publications etc.) provided to demonstrate their technical competencies. The verifier shall have appropriate procedures for acquiring updated information on the current competencies of the inspectors.

Point 6.1.9 requires that each inspector shall be observed on-site, unless there is sufficient supporting evidence that the inspector is continuing to perform competently. This requirement has a limited application in the case of ISO 14034. Verification of performance is carried out based on the analysis of test data which typically has the form of a desk study. On-site activities can include site visits or the performance of a test system assessment which generated the test data for the needs of performance verification in order to make decision on the test data acceptance (Clause 5.4.2 of ISO 14034).

Clause 7: Process requirements

Sub-clause 7.1 Inspection methods and procedures

Inspection methods may involve sampling and testing. In the case of ISO 14034, the verifier does not perform tests for verification purposes. The verifier uses test data generated by a test body. The test data shall be generated by a test body in a way that ensures the level of quality and impartiality required by ISO/IEC 17025 for example if tests consist of analyses, the test body performing those analyses shall be accredited to apply ISO/IEC 17025 for the relevant analytical methods. Clear in-house instructions on the assessment of the test data generation compliance to ISO/IEC 17025 may be required.

In the case when both the verifier and the testing body performing testing for verification purposes belong to the same organisation, the absence of conflict of interest and independence of both bodies involved in the verification of the environmental technology shall be demonstrated.

Sub-clause 7.4 Inspection reports and inspection certificates

Point 7.4.2 refers to the content of the inspection reports and inspection statements. Sub-clause 5.5 of ISO 14034 specifies the minimum requirements concerning the content of the verification report and verification statement. These requirements include additional content requirements to those specified in 7.4.2. Point 7.4.2 (c) refers to the date(s) of inspection which corresponds with the date of verification (point 5.5.1 (d) in ISO 14034). The verification process is typically extended in time and can involve several months. Therefore, the requirement concerning the specification of the date(s) of inspection shall reflect this fact.

NOTE 1: The verifier should use the application submission date by the applicant as the start date of the inspection and the date of the acceptance of the verification report and statement of verification by the applicant as the end date of inspection.

Moreover, Sub-clause 5.6 of ISO 14034 requires that at a minimum the statement of verification shall be made publicly available. The verifier is responsible for publication of the statement of verification in a publicly available domain (e.g. at its own website) and therefore shall have appropriate procedures in place demonstrating compliance to this requirement.

NOTE 2: A programme which applies in full ISO 14034 may define additional requirements concerning publication e.g. a requirement to publish the statement of verification at the programme website or a requirement to publish both a statement of verification and a verification. It can also put a validity period on these documents. Consequently, it will require that the verifier has appropriate surveillance procedures dedicated to these documents in place.

6. Explanations concerning the definition of the scope of accreditation for ISO/IEC 17020:2012 to apply ISO 14034

The description and assessment of the scope of accreditation of verifiers represents the core of the accreditation process. The purpose of this section is to provide guidance to NABs in how to define scopes of accreditation for ISO/IEC 17020:2012 to inspection bodies performing environmental technology verification compliant with ISO 14034.

The International Standard ISO/IEC 17011:2017 defines the term “scope of accreditation “as specific conformity assessment activities for which accreditation is sought or has been granted (definition 3.6). It does not however specify the level of detailness to be used when defining the scope of accreditation. ILAC G18: 01/2014 Guideline for describing Scopes of Accreditation provides general rules on how the scopes of accreditation shall be defined focusing on the flexibility aspects in defining the scope and providing some practical examples. ILAC G28:07/2018 Guideline for the Formulation of Scopes of Accreditation for Inspection Bodies provides further explanations and guidance specific to the definition

of the accreditation scope by the inspection bodies. The guidance provided in both documents needs further explanations concerning the specificity of ISO 14034 as an inspection scheme and the requirements for NABs to define the scope.

Point b) of Sub-clause 7.8.3 of ISO/IEC 17011:2017 specifies that for inspection bodies the scope of accreditation shall, at least, identify the following minimum requirements:

1. the type of inspection body (A, B, C as defined in ISO/IEC 17020:2012);
2. inspection schemes, where relevant;
3. the field and range of inspection for which accreditation is sought or has been granted;
4. the regulations, inspection methods, standards and/or specifications containing the requirements against which the inspection is to be performed, as applicable.

Requirement 1

In the meaning of ISO 14034, to satisfy requirement (1), the description of the accreditation scope shall specify the type of inspection body as type A compliant with ISO/IEC 17020:2017 and consequently, NAB shall ensure that the verifier complies with requirements for type A inspection bodies while the expert team performing assessment involves assessor competent for assessing inspection bodies type A.

