

How the ETV scheme may foster the EU green transition?

Policy Brief



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Contents

EXECUTIVE SUMMARY	4
INTRODUCTION	5
CONTEXT.....	5
WHAT IS ETV?	5
EVIDENCE BASED POLICY ADVISE	7
ETV AS A TOOL TO FOSTER CIRCULAR ECONOMY VALUE CHAINS AND BUSINESS MODELS	8
TARGET GROUP	8
POLICIES OF CONCERN	8
WHAT ROLE CAN ETV PLAY?	9
ETV AS A TOOL FOR ACCELERATING INNOVATIONS FOR SUSTAINABLE INDUSTRIAL PROCESSES	10
TARGET GROUP	10
POLICIES OF CONCERN	10
WHAT ROLE CAN ETV PLAY?	13
ETV AS A TOOL FOR GREEN INNOVATIONS IN PUBLIC TENDERS	13
TARGET GROUP	13
POLICIES OF CONCERN	14
WHAT ROLE CAN ETV PLAY?	15
ETV AS A TOOL FOR THE NEEDS OF SUSTAINABLE FINANCING.....	17
TARGET GROUP	17
POLICIES OF CONCERN	17
WHAT ROLE CAN ETV PLAY?	18
ETV AS A TOOL TO ENCREASE THE MARKET IMPACT OF INNOVATION PROGRAMMES	19
TARGET GROUPS.....	19
POLICIES OF CONCERN	19
WHAT ROLE CAN ETV PLAY?	21
LESSONS AND RECOMMENDATIONS FOR POLICY AND PRACTICE	23
FURTHER READINGS AND REFERENCES.....	28

EXECUTIVE SUMMARY

The European Green Deal provides a political framework and ambitious targets to increase resource efficiency, stop climate change and reduce pollution, together with the necessary investment and financing rules to ensure a green transition.

This situation has widened the gap between the ambitious environmental and climate targets and objectives with the reality of the performance of the technologies that are currently offered in the market. At the same time, it created a large space for innovation and new opportunities for technology developers and users. Therefore, it is necessary to promote the tools that can address the market uptake and large-scale diffusion of new environmental technologies for the green transition in a manner relevant for their broad market acceptance and recognition.

This Policy Brief introduces the Environmental Technology Verification (ETV) scheme and offers approaches and recommendations developed under the LIFEproETV project as a tool to help address the needs and objectives of the EU Green Deal policies, especially those related to improving the performance of technologies and the need for innovation in this sector.

LIFEproETV is implemented under the LIFE Programme to address the needs of awareness rising, market acceptance and recognition of ETV. It facilitates the scale-up of the scheme from the pilot to a full-fledged EU ETV Programme.

Five different perspectives have been considered in this document to present how ETV can concretely be a useful tool for supporting and strengthening European policies. The Policy Brief

- identifies the target subjects to whom the recommendations are addressed to.
- identifies the mechanisms through which ETV works as policy support tool.
- contextualizes recommendations and suggestions about enabling EU green deal policies specific targets.
- provides key examples that demonstrate how the verification scheme is a valid policy support.

INTRODUCTION

Context

The in 2020 adopted EU Green Deal empowers innovation as a driving force for a sustainable transformation of Europe's economy. In that context, new environmental technologies are enablers to bridge the strategic policy objectives and the set targets for the EU Green Deal policies with their implementation.

Green innovations deliver necessary novel technical solutions for moving to climate neutral, circular economy, improving energy efficiency, reducing pollution and adverse environmental impacts of production processes. For these innovations to benefit from their environmental added value, a large-scale diffusion must be ensured together with a credible and objective information on their performance. Both could be aided with the use of the Environmental Technology Verification scheme (ETV in short).

What is ETV?



ETV is a voluntary verification scheme. It has been established to deliver objective and market-relevant information about the performance of new environmental technologies. With the role to support market uptake of green technical solutions, it has been announced by the European Commission in the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan (SCP/SIP) and implemented based on a Commission Staff Working Paper "The Environmental Technology Verification (ETV) initiative helping Eco-Innovations to reach the Market" accompanying the Ecoinnovation Action Plan in 2011..

ETV provides a consistent, third-party operated process for delivering an impartial and credible evidence on the technical/functional performance of market-ready or new on the market environmental solutions i.e. products, processes or services with business-to-business applications. The process is based on verification whether the technical design of a technology delivers the performance and environmental benefits claimed by a technology provider based on the evaluation of quality assured test data. It allows to demonstrate how effective a new solution is in addressing an environmental problem and whether it will result in a reduced environmental impact compared to current technologies with the same purpose available on the market.

PROMOTION AND IMPLEMENTATION OF ETV AS AN EU VOLUNTARY SCHEME FOR VERIFYING PERFORMANCE OF ENVIRONMENTAL TECHNOLOGIES

EU ETV Technology Areas

Water treatment and monitoring



Energy technologies (and energy efficiency)



Materials, waste and resources



Air pollution monitoring and abatement



Soil and groundwater monitoring and remediation



Environmental technologies in agriculture



Cleaner production and processes



Information provided by ETV is important for environmental market actors: technology buyers e.g. industrial users, entities providing public utility services but also permitting/regulatory bodies, investors for their consideration and decision making on what they are buying, permitting or investing into. It is also relevant for policymakers when updating regulations or legislation based on technology performance, implementing the forward-looking approach into environmental and climate related policies as well as building innovation ecosystems that foster upscaling of green innovations

Following a successful pilot stage, the ETV scheme is now implemented by the European Commission with the support of the European Institute of Innovation and Technology as a full-fledged EU Environmental Technology Verification Programme. The up-scaling involves a geographical extension beyond the seven

The ETV process involves three internationally recognised and European harmonised standards:

- ISO 14034: Environmental Management: Environmental Technology Verification (adopted as European Norm in 2019)- a technical standard defining the verification process and procedures
- ISO 17020 Conformity assessment -Requirements for the operation of various types of bodies performing inspection - a defining the requirements for entities performing verification under ETV (Verification bodies) . The Verification Bodies must be accredited Type A inspection bodies according to ISO 17020:
- ISO 17025 General requirements for the competence of testing and calibration laboratories - a conformity assessment standard defining the requirements for generating quality assured technology performance test data used in the verification process

countries participating in the ETV pilot: Czech Republic, Demark, France, Finland, Italy, Poland and United Kingdom as well as an extended technology scope, covering: water treatment and monitoring, energy technologies, waste, material and resources, soil and groundwater monitoring and remediation, cleaner production and processes, air pollution monitoring and abatement and environmental technologies for agriculture.

