

Executive Summary

AdvanceETV

Coordination Action on Environmental Technology Verification (ETV) – Building a framework for international cooperation

AdvanceETV was a coordination action on Environmental Technology Verification (ETV) funded by the 7th Framework Programme of the European Union between 01/2009 – 07/2012.

The overall target of AdvanceETV with its 12 partners from Germany, Spain, Sweden, Poland, Denmark, the Netherlands, Belgium, the UK, USA and Canada was to bring together the already proposed schemes and protocols prepared within the previous EU ETV activities and to link them with outcomes of already existing ETV systems worldwide.

Furthermore AdvanceETV aimed at building an international framework for cooperation and mutual recognition by supporting the cooperation of the European Commission and the international ETV activities, e.g. the International Working Group on ETV (IWG-ETV).

To achieve these aims AdvanceETV supported the development of the EU ETV Pilot Programme by drafting the General Verification Protocol (GVP) based on the analysis of former EU FP6 projects dealing with ETV. The GVP is the main technical reference for the implementation of ETV procedures and co-ordination at the European level.

In order to show how ETV could be used as a supportive tool for other policies, regulations and voluntary schemes potential complementarities were assessed in the framework of the project.

AdvanceETV has also helped develop a framework for international mutual recognition on ETV, in particular by drafting a framework for joint and co- verification at international level tested on real verifications with US, Canada and EU. Several AdvanceETV partners contributed to the work of the IWG-ETV by the preparation of requirements for an ETV programme laid down in the documents “ETV Framework and Policy” and “ETV Procedure”, which are used for the development of a new ISO-ETV standard.

In several conferences and workshops AdvanceETV informed the stakeholders (technology providers, technology purchasers/ users, policy makers) about the principles of ETV and the current status of ETV in Europe and internationally.

More information on AdvanceETV and reports addressing the achievements of the project are available at www.eu-etv-strategy.eu.

A summary description of project context and objectives

Europe is confronted with urgent environmental challenges such as climate change, the unsustainable use of resources and the loss of biodiversity. Innovative environmental technologies could play a significant role in addressing them and, at the same time, could contribute positively to EU competitiveness and growth.

In January 2004 the European Commission (EC) adopted its Environmental Technology Action Plan - ETAP (COM (2004) 38) to improve the development and wider use of environmental technologies. One instrument to achieve the ETAP objectives was Environmental Technology Verification (ETV).

As innovative environmental technologies often face difficulties to break into the market and access potential users, ETV aims to help both technology providers and purchasers by generating independent and highly credible information about new environmental technologies. It will do this by verifying that performance claims put forward by technology developers and vendors are accurate, complete, fair and based on reliable test results.

In December 2011, following the review of the ETAP and as a follow-up to the plan, the EC DG Environment developed and launched the Eco-Innovation Action Plan (EcoAP). This expanded the focus of ETAP from green technologies to all aspects of eco-innovation.

The EU ETV Pilot Programme was launched as part of the EcoAP. Seven member states (Belgium, the Czech Republic, Denmark, Finland, France, Poland and the United Kingdom) have volunteered to participate in the EU ETV Pilot Programme that will initially cover the technology areas:

- (1) Water treatment and monitoring,
- (2) Energy technologies,
- (3) Materials, waste and resources.

The overall target of AdvanceETV with its 12 partners from Germany, Spain, Sweden, Poland, Denmark, the Netherlands, Belgium, the UK, USA and Canada was to bring together the already proposed schemes and protocols prepared within the previous EU ETV activities, link them with outcomes of already existing ETV systems worldwide and thus support the development of the EU ETV Pilot Programme.

Furthermore AdvanceETV aimed at building an international framework for cooperation and mutual recognition by supporting the cooperation of the European Commission and the international ETV activities, e.g. the International Working Group on ETV (IWG-ETV).

The IWG-ETV was founded in May 2008 to work on the harmonization of the different international ETV systems and to approach the slogan "verified once - accepted everywhere". Currently (June 2012) the IWG-ETV is developing a proposal for a new ISO-ETV Standard with an accreditation framework. The ISO-ETV Standard will define and describe all phases of the ETV process, while the accreditation framework will give guidance on the accreditation of organizations involved in the ETV process (i.e., Verification Organizations).

A description of the main S&T results/foregrounds

AdvanceETV gained several results (e.g. the drafting of the GVP) that contributed to the development of the EU ETV Pilot Programme that was officially launched in December 2011. Furthermore the results of AdvanceETV supported the work of the IWG-ETV on harmonizing the different international ETV systems. Important input was given to the determination of the necessary Quality Assurance aspects of ETV, which were also the basis for the development of a proposal for a new ISO-ETV Standard with an accreditation framework.