Requirement 2

Requirement (2) is satisfied by ensuing that the inspection scheme follows ISO 14034. The scope of accreditation can provide reference either to ISO 14034 as an International Standard, a European Norm or a National Norm or to a combination of these depending on the verifier's request. In the case of The NAB should, however, pay attention if ISO 14034 referred to as the national standard does not provide any additional requirements. There is no difference concerning the requirements between ISO 14034 as International Standard and European Norm. Also, if the accreditation refers to a programme based on ISO 14034, and the programme has a reference document specifying further the requirements of the inspection scheme, an indication of the programme reference document may be requested by the verifier. The NAB shall ensure that the expert team performing the assessment is acquainted with the requirements of this programme, if relevant.

Requirement 3

In the meaning of ISO/IEC 17020:2017, the inspection items are: goods, process, services or installations (Clause 3.1). In the meaning of ISO 14034:2016, the items of inspection are environmental technologies (definition 3.3.4, Sub-clause 3.3 of ISO 14034) which can be further specified in the accreditation scope as product, process or service if relevant or requested by the verifier or specifically addressed by a programme based on ISO 14034 for which the verifier seeks accreditation.

Concerning the field of inspection, ISO 14034 applies to any technology which complies to the definition of an environmental technology and in particular to new, often disruptive technical solutions. However, unlike in typical inspection schemes, where the field of inspection can be easily and precisely defined and the items of inspection demonstrate a set of common, predefined features/parameters (e.g. elevators or cranes), in ISO 14034 the inspection field (area) may be hard to be precisely defined as the inspection items represent often unique, one-of-a-kind technical solutions manufactured in limited quantity.

Therefore, the inspection field may be described by indicating a particular technical field of the inspection items application or broken down into technical sub-fields which further specify the inspection items application/matrix(es). The degree of detail will depend on the specific nature of the ISO 14034 scheme e.g. if it is based solely on the ISO 14034 or on an ISO 14034-based programme.

Therefore, it is strongly recommended that the definition of the accreditation scope maintains a certain level of flexibility allowing new, and even breakthrough environmental technologies related to specific fields of application to be verified while ensuring that:

- NAB can assembly an expert team to assess the competence of the verifier to perform all the services defined in the scope of accreditation,
- the scope is sufficiently precise that potential clients may establish accurately and unambiguously the general field of inspection, its type and range,
- the boundaries established by the NAB for the definition of the accreditation allow the scheme development so as to comply with the flexibility principle defined in ISO 14034 and enable the response to the needs of the clients and other interested parties,
- the flexibility does not significantly change the competencies, skills, resources and methodologies required for the inspection activity.

At a minimum, the scope of accreditation shall define the technical field for which the environmental technologies apply as the field of inspection.

NOTE 1: Areas of environmental technology applications may be defined for example as follows:

- *water*
- *materials, waste and resources*
- *energy*
- *soil and groundwater*
- *cleaner production and processes*
- *agriculture*
- *air*

Or:

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

NOTE 2: Upon the request of the verifier the scope of accreditation may be further detailed. In that case, the verifier shall provide a detailed description of the scope.

NOTE 3: If the accreditation is related to a programme fully adopting ISO 14034, the programme may define the required scope of accreditation.

If relevant, the scope of accreditation may be supplemented with an identification of each particular inspection scheme if specifically defined e.g. for a given type of environmental technology that has been accredited, this might take the form of a number or a particular name or some other distinct identifier.

The range of inspection is defined by the performance claim of an environmental technology to be verified.

Concerning the stage of inspection, in the meaning of ISO 14034, the stage refers to the stage of an environmental technology maturity technical readiness level (TRL) required to perform ETV. Note to ISO 14034 Sub-clause 5.2.1 Application requirements point 4) specifies that the technology proposed for verification needs to be either already available on the market or available at least at a stage where no substantial change affecting its performance will be implemented before its market entry. NABs shall ensure that the verifier has appropriate procedures in the inspection methods that allow for the definition of the sufficient TRL of the technology enabling its inspection in line with ISO 14034 while guaranteeing the quality and credibility of the inspection.

Requirement 4

The inspection methods containing the requirements against which the inspection is to be performed shall follow the requirements specified in ISO 14034. NAB shall ensure that the verifier has appropriate operational procedures in place which define the inspection methods corresponding to these processes and procedures and that the technical experts assessing these inspection methods demonstrate appropriate knowledge and understanding of ISO 14034.

7. REFERENCES

1. ISO/IEC 17011:2017, Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies
2. ISO/IEC 17020:2012, Conformity assessment – Requirements for the operation of various types of bodies performing inspection
3. ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories
4. ISO 14034, Environmental Management: Environmental Technology Verification
5. ISO/IEC 17029:2019, Conformity assessment -General principles and requirements for validation and verification bodies
6. ILAC-P15:05/2020 Application of ISO/IEC 17020:2012 for the Accreditation of Inspection Bodies ILAC-G28:07/2018 Guideline for the Formulation of Accreditation Scopes of Inspection Bodies
7. ILAC G18: 01/2014 Guideline for describing Scopes of Accreditation