Even though the policies of the EU Green Deal clearly indicate the role and need to boost green innovations and applying the forward-looking approach to achieve their objectives, they rarely refer to ETV as a relevant tool dedicated to green solutions with industrial applications. When introducing ETV as a tool, SCP/SIP Action Plan clearly indicated that the scheme should be voluntary, yet based on a regulatory framework, which is currently not the case. Lack of demonstrating the ETV relevance for implementation of the EU Green Deal policies and links with the regulatory basis has consequences. ETV is not present in national/regional policies nor sectoral policies. It is also not a part of the regulatory framework at EU and national level, even though the ETV pilot evaluation report proved the usefulness and adequacy of the scheme in meeting its purpose. All it makes the potential offered by ETV heavily underused and in thus not sufficiently recognised and accepted by the EU and domestic markets.

All the technology areas of ETV and the need to accelerate market uptake of innovations are reflected in the EU Green deal policies, and specifically relevant for:

- ✓ Circular Economy Action Plan,
- ✓ Zero Pollution Action Plan,
- ✓ New Industrial Strategy,
- ✓ EU Green Taxonomy.
- ✓ New European Innovation Agenda
- ✓ Processes4Planet

Evidence based policy advise



The document has been developed under the LIFEproETV project, an initiative implemented under the EU LIFE Programme by a consortium of 7 partners from 6 countries: IETU (Coordinator) and IOS-PIB from Poland , ZAG from Slovenia, KOVET from Hungary , INSAVALOR from France , CETAQUA from Spain and EIT Raw Materials. The LIFEproETV project is an initiative aimed to build a strong market acceptance and recognition of the ETV scheme. Beside objectives dedicated to increasing awareness about the scheme, it also addresses developing knowledge and understanding about ETV among different stakeholders, including policy and decision makers so as to maximise the potential offered by the scheme for bridging the policy objectives of the EU Green Polices with their implementation in the technological domain. In this way we want to strengthen the policy relevance of ETV.

This Policy Brief is to explain the policy relevance and provide an evidence-based policy advice to the EU, national and regional decision makers on the use of ETV as a policy support tool to accelerate green transition. ETV provides an ISO standardised tool helping bridge the policy objectives and targets of the EU Green Deal with the implementation of suitable new technical solutions especially in areas that require innovations. With the focus on delivering information on performance of technologies i.e. products, processes and services, the information provided by ETV may also serve as evidence for revision of performance based regulations required for adopting legislation relevant for meeting the targets defined in EU Green Deal policies.

Under LIFEproETV activities the potential of ETV for enabling the achievement of the policies and strategies of the implementation of the EU Green Deal have been analysed via extensive discussions with a wide range of stakeholders, such as, technology buyers, providers, policy makers at EU and national/regional level, business support organisations and scientific community during a series of events

LifeproETV has defined 5 key potential uses for building ETV policy relevance. They are presented in Fig.1.

which gathered an audience of 400 attendees.

POTENTIAL OF ETV USE



ETV as a tool to foster circular economy value chains and business models



ETV as a tool for accelerating innovations for sustainable industrial processes



ETV as a tool for green innovations in public tenders



ETV as a tool for the needs of sustainable financing



ETV as a tool to increase the market impact of innovation programmes



ETV AS A TOOL TO FOSTER CIRCULAR ECONOMY VALUE CHAINS AND BUSINESS MODELS

Target group

Authorities and experts involved in the implementation of the Circular Economy Action Plan, policy makers connected to policies and regulations at EU, national and regional level, providers of innovative green technologies, industrial associations of sectors as: textiles, plastics, construction, waste management and processing sector, experts participating in the revision of the Eco-design Directive.

Policies of concern

The **EU Circular Economy Action Plan** (CEAP 2.0) and the package of related policies require introduction of systemic eco-innovations and new business practices based on new value chains, valorisation of waste, new cross-sectoral linkages and the exchange

of secondary materials across businesses and industries through synergic alternatives of collaboration such as industrial symbiosis. They all demand new technical solutions enabling remanufacturing, recovery, recycling, reuse of materials, high performing sorting techniques for better quality and productivity of secondary materials recovery and reuse, biobased or secondary raw material based materials, and secondly solutions allowing not to generate waste/ close the material loops or dematerialise the processes.

For consumption products different labelling schemes based on compliance assessment/certification have been developed or are planned under CEAP. The labelling shall be applied to provide and communicate objective and credible information on the overall environmental performance of products. This information must be easily understandable by consumers for them to choose greener alternatives. Like these labels referred to in Green Public Procurement as means of proof for meeting the green criteria, ETV could play a role for technical solutions in B2B applications.

Examples of solutions fostering circular value chains and industrial symbiosis that can be verified under ETV:

- recycling of industrial by-products and waste into secondary materials,
- recycling of agricultural waste and by-products for non-agricultural purposes
- Improved resource efficiency through material substitution
- separation or sorting techniques for materials recovery
- reduction of contaminants from waste
- biobased products

What role can ETV play?

ETV helps overcome technology and materials performance barriers hindering development of industrial symbiosis paths and circular business models.

- ✓ ETV facilitates the use of waste materials as secondary raw materials (SRM) and the SRM based products themselves by providing credible and objective information on the technical specifications and the environmental added value of the products and their manufacturing processes not covered by the relevant “fit for purpose” schemes or legislation. It is particularly true when the end of waste criteria varies a lot across Europe or are not clear for specific waste types of applications as SRM in construction sector.
- ✓ ETV may be also used to verify the performance and accompanying environmental impacts of SRM based materials, their manufacturing processes or different remanufacturing processes. It allows to demonstrate that the new materials or the process are not causing secondary pollution of environment (especially with hazardous substances) when compared to conventional process. For companies such information may deliver data necessary for comparing the “business as usual” scenarios involving current management practices of some waste streams vs new business opportunities based on the use of SRM.
- ✓ ETV delivers information on the functional and environmental performance of by-products for use and product parts for circular applications in industry. Availability of such information could build higher confidence of users. For waste stream holders, the information allowing to understand the technologies/ SRM based products could create new opportunities.
- ✓ ETV may become a standard for integrating innovation and environmental requirements related to circular economy in supply chains and redesigning business

models for circularity. For example, ETV could serve as a complementary scheme to assess and provide data on the functional performance of the products and technologies with B2B applications meeting the criteria of the Eco-design Directive.

- ✓ ETV supports and complements the information needs of other environmental performance and management schemes. For example the objective and verified data on technology performance including environmental parameters presented in the ETV Statements of Verification may serve as information source for ISO 14001, EMAS or OEF certified companies to choose appropriate alternatives to achieve/improve their environmental targets. Moreover, the ETV Statements of Verification may serve as a source of information to support compliance with environmental performance schemes for products such as Environmental Product Declaration (EPD), Ecolabel, Product Environmental Footprint (PEF) and Eco-design.