1. The General Verification Protocol (GVP) – the core of the EU ETV Pilot Programme

Introduction

General Verification Protocol (GVP) is the background document of the EU ETV Pilot Programme. The AdvanceETV report concerning “Recommendations on ensuring best practice of European ETV” as contribution to the international mutual recognition development has become the corner stone for drafting the General Verification Protocol of the EU ETV Pilot Programme by the European Commission and the ETV Steering Group who jointly coordinate the EU ETV Pilot Programme.

What is the purpose of GVP?

General verification protocol describes the principles, the general ETV procedure to be followed when verifying an individual environmental technology and the main actors of the system including their roles and responsibilities. The document is accompanied by a set of appendices which include templates of other ETV documents to be used in individual verifications. Provisions laid down in the GVP ensure that the individual technology verifications were performed according to procedures which are robust, transparent and harmonized across technology areas and that the main outputs of the verification process – Statements of Verification are recognized in the European Union. The principles and procedures included in the GVP are considered subject to harmonization and recognition by other ETV systems operating in the world. They also constitute the basis for setting up a cooperation framework principles for verification bodies from two or more different ETV systems undertaking a co or joint verification to ensure that the results of this effort are mutually recognized. GVP serves as a primary source of reference information for:

- Accreditation organizations – specifying the ETV related requirements for the accreditation of Verification bodies which complement the ISO 17020
- Verification Bodies providing the overall rules and principles which they have to follow when performing individual verifications as well as requirements concerning quality assurance and management
- Test bodies and analytical laboratories specifying the requirements they have to meet in order to be recognized by the EU ETV system as reliable data providers
- Organizations and decision makers implementing the EU ETV Pilot programme on the national level
- ETV Steering Group and Commission services responsible for program coordination on the EU Level in view of its harmonization and mutual recognition with other ETV systems operating elsewhere in the world
- Technical Working Groups who will supervise and guide the performance of the Verification Bodies in the 3 technology areas of the EU ETV Pilot Programme

Also technology manufacturers or developers are encouraged to consult the GVP to get information on the general principles and the requirements of the EU ETV Pilot Programme. Additionally, to help proposers better understand the verification procedures, a comprehensive guide for proposers to the EU ETV Pilot Programme has been developed within AdvanceETV. It presents the GVP principles from a practical perspective and in the scope relevant for a proposer.

How the document is structured?

The GVP consists of the following three sections:

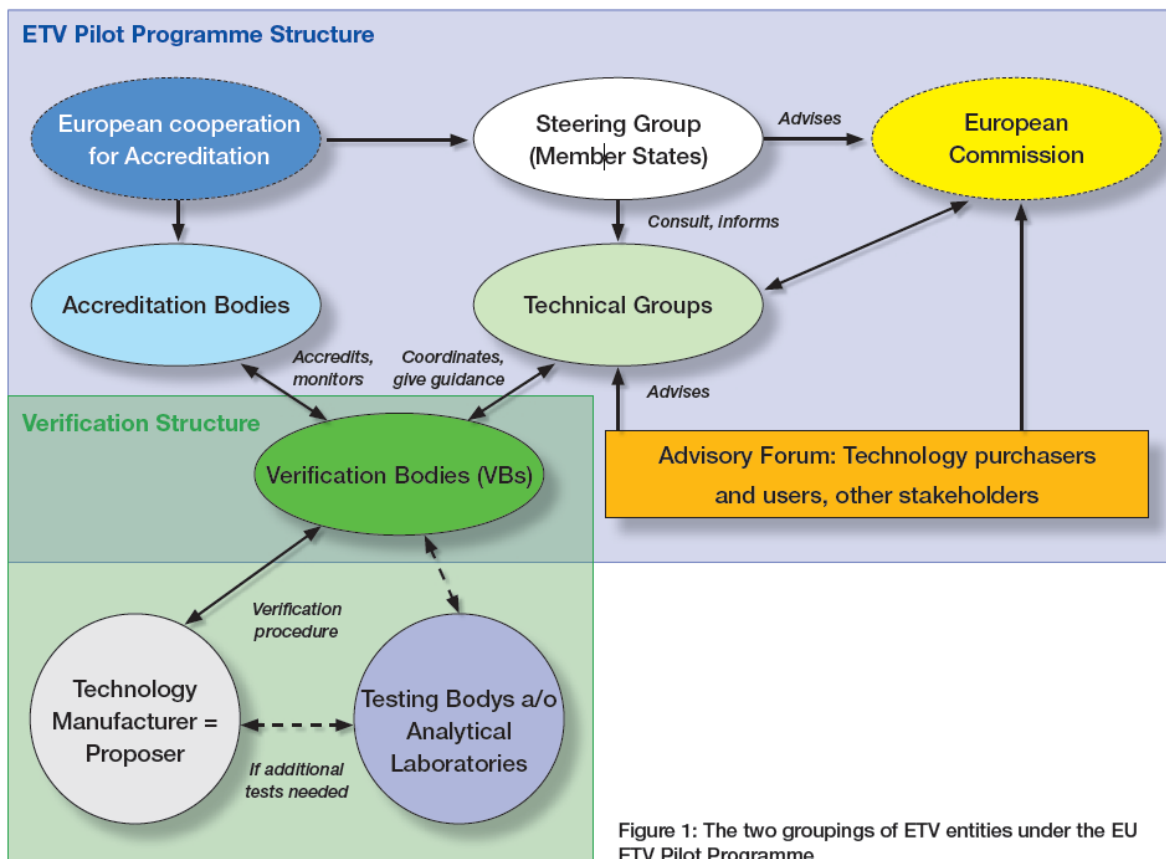
- Part A: Environmental Technology Verification pilot programme
- Part B: Verification procedure
- Part C: Quality management
- Part D: Supporting documents (Appendices)