8. ANNEX 1: GUIDANCE FOR DEMONSTRATING COMPETENCE OF THE VERIFIER TO CONDUCT VERIFICATIONS COMPLIANT WITH ISO 14034

CAPABILITY	DESCRIPTIONS
Capability 1 - Risk Assessment To identify the possible risks and benefits of the use of innovative or non-standardized technologies without established information concerning the behaviour and performance of the technology	To be able to identify and prioritize risks of innovative technologies, verifiers are required to have the following capabilities or qualifications: • an in-depth knowledge of the relevant standards, procedural and other requirements to be followed; • an understanding of the technology areas covered by their accreditation scope; • an in-depth technical knowledge of the technology under verification; • an in-depth knowledge of specific risk areas, technical aspects of technologies and specialist scientific fields (e.g. drinking water treatment requirements); • knowledge of the views of interested parties and the means to ensure they are taken into account in a balanced way; • the means to consider managerial risks related to the overall process, specific verification requirements, impartiality and quality assurance. This knowledge and understanding can be contained within the verifier's organization or, in part, within a network of external bodies that the verifier actively manages or cooperates with professionally.
Capability 2 - Establishing Technical Criteria To translate possible risks and benefits (i.e. from Capability 1) into technical criteria to evaluate the behaviour and performance of the technologies with regard to the performance claim made by the applicant. This should take into account environmental and operational parameters and the needs of the interested parties (e.g. manufacturers, designers, purchasers, specifiers, regulators, users).	
Capability 3 - Evaluation and Verification Methods To design and validate proper methods (e.g. tests, simulations or calculations) to evaluate and verify the performance, taking into account current state-of-the-art, including the rationale for selection and application of the technical criteria (i.e. the criteria in Capability 1). To document these methods in the form of planning documents and develop them further as needed.	To devise proper methods, the verifier should: • have experts (either directly employed or contracted) with knowledge of the technologies and their applications within the domain areas included in the scope of expertise of the verifier; • have experts (either directly employed or contracted) with knowledge of best practice evaluation and verification methods for such technologies and products; • ensure that all personnel involved in the verification have an objective attitude, are impartial in their professional judgement and can work with other verification bodies and external organizations and groups of experts in a balanced, consensual and technically competent way to agree on a plan which accounts for manufacturing, operational and regulatory requirements.
Capability 4 - Technology Verification To verify the performance of a technology (i.e. from Capability 3) based on agreed methods and technical criteria and to provide concrete implementation of the results in the form of a verification statement as requested by the applicant.	To carry out a technology verification the verifier should: • comply with applicable procedures and rules; • have an in-depth knowledge of the technology area and conditions of use relevant to the technology being verified; • have experts (either directly employed or contracted) with the experience to make judgements regarding the compliance, or otherwise, with the technical criteria and regulations that apply to the technology and its use. The experts should have documented knowledge about: • processes and procedures in handling ETV applications; • the technology and the technology area as specified; • the market and use needs for the specified technology area; • the environmental implications related to the use of the technology from a life cycle perspective; • relevant applicable test methods; • statistical methods to assess test results and calculations. The expertise of the experts can be documented through written conclusions, professional achievements and other objective evidence

CAPABILITY	DESCRIPTIONS
	based on the CVs, publications and other relevant documentation from the expert.
Capability 5 - General Management To ensure consistency, reliability, objectivity and traceability in its work through the application of appropriate management rules.	Verifiers should comply with the procedures described in ISO 14034 and have documented management procedures in place to ensure: • *Sound practice of contract offer and review* - The ability to pursue applicant requests, identify resources and determine time requirements leading to a contract offer to the customer that clearly defines the scope of the work, the responsibilities of both verifier and customer and the fees involved; • *Objectivity and impartiality* - To have policies and procedures in place to ensure the objectivity of the verification work, guaranteeing independence from any particular interest; • *Document control* - To have a document control system to ensure registration, traceability, maintenance and keeping of all documents that are relevant to the verification procedure; • *Confidentiality* - To have policies and procedures to ensure protection and non-disclosure of the confidential information the verifier or any of its partners are made aware of during the evaluation and verification procedure; • *Suitable personnel qualifications* - To have policies and procedures to assess and qualify its experts (continuously or on a case-by-case basis), together with the development and implementation of plans for the development/updating of the knowledge of its experts; • *Proper validation* - To have policies and procedures to ensure that validation of the verification and related decisions and documents is carried out by staff independent from those who carried out the technology or product testing and evaluation work; • *Sound practice of internal audit and management review* - To have policies and procedures in place to ensure that compliance with management procedures is monitored regularly and that any findings of non-compliance are resolved by management; • *Change notification* - To have policies and procedures to notify customers of changes the verifier intends to make regarding requirements for evaluation and verification; • *Appeals handling* - To have policies and procedures to ensure that appeals or complaints by customers are dealt with objectively and that records of both the appeal and any follow-up action are kept; • *Quality assurance* - To have policies and procedures to ensure that compliance with the quality requirements of ISO 17020 for the verifier and ISO 17025 for the test data is provided.