ETV AS A TOOL FOR ACCELERATING INNOVATIONS FOR SUSTAINABLE INDUSTRIAL PROCESSES

Target group

Policy makers and experts involved in IED revision process, BREFs development, implementation of the Zero Pollution Action Plan, developers and providers of innovative green technologies, industrial associations of sectors regulated under Industrial Emission Directives.

Policies of concern

Directive 2010/75/EU of the European Parliament and the Council on industrial emissions (the Industrial Emissions Directive or IED) is the main EU instrument regulating pollutant emissions from industrial installations. The IED aims to achieve a high level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques (BAT). The IED represents a strong legislative driver for improving environmental performance of technologies, but despite this is widely recognized certain barriers technical, commercial and legislative still resist. By helping to overcome these barriers, EU ETV can become one of the instruments contributing to more and faster implementation of innovative technologies in line with the “forward looking approach” adopted for the revised IED, either through BREFs and the cooperation with the planned Centre for Industrial Transformation and Emissions (INCITE) or through engagement by permitting authorities.

The definition of an environmental technology provided by ETV as a product, process or service resulting in an environmental added value i.e. less adverse or beneficial environmental impact compared to current solutions with the same function is compatible to BAT definition as provided in article 3(10) of IED:

Similarly to the definition of a technique, the definition of an environmental technology includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned in relation to its performance

The availability and scale aspect of the BAT definition is reflected in the TRL level of technologies eligible for verification under ETV that must be minimum 7. Which means that a technology must have achieved minimum level where no significant changes will be implemented afterwards, that could affect its performance. ETV does not deal with the economic aspects of a technology and its implementation, it solely focuses on the performance and the environmental benefits.

The attribute "best" referring to the effectiveness in achieving the general level of environmental protection for a BAT is addressed by ETV through compliance of a technology to the definition of an environmental technology from a life cycle perspective and through verification of its technical/functional performance parameters and environmental parameters if not already included under the technical/functional parameters.

Moreover, according to article 15(2) of the Industrial Emissions Directive, emission limit values and the equivalent parameters and technical measures in permits shall be based on the Best Available Techniques (BAT), without prescribing the use of any technique or specific technology. Best Available Techniques are defined in article 3 (10) of the Industrial Emissions Directive.

Zero Pollution Action Plan EU Action Plan: "Towards a Zero Pollution for Air, Water and Soil"¹.

The zero pollution vision for 2050 defines a set of concrete targets to be achieved by 2030 with a clear objective to speed up reducing pollution at source:

- Air: reducing the number of premature deaths caused by air pollution by 55%
- Water: reducing plastic litter at sea by 50% and microplastics released by 30%
- Soil: reducing nutrient losses and the use of chemical pesticides by 50%
- Waste: significantly reducing waste generation, and residual municipal waste by 50%

Achievement of these objectives requires new technologies:

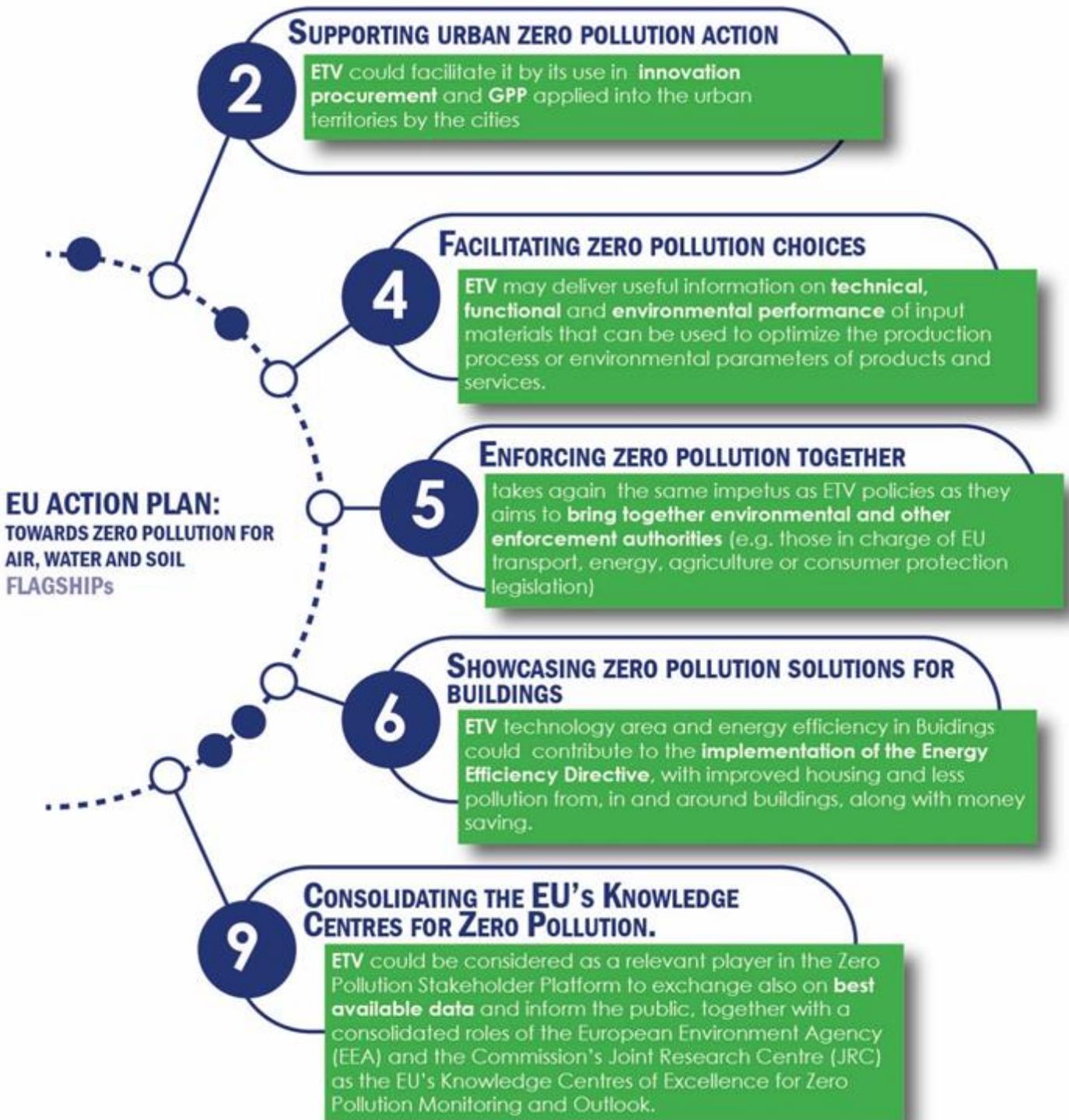
The EU ETV scheme complements the key 2030 targets and efforts towards their achievement defined in the Actions on Zero Pollution.