Part A: Environmental Technology Verification Pilot Programme

This part describes the overall organization of the EU ETV pilot programme including the objectives, technological scope, management and operation and the legal framework. It also presents the two following groupings of the ETV system entities together with a specification of their roles and responsibilities:

- EU ETV Pilot Programme structure: entities constituting the organizational framework for the management of the EU ETV Pilot Programme i.e. European Commission, ETV Steering Group, European co-operation for Accreditation, accreditation bodies, verification bodies, technical working groups, advisory forum;
- Verification structure entities: directly involved in the verification process: verification bodies, test bodies, analytical laboratories and proposers.

Figure 1 below presents the two groupings of the ETV entities together with the relations between them. As it can be seen from the diagram verification bodies play a role in both structures. Beside the description of the organizational and management aspects of the EU ETV Pilot Programme and the verifications, Part A includes also a general overview of the verification procedure focusing on a stepwise approach and explaining in brief the subsequent phases of the process as presented in figure 2.



The phases and individual steps therein are described in details in Part B.

Part A ends up with a specification of the requirements concerning the use of the ETV logo and the Statement of Verification and the follow up activities after the verification which are related to proposer's feedback on the ETV usefulness, addressing the complaints which may arise in relation to the verification procedure and outreach activities.

Part B Verification Procedure

Part B is of an executive character and presents the operational details of the individual phases and the steps within of the verification procedure:

- entry into programme,
- eligibility check of a candidate technology,
- development of the proposal for verification,
- key aspects of the contractual arrangements associated with the verification procedure,
- development of the specific verification protocol including revision of claim, requirements concerning the test design, data quality, testing, measurements and calculation
- assessment of existing data and decision on the need to perform additional tests,
- testing including test plan development,
- requirements concerning the testing site selection, drafting the test plan and development of a test report
- assessment of all data, final verification of the claimed data and development of the key ETV outputs: verification report and Statement of Verification,
- publication and use of the ETV outputs and the logo.