The technology areas of the EU ETV Programme are compatible with the technologies needed to accomplish the 2030 targets of the Zero Pollution Action Plan.

ETV deals not only with new treatment and processing technologies but also with innovations for monitoring of pollution levels and environmental quality (soil, air, water) measuring parameters reflecting environmental impacts that may be needed to deal with such pollutants as e.g. microplastics

¹ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil' COM/2021/400 final

- New production processes emitting less pollutants to air, water and soil
- New energy technologies saving resources and/or reducing emissions
- New agricultural technologies controlling better the use of fertilisers and pesticides
- New water treatment techniques integrating the removal of microplastics
- New recycling techniques, reuse of industrial by products and used products



What role can ETV play?

The recent revision process of IED was aimed to address, among others, the fact the directive was not dynamic enough to sufficiently support the rapid deployment of innovative technologies. The objectives set up or revision include promotion of the uptake of innovative technologies and techniques during the ongoing industrial transformation, by revising BREFs without delay when there is evidence that better performing innovative techniques become available, and ensuring permits support frontrunners.

- ✓ ETV may function as a source of evidence on the better performing techniques delivering not only information on the technical/ functional performance but also the environmental aspects and the technology readiness level of the new solutions. ETV allows to provide this data for new solutions that reached TRL7. The ETV procedures dedicated to eligibility check request information sufficient to determine that the technology operates in a stable and predictable way when operated under normal conditions and that it has been designed in a way as not to cause more adverse or alternative environmental impacts compared to conventional solutions e.g. techniques defined as BATs.
- ✓ ETV may provide a mechanism enabling identification of emerging techniques or proving the performance of mature technologies with first applications to be recognised as BAT. ETV could support the work of the Innovation Centre for Industrial Transformation and Emissions to be established under the revised IED.
- ✓ ETV may deliver performance data for techniques promoting the use of safer chemicals or chemical alternatives, techniques increasing resource efficiency or the circular economy or novel decarbonisation techniques. In relation to the later, the analysis of the environmental added value which is central to eligibility assessment of a technology to be verified under ETV, may provide a procedure for assessing the new decarbonisation techniques from the viewpoint of their design and the resulting environmental aspects including alternative impacts that may be caused by these solutions from the life cycle perspective

Examples of solutions for sustainable industrial processes that can be verified under ETV:

- Savings of material resources by process optimisation, e.g. savings of chemicals or carbon, while ensuring at least the same functionality and quality as the relevant alternative
- Improved energy efficiency by process optimisation (i.e. specific techniques applicable to particular industrial processes), while ensuring at least the same functionality and quality as the relevant alternative
- Prevention and reduction of pollution and waste from industrial processes (e.g. new methods in surface coating) while ensuring at least the same functionality and quality as the relevant alternative



ETV AS A TOOL FOR GREEN INNOVATIONS IN PUBLIC TENDERS

Target group

Public procurers: enterprises, authorities, public utility services, policy makers and authorities responsible for European, national, regional procurement plans and

strategies, providers of innovative environmental solutions, business support organisations and consulting companies, experts in development of the tendering documentation, technical specifications.

Policies of concern

Considering the fact that at the EU level, the purchasing power of public buyers is estimated to account for around 14% of the GDP i.e. around EUR 2 trillion a year on procuring products and services ², public procurement is a powerful lever for achieving the climate and environmental objectives set in national and European policies by public sector. Therefore, the current and emerging policy developments supporting the implementation of the EU Green Deal relevant for improving the sustainability of products, industrial, financing and innovation processes highlight and strengthen the importance of **Green Public Procurement (GPP)** and **Innovation Procurement (IP)** and mainstream them to these policies. For example, the new Circular Economy Action Plan already sets up an objective to define minimum mandatory GPP criteria and targets in sectoral legislation as well as GPP uptake monitoring and reporting. To maximize the utility of IP for the uptake of green and digital technologies, the Commission has issued and promoted a dedicated Guidance on Innovation Procurement. Despite the guidance documents available on Green Public Procurement and Innovation Procurement, the potential of these two instruments remains still not fully used by contracting authorities. As indicated in the new European Innovation Agenda, only one third of Member States have strategies to use Innovation procurement. Therefore, under the agenda's flagship on enabling deep tech innovation through experimentation spaces and public procurement, the Commission wants to promote this tool.

An increasing importance of green criteria in public procurement on the one hand and the need to seek innovative solutions demonstrating high technical performance to address environmental challenges of public sector are simulating businesses to develop especially in sectors where public procurers are key investors e.g. public utilities. However, the market entrance of new environmental technologies through public procurement, especially GPP, is often challenging, especially for SMEs offering innovations that often suffer a strong competition from incumbents in demonstrating compliance to technical specifications and award criteria, due to little or no feedback on their previous application and performance confirmed in practice or need to be developed.

In IP, the key challenge is in definition of technical specifications including the level of ambition and the choice of best performing alternatives that meet these criteria as it often

ETV in public procurement

For new environmental technologies available on the market, Green Public Procurement (GPP) may facilitate their diffusion, whereas Innovation Procurement (IP) is aimed to deliver novel, ambitious green solutions for market uptake and set the trends for their development.

The new public procurement directives focus on the need of environmental considerations in public tenders.

At the same time the use of references to formal standards is encouraged due to their legitimacy to ensure credibility and transparency of procurement procedures.

Moreover, formal standards supporting sustainability accelerate diffusion of environmentally friendly solutions necessary for achieving larger environmental impact from GPP by reflecting the users' needs⁴. They may also drive the innovation by opening competition to potential providers and new ideas

² http://ec.europa.eu/growth/single-market/public-procurement_en

requires capabilities and the expert knowledge of the IP team accessing the frontier of a specific scientific field

What role can ETV play?

ETV should be considered in GPP and IP in a way to provide a level playing field for green innovations, however, ensuring at the same time that other independent third-party conformity assessment schemes are also recognised as equivalent means of proof.

ETV confirms that the new solution is a green innovation that:

- ✓ performs better than conventional technologies in real operational environment → Relevant to assess the performance of innovation vs your performance ambition levels for the intended application
- ✓ delivers an environmental added value: i.e. results in less adverse or beneficial environmental impacts compared to solutions currently used in similar situation → Relevant to proof that the innovation will address your problem with a reduced environmental impact

The EU ETV scheme is compatible and complements Green Public Procurement and Innovation Procurement in several ways, such as:

- ✓ The definition of environmental technology according to the ETV standard ISO 14034 is fully compatible with the definition provided for GPP as both focus on reduced environmental impact. It allows technologies to fall under one or more subjects of green procurement, for instance: goods, services, construction works.
- ✓ ETV could be used during Innovation Procurement to define what is an innovative technology compared to a reference technology. ETV Statements of Verification may help determine the availability of products or services satisfying the needs of the contracting authority and facilitate decision making on

The EU ETV Statements of Verification meet the criteria of a document issued by an 'independent third-party certifier' or 'an independent third-party body' i.e., a body that performs conformity assessment activities accredited either in accordance with Regulation (EC) No 765/2008 of the European Parliament and of the Council or an accreditation body signatory to the multilateral recognition arrangement (MLA) for product certification of the International Accreditation Forum (IAF). It is relevant in the case when the procurement enables provision of specific third-party certificates to demonstrate compliance with the tender documents or their equivalents.

the need for concluding an Innovation Partnership if such offer does not exist on the market.

- ✓ ETV procedure including the requirements of performance test data generation compliant with the requirements of ETV may provide an overall framework to be adopted in tender documentation (including a draft contract) for specifying a method to be applied for tender evaluation and verifying contract fulfilment at individual stages of the procurement.
- ✓ For Innovation Partnership stages resulting in TRL7 or higher, testing and test data generated based on ETV procedure may be applied to demonstrate fulfilment of the contract performance, e.g. to reduce the number of partners by terminating individual contracts that are not resulting in the delivery of innovation performance as defined in the targets or that result in environmental impacts more adverse than conventional technologies
- ✓ For tenders evaluation and contracting, the overall framework based on ETV scheme (described in the procurement documentation!) provides a methodology for a fair comparison (benchmarking) between the offers based on objective, factual approach.
- ✓ At the end of the contract a full ETV verification can be implemented as means of proof to demonstrate fulfilment of the contract requirements performance at the final stage of an IP.

- EU ETV scheme can be used by contracting authorities to check the conformity of performance to the specifications, both technical and environmental,
- EU ETV Verification report may be considered in GPP and IP as equivalent to test reports from a conformity assessment.
- EU ETV Statement of Verification can be used as an equivalent to ecolabels (multi-criteria analysis, compliance checks by independent qualified certifiers, life cycle approach) as means of proof awarded by independent third parties.

How ETV can take over the roles of a contracting authority?

Planning and preparation

- A verification body provides input to technical specifications** for tender preparation concerning performance parameters relevant to the subject matter of the contract:
- technical/functional performance
 - environmental performance
 - quality assurance framework
 - testing requirements

Contract performance

- A verification body takes over the responsibility for delivering evidence on candidate technologies performance:**
- Ensure test data generation process (verification bodies do not perform testing!!!)
 - Approve test plans and test reports
 - „qualify“ test bodies selected by technology providers for testing (test data for ETV must be generated compliant to ISO 17025 requirements),
 - ensures the quality of the test data generation process/environment
 - Provides final assessment: concludes on the verified performance, provides verification report and ETV statements



ETV AS A TOOL FOR THE NEEDS OF SUSTAINABLE FINANCING

Target group

Investors (private and public), banks, financial market participants (asset managers, insurance companies, pension etc.), financial advisers, large and listed companies.

Policies of concern

Sustainable finance is indispensable to implement the Commission's strategy towards achieving the European climate and energy targets and reach the objectives of the European Green Deal. It is characterized by making sustainability considerations part of financial decision-making, aiding to more climate neutral, energy- and resource-efficient and circular projects. Major private and public investments are required to transform the EU economy to deliver on climate, environmental and social sustainability goals in 6 defined areas:

1. Climate change mitigation
2. Climate change adaptation
3. The sustainable use and protection of water and marine resources
4. The transition to a circular economy
5. Pollution prevention and control
6. The protection and restoration of biodiversity and ecosystems

The definition of an environmental technology based on the demonstration of the environmental added and the life cycle approach provided by ETV is compatible with the way in which significant contributions of activities are considered consistent with the taxonomy.

Both types of significant contributions considered under the taxonomy involve assessment of the technical solutions applied in the activity.

The Technical Screening Criteria comprise parameters referring to the performance of the technical solutions which demonstrates the utility of ETV as a source of information contributing to the assessment of the economic activity in terms of its impacts on the environment in line with the approach of the EU Green Taxonomy.

Within this framework the **EU Green Taxonomy** creates a common language defining economic activities that achieve levels of environmental performance i.e.:

- provide a significant contribution (substantive contribution) to at least one of the six environmental goals ,
- cause no significant harm (do no significant harm -DNSH) to any of the other five objectives

For each environmental objective, the taxonomy recognizes two different types of significant contributions that can be considered consistent with the taxonomy:

- the activity itself is carried out in a way that contributes significantly to the environmental goal e.g., building renovation, energy-efficient manufacturing processes, low-carbon energy production or .
- enabling activity: the activity that improves the environmental performance of another business or other activities and does not in itself jeopardize environmental

goals. e.g., production of low-carbon products, key components, equipment or machinery.

A set of Technical Screening Criteria is used to assess the economic activity. These criteria involve many parameters specific to performance of technologies / processes/ materials that are involved in the economic activity.

In this way, investors can not only identify investment opportunities contributing to the environmental policy and climate-change objectives but will have a greater choice of projects and products to satisfy the growing demand on green investments. Sustainable, transitional and enabling businesses, can benefit from new sources of funding. Additionally, with the adoption of the Sustainable Finance Package on April 2021 and the Corporate Sustainability Directive (CSRD), all large companies will be required to publish regular reports on their environmental and social impact activities, including their alignment with the EU Green Taxonomy.

What role can ETV play?

Capital providers, such as banks, venture capital, investors and business angels can make use of EU ETV as a tool to de-risk investments when financing projects which include environmental technologies.

ETV can serve as compliance-check and provide guarantees of the technology's performance. Financial stakeholders may profit from an improved public image by supporting the development of green investments with verified technologies.

The EU ETV scheme complements the efforts of the sustainable financial policy framework to direct investment into sustainable activities by delivering transparency and comparability on the green claims of innovative technologies, as well as avoiding greenwashing, one of the main purposes of the framework.

EU ETV can concretely support the implementation of the EU Green Taxonomy by:

- ✓ providing a mechanism for investors/capital providers enabling the uptake and financing of activities involving innovative, emerging

technologies with an environmental added value. For example, ETV can serve as a default mechanism facilitating due diligence procedures for providing proofs on their significant contribution to sustainability objectives via verification of performance, in order to make these innovations eligible for financing by default if they are ETV verified. This mechanism can be based on the link between the Technical Screening Criteria defined for the environmental objectives that often correspond to the performance parameters of technologies required to achieve minimum values/thresholds.

- ✓ ETV can also support demonstration by the technology user/investor of the compliance of the verified technology to the Technical Screening Criteria, for the purpose of assessing the environmental sustainability of the verified technology towards financial market actors offering 'green' financial products.
- ✓ Reciprocally, when verifying the performance of green innovations under ETV, the Technical Screening Criteria may serve as a source for the definition of the performance claim and environmental parameters to be verified considering the environmental impacts associated with the intended application of the technology.