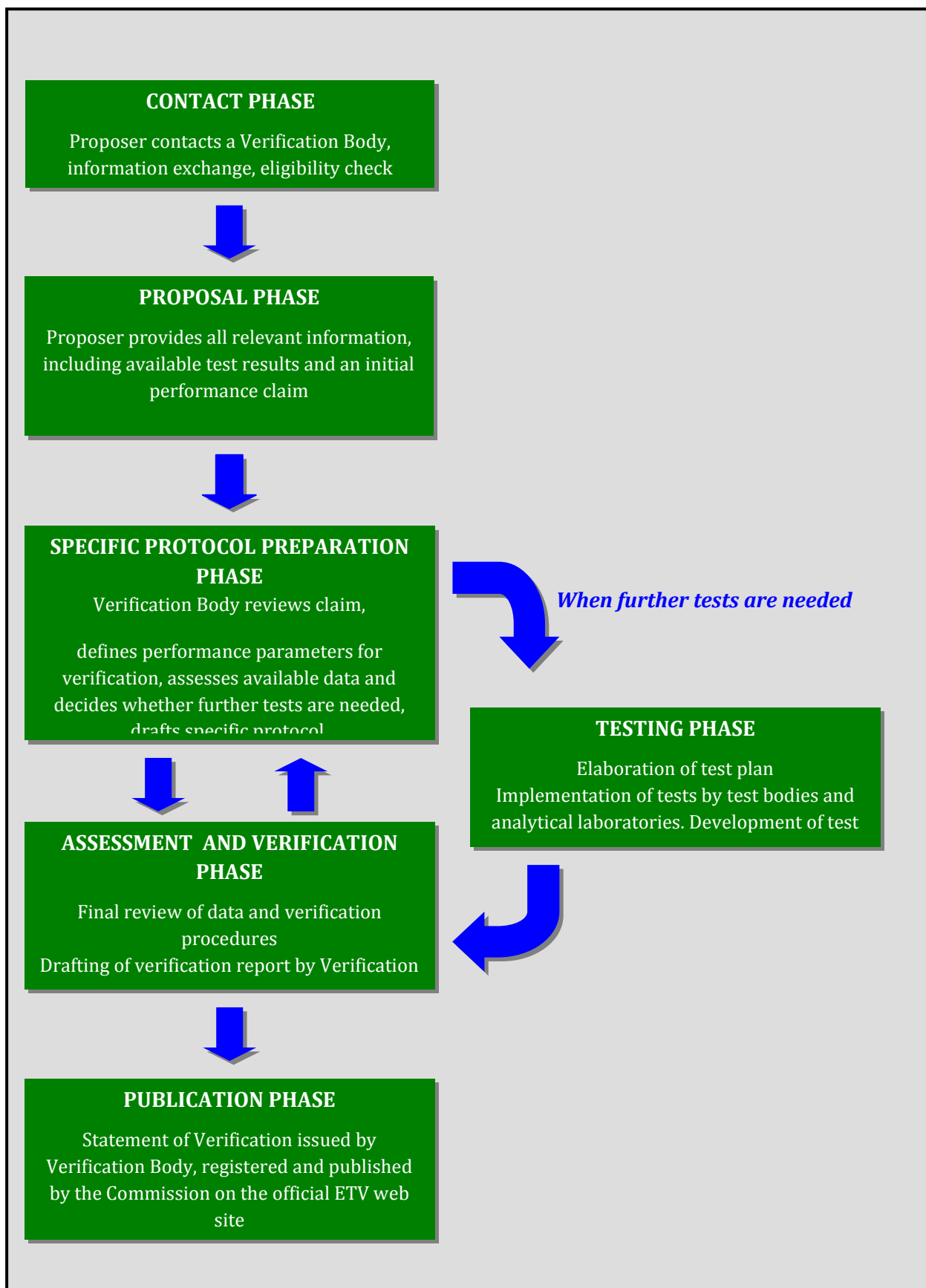


Figure 2: Overview of the verification process under the EU ETV Pilot Programme

Part C Quality management

The aim of part C is to specify the requirements concerning quality assurance, control and management for both verification activities and ETV entities performing them under the EU ETV Pilot Programme so as to guarantee the credibility and veracity of the ETV results.

These refer in particular to the quality management system requirements which the entities involved in verification (Verification Body, test body and analytical laboratory) must have implemented. ETV Pilot Programme requires that this system must meet the principles of ISO 9001 (Quality management systems – Requirements) or an equivalent standard and conforming to the requirements of GVP.

In addition to that, GVP lies down also the accreditation requirements of the EU ETV Pilot Programme of the entities:

- Verification Bodies must be accredited under ISO 17020 to applying this GVP
- analytical laboratories must be accredited according to ISO 17025 (General requirements for the competence of testing and calibration laboratories) for the relevant methods of analysis

Figure 3 presents the overall system of quality control and assurance of the EU ETV Pilot Programme.