- ✓ For investors/capital providers investing in green/cleantech ETV may aid identification of innovative green investments/undertakings (e.g., investments in start-ups) as well as a tool for de-risking the offerings towards clients (technology users),
- ✓ ETV can contribute to creating a monitoring or revision mechanism based on the verified technologies enabling updates of the Technical Screening Criteria.
- ✓ For documenting taxonomy eligibility and alignment. ETV Statements of Verification, on the same principle as third-party ecolabels may help auditors in such assessments providing information relevant to compliance to the technical screening criteria.



ETV AS A TOOL TO INCREASE THE MARKET IMPACT OF INNOVATION PROGRAMMES

Target groups

R&D programme owners at EU, national and regional level technology innovation agencies and national innovation support institutions, business support organisations, R&D organisations, startups, spin-offs.

Policies of concern

Adopted in July 2022, the **New European Innovation Agenda**³ aims not only to help Europe to develop new technologies to address the most pressing societal challenges, but also to bring them on the market. It involves funding for scale-ups: with measures benefitting SMEs. As a support for the recovery of the EU economy, it includes a new fund InvestEU that will invest in innovative SMEs as well as R&D projects with strong emphasis on EU policy priorities. It includes attracting additional private investments to support SME scale-up and growth, but also financing projects in sustainable energy, digital connectivity, transport, the circular economy, water, waste, other environment infrastructure etc. The fund is also to support the market uptake of the research results. High priority is also given to enabling innovation through experimentation spaces and public procurement: regulatory sandboxes, test

ETV demonstrates high potential to be integrated as an element of the European innovation ecosystem created under the New European Innovation Agenda supporting 4 out of 5 flagship areas:

- Funding for scale-ups
- Enabling innovation through experimentation spaces and public procurement
- Accelerating and strengthening innovation and addressing innovation divide
- Improving policy-making tools

³ COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A New European Innovation Agenda (SWD(2022) EN 187 final), Brussels, 5.7.2022 COM(2022) 332 final

beds, living labs and innovation procurement. ETV may play a relevant role in these efforts both as a scheme and with its verification methodology. Moreover, the Agenda foresees actions towards accelerating and strengthening innovation and addressing innovation divide: creation of regional innovation valleys and help Member States and regions direct at least €10 billion to specific interregional innovation projects. For the valleys, ETV could work as an element of the innovation ecosystem based on collaboration with stakeholders to create a level playing field helping new environmental technologies compete on the market, also in this context, ETV can give a strong contribution to better define the criteria to access to finance for all type of innovators. ETV could support also the policy framework through providing a clearer terminology, indicators and data sets relevant to the performance of new environmental technologies and thus facilitate policy and regulation making processes.

As a part of the EU innovation ecosystem, the Agenda foresees also establishing 'Innospace', an AI-based open platform, to support the circulation of ideas and access to research results, highlight the demand and supply of innovative solutions, and connect stakeholders to facilitate collaboration. It will provide all stakeholders with information on innovation challenges and opportunities (technology and market trends, intellectual property, demand, etc.) and facilitate the identification of functionalities, services and funding opportunities, public or private, to support the translation of ideas into activities and projects. ETV could become a part of this tool giving visibility to green innovations with proven performance as a supply source of technologies matching the needs of industry in the context of the EU Green Deal priorities.

The **Processes4Planet (P4Planet) Partnership⁴** is a European co-programmed public-private Partnership established between A.SPIRE – as the private entity – and the European Commission in the context of the Cluster 4 (Digital, Industry and Space) of Horizon Europe funding programme. It aim is to transform the European process industries to achieve circularity and overall climate neutrality at the EU level by 2050 while enhancing their global competitiveness. ETV can play an important role in supporting the deployment of the R&I process as addressed in the Strategic Research and Innovation Agenda (SRIA) of **"Processes4Planet" Transforming the European Process Industry for a sustainable society⁵**. The P4Planet SRIA addresses the innovation challenges of processing industries. ETV technology areas dedicated to cleaner production and processes, waste, materials and resources as well as water treatment and monitoring are

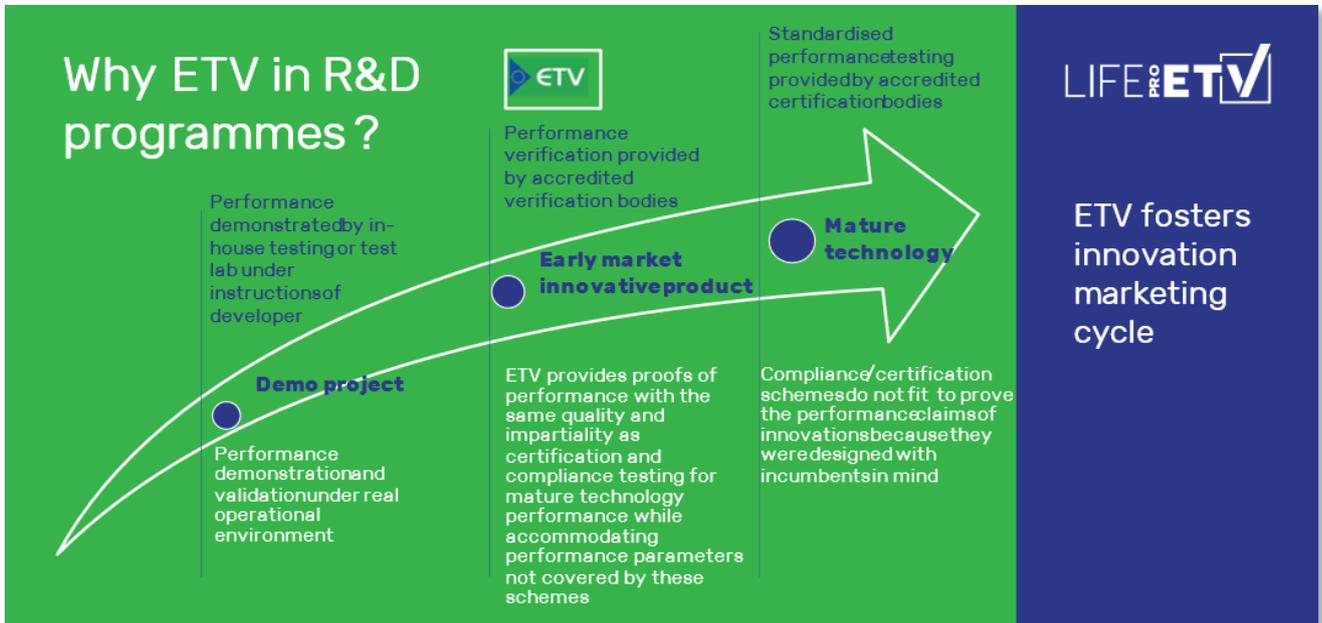
ETV demonstrates a strong potential to support the 3 general objectives of the P4P SRIA :

- 1. Developing and deploying climate neutral solutions:** by facilitating subsequent deployment of technological innovations for climate neutrality of process industries to readiness for.
- 2. Closing the energy and feedstock loops:** by confirming that the performance of new technological innovations supports resource circularity and improved resource efficiency in line with the near zero landfilling and near zero (waste) water discharge in 2050.
- 3. Achieving a global leadership in climate neutral and circular solutions, accelerating innovation and unlocking public and private investment:** by providing a mechanism and an ISO standardized process helping green innovations compete on global markets.

⁴ <https://www.aspire2050.eu/p4planet/about-p4planet>

⁵ https://www.aspire2050.eu/sites/default/files/users/user85/p4planet_07.06.2022._final.pdf

in line with the innovation areas of the SRIA. ETV could help achieve the targets defined in the SRIA: about 50% of the developed technologies could be applied by 2030 and 100% by 2050. It could also support establishing of the first-of-a-kind (FOAK) large scale plants based one or more new technologies proving their performance to reduce the risk of their integration in value chain(s) and deployment by the process industry.



What role can ETV play?

In general, as an element of sustainable transitions in innovation ecosystems, ETV fits ideally as an option with an added value to:

- ✓ R&I programmes dedicated to development of close to-market innovations corresponding to the needs of the environmental and climate policies (or societal challenges), where an specific reference to funding of ETV may be included to support Start-ups and SMEs
- ✓ business development services for SMEs such as coaching, training, mentoring,

As an innovation policy support tool, ETV demonstrates a potential relevant to the objectives of the New European Innovation Agenda especially by:

- providing an alternative, evidence based and ISO standardized process that may help overcome the challenge of regulations that lag behind the innovation cycles and thus facilitate the large-scale diffusion of green innovations,
- providing a tool which can be used to build a system of incentives for companies to seek improvement of their performance, product or service beyond what is specified in the regulation,
- provide a pathway to bring innovations developed with EU and national/regional R&D public expenditures to the market and thus maximise the impact of the EU as well as national/regional research and development programmes.

✓ innovation support mechanisms such as e.g., innovation vouchers or fiscal incentives to foster innovation in SMEs (e.g., tax reliefs both for investments in R&I to commercialise own innovations or for purchase of innovative technologies),

✓ existing as well as new financial and policy instruments in which there is an explicit need to mitigate the financial risk of breakthrough environmental technologies e.g. project development programmes designed to help SMEs or start-ups attract private capital to demonstrate and/or scale up their green innovations.

LESSONS AND RECOMMENDATIONS FOR POLICY AND PRACTICE

✓ Definition of an environmental technology provided by ETV should be recognised by the EU legal framework

ETV defines an environmental technology as a product, process or service that results in an environmental added value i.e. a beneficial or less adverse environmental impact or that helps better measure the parameters reflecting environmental impact. The definition is compatible with the definition of the Best Available Technique provided in article 3 (10) of the Industrial Emissions Directive in many aspects. Also ETV, although focused on 7 technology areas under the EU ETV programme, is a technology neutral scheme. The technical standard ISO 14034 which specifies the ETV process, procedures and requirements does not refer to any specific technology which proves the applicability of ETV and the performance verification methodology useful to support performance based regulations such as IED.

Reference to the ETV definition of an environmental technology should be considered in regulations and guidance documents referring to Green Public Procurement and the EU Green Taxonomy and other environmental performance based regulations and whenever relevant to define or required to demonstrate that innovations are not harming the environment .It should be also adopted into the cross-cutting standardisation for circular economy.

✓ ETV should be included into the circular economy standardisation for product-integrated environmental protection

Standards aid progress towards European and international policies dedicated to resource efficiency and circular economy. They are also referred to in the legal framework for many sectoral policies. ETV is already an ISO standardised process. The definition of environmental technology provided by ETV should be integrated into the circular economy standardisation framework. ETV process could add a value as a third party confirmation to help new environmental products/materials with industrial applications in demonstrating compliance to the requirements regarding use of certain materials (e.g. quality and environmental aspects of secondary raw materials), dangerous/hazardous substances , some circular product properties (e.g. recyclability, degradability, reuse, organic recovery, energy efficiency, reduction of air, wastewater and noise emissions) etc. This information is relevant for many regulatory and permitting bodies especially at national level and industrial users to reduce the risk of applying these innovations and provide a basis for informative decision making in making the choices of greener alternatives. The information is also relevant in the context of Green Public Procurement helping technology providers demonstrate compliance to green criteria defined in tenders.

Integrating ETV as a circular economy standards family seems particularly relevant to address some cross-cutting issues e.g. the revised Eco-design directive, as well as many sectoral policies related to plastic, batteries, WEEE, textiles, construction, food and agriculture (e.g. nutrients recovery) for which performance based regulations are developed or there is a need to address regulatory gaps involving performance of technologies and materials.

Although ETV as a scheme has a defined scope of technology areas, it remains technology neutral in terms of the process which addresses the need of the circular economy horizontal standardisation. A detailed mapping on how ETV could be integrated into the

current as well as planned circular economy standards is need. It should also highlight the compatibility of ETV with other standardised environmental management schemes relevant for circular economy e.g. from the ISO 14000 series. Integrating ETV as a circular economy standard could influence and provide a market relevant basis for future legislation related to product integrated environmental protection for circularity. .

Therefore , CEN-CENELEC Strategic Advisory Body on Environment (SABE) working on the package of standards in support of circular economy should consider ETV as a circular economy standard and the definition of environmental technology provided by ETV should be integrated into the circular economy standardisation framework.

✓ **ETV should work as scheme that facilitates environmental regulatory permits and approvals of innovative technologies for process -integrated environmental protection**

For large industries as well as some public service utilities Industrial Emissions Directive (IED) serves as key environmental performance based regulation. As a the basis for permits and approvals concerning industrial processes and their environmental impacts it uses performance of Best Available Techniques as a reference in many sector specific regulations. Consequently, the permitting bodies use the same reference when issuing environmental approvals for deployment of new technologies. The ETV process involves assessment of new technologies based on test data considering BAT standards as a reference whenever relevant in order to demonstrate their above-average performance. Therefore, at national level ETV as a credible scheme should be recognised by permitting bodies as a scheme for demonstrating compliance to the BAT performance levels. It will reduce the uncertainty of the potential benefits to companies of having a verified technology implemented. For permitting bodies ETV as an inspection scheme should be recognised as a source of evidence helping them better understand how a technology /process , especially when it is designed in innovative way and based on principles different that conventional solution, is able to achieve performance meeting BAT requirements as a basis for issuing a permit on its application.

✓ **ETV should be used as data provider on innovations for large industrial applications to help them get recognised as Best Available Techniques or Emerging Techniques**

Currently, the uptake of innovations for derivation of Best Available Techniques (BAT) referenced in regulations as well as identification of Emerging Techniques (ET) in the IED regulated industrial sectors remains a challenge. ETV could address this challenge as a measure facilitating the feed of objective evidence on the performance of new techniques with a potential to be recognised in BREFs. It refers to sufficiently advanced innovations that have either already been used commercially or are close to commercialisation to be considered as e.g. ET or BATs after positive opinion of pertinent Technical Working Group. Proper recognition and identification of an innovative technique either as BAT or ET may significantly increase its applicability and diffusion. Therefore, at national ETV should be communicated to policy makers involved in the implementation of the revised IED as well as experts involved in the Technical Working Groups working on BREFs revision. Moreover, the revised IED aims to facilitate development and testing of emerging and breakthrough techniques as well as allow more time to achieve ambitious associated performance levels instead of (less strict) levels associated with BATs. In that context, ETV could be used as data provider to prove whether a more ambitious performance level of claimed for the ET has been achieved and eventually provide a basis to recognise it as BAT

setting a new performance standard. Therefore, ETV could facilitate development and testing of Emerging Techniques (revision of IED Art. 15). ETV has also a role to play as a scheme providing data to the monitoring to identify better performing innovative techniques with proven performance for industrial applications as ET and BAT candidates. Therefore, the EU ETV Secretariat as ETV operator on behalf of DG Environment and European Institute of Innovation and Technology (EIT) should establish a close cooperation with the Centre for Industrial Transformation and Emissions (INCITE) planned under the revised IED to feed information on verified technologies for the processes of BREFs revision or creation of new ones.

✓ ETV should be implemented for providing a level playing field for new environmental technologies to aid greening public sector

ETV definition of an environmental technology should be incorporated into the set of definitions used in Green Public Procurement together with making the environmental criteria a mandatory part of specifications. The ETV approach for demonstrating compliance to the definition of an environmental technology is based on a life-cycle approach. It takes into consideration the performance of technical solutions with the same function currently used in similar situation. By making such comparisons, ETV allows to demonstrate the innovation and the environmental benefits provided by them. The definition allows not only to prove the technical viability of innovation in addressing an environmental problem or creating a new opportunity but its reduced environmental impacts compared to current technologies as well. Providing a basis for comparison of technologies in line with the needs of the contracting authorities, ETV should be recognised in the EU GPP guidance documents and national public procurement policies as a scheme offering the choice of best alternatives corresponding to the needs of the contracting authority, especially when they are performance based and offering a methodology for proving compliance to technical specifications.

ETV Statements of Verification should get the same status of recognition as means of compliance proof in tendering procedures as certification schemes e.g. Ecolabel, especially that they demonstrate compliance to the EU regulations defining the requirements concerning third-party certificates. The potential of ETV in support of public procurement should be presented to the GPP Advisory Group and key stakeholder groups involving cities and public procurers such as ICLEI, ARC+ as well as technology users and providers e.g. European technology platforms.

✓ ETV should be embedded ETV into EU and national/regional innovation ecosystems to improve their market impact

ETV has already proven its performance and suitability as a tool to deliver credible and market relevant information helping green innovations access the market. Many technologies developed under e.g. EU programmes like LIFE or Horizon have made an attempt to be verified under ETV. The limiting factors that made some of these attempts not successful were related to lack of sufficient knowledge about ETV from the side of the consortia, time and budget constraints and insufficient TRL level reached of the developed solutions. On the other hand, the reason why ETV was attempted in the projects implemented under these programmes was the indication of ETV in the call and verification costs recognized as eligible budget items. Since ETV requires time and adequate budget, appropriate integration of ETV in the demonstration projects should be considered. The best alternative would be specific ETV dedicated calls under national/regional programmes or EU programmes such as LIFE or Horizon e.g. for innovations that have already been developed under these programmes as a follow up on their way to the market.

As an element of exploitation plans and strategies, ETV could improve the use of public funding to overcome the commercialization gap of environmental technologies and thus their market impact. Furthermore, contractors to EASME or CINEA (e.g. Ernst and Young in LIFE Close2Market projects) providing advice on commercialisation of innovations should include ETV in the portfolio of tools supporting acceleration/market uptake of new technical solutions which is currently not the case.

Consequently, ETV should be also used in programmes at EU and national level dedicated to increasing the innovation level of SMEs that involve assistance for acceleration of innovations (e.g. funding opportunities and support under European Innovation Council programmes) as well as tax releases related to spending on the development a purchase of new environmental technologies. ETV could be used by operators of such programmes as a guarantee ensuring the innovation and reduced environmental impact of the purchased technologies.

For start-ups seeking getting credibility of their innovations, ETV could work as a derisking scheme towards investors. It could also help investors (e.g. venture capitals, business angels) de-risk the offerings that they invested into towards potential clients and thus reduce their market failure.

In the context of innovation ecosystems, ETV has a strong role and potential as a tool for Innovation Procurement. Properly involved in the procurement procedures, it could provide a methodology for purchase of green innovations that should be considered at EU as well as national innovation procurement strategies and guidance documents that are currently developed along with the increasing interest of public procurers in this form of purchase. Reference to ETV should be also provided on the official EU web site concerning Innovation Procurement especially that this tool, beside supporting procurers is also supporting access of SMEs to the markets (domestic, EU, international) in line with the EU SMEs Strategy. Here, a strong collaboration for ETV promotion and guidance on use should be implemented with European Assistance for Innovation Procurement (EAFIP) initiative.

Collaboration with other innovation procurement initiatives is also envisaged e.g. the innovation procurement platform Innobroker⁶

✓ ETV uptake as a policy support tool starts with improved communication about the scheme among EC level policy makers

The analysis of the different policies and innovation support initiatives at EU level showed that ETV is not present in them, despite the potential it offers as presented in these policy briefs. In many cases it is due to lack of internal communication about ETV at the European Commission level. DG Environment as the ETV scheme operator and key enabler for its uptake in EU level policies, should ensure that ETV is proposed for consideration towards other DGs and agendas of the European Commission during internal policy design processes supporting transition towards circular economy, the zero pollution objective and climate neutrality as well as innovation support programmes.

ETV should also be communicated by DG Environment to the advisory groups and stakeholder fora (e.g. Zero Pollution Stakeholder Platform) including experts from national governments and industry that have been established. Since the European Commission is responsible for providing an overarching policy framework with common goals and objectives for Member States to implement, lack of ETV mentioned in these policies causes that the scheme is also not considered by policy and decision makers at national/regional level. It significantly hampers mainstreaming the scheme into national/regional policies and innovation support programmes.

⁶ <https://innovation-procurement.org/innobrokers/>

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