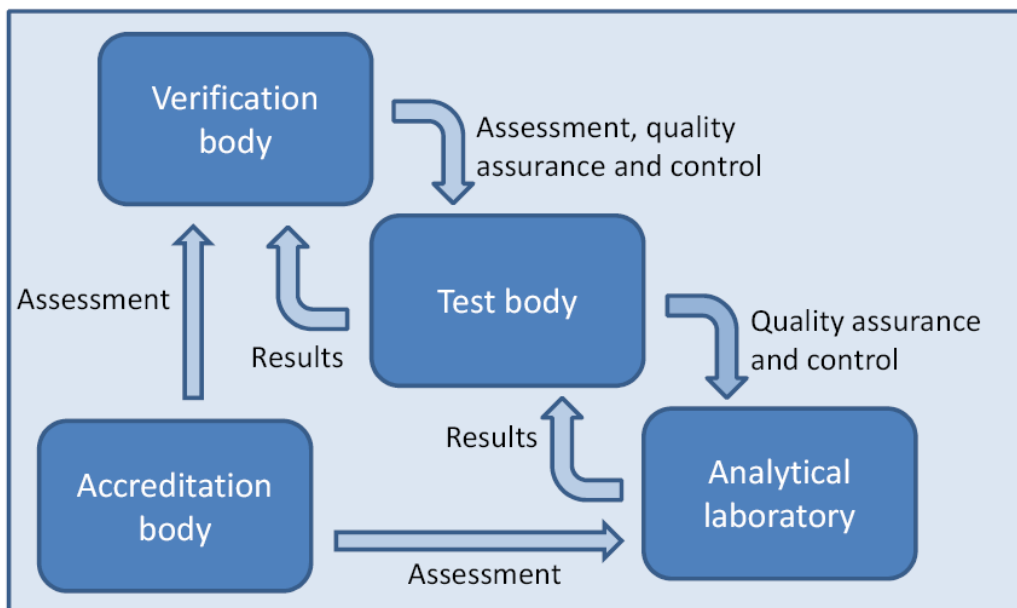


Figure 3: Overview of the quality control and assurance system of the EU ETV Pilot Programme

Part C includes also a description of procedures which are to be followed by the individual entities in order to ensure the quality management and control within the scope of activities for which they are responsible in the verification process with an overarching role of the verification body who takes the guarantee for the overall quality assurance of the entire verification procedure.

Part D Supporting documents (Appendices)

Part D consists of 7 appendices which include documents supporting the implementation of the GVP for individual verifications by the process entities. Appendix 1 includes a glossary of terms and definitions used in the EU ETV Pilot Programme. Appendix 2 presents in details

the technology scope (technology areas broken down to technology groups/applications) of the EU ETV Pilot Programme.

Appendices 3 and 4 present a flowsheet of the verification activities from the perspective of the proposer and the verification entities. Appendix 5 consists of a selection of templates to be used by verification entities for drafting key documents of the ETV procedure i.e. quick scan form, contract for verification, specific verification protocol, test plan, test report, verification report and statement of verification. It also includes a table to help define performance parameters relevant from the life cycle assessment viewpoint. Appendix 6 aims at explaining that an individual verification procedure is a dynamic process. It illustrates an evolution pathway of the initial performance claim presented by the proposer to the final performance verified in the process with an explanation of the different factors which may influence the modification of the claim at the individual stages of the procedure. Appendix 7 presents in details the quality management documentation requirements for the test bodies to ensure that they are a credible and reliable data provider.

2. Complementary benefits of ETV: synergies with EU policies and funding opportunities

With the aim to improve implementation of innovative environmental technologies and thus improving the environment, Environmental Technology Verification (ETV) has clear links to EU policies and might be useful to support different directives. There are also EU funding programmes, where ETV can be useful and which can be used to support financing of verifications. For technology purchasers, it is interesting to see, if a verified technology can be accepted by authorities. AdvanceETV assessed where ETV could serve as a supportive tool.

Background

To better use the potential for new and innovative environmental technologies, the Environmental Technologies Action Plan (ETAP) was implemented by EU in 2004. Among the different priorities of ETAP, the need of performance verification of innovative technologies was identified as a mechanism to drive innovation from research to the market. In December 2011 the European Commission officially launched the EU ETV Pilot Programme as part of the new Eco-Innovation Action Plan (EcoAP), which is a follow-up to ETAP, expanding the focus of ETAP from green technologies to all aspects of eco-innovation.

The EU ETV pilot programme aims to provide reliable information on the performance of a technology to environmental technologies purchasers.

One of the pillars of this EU ETV pilot programme is to provide better access to the market for innovative technologies; another is to support environmental policies. There are possible links to European instruments and existing verification mechanisms of environmental regulation and directives. The Industrial Emissions Directive (IED) is interesting as it provides a connection to the Best Reference (BREF) documents, where best available technologies in different sectors are mentioned. Emission limit values have to be based on best available technologies.

What is ETV and what not?

In order to assess potential complementarities of ETV schemes with other policies, regulations and voluntary schemes, it is necessary to extend this definition of ETV:

- ETV is a mechanism that would help manufactures to market innovative environmental technology. So, it would be easier to assess the environmental performance of a technology, as it is verified with a sound scientific basis.
- ETV is a scheme addressing innovative technologies with an environmental profile better than standard, not only best environmental performing technologies. The highest level of environmental protection may thus not be a consequence of using verified technologies. Nevertheless, better environmental protection is an indirect consequence, through the informed choice of technology purchasers.
- ETV is a source of scientific reliable information for purchasers and may increase the available knowledge for new technologies and may be particularly relevant where verification is needed to justify the acquisition and use of innovative technologies.
- ETV is not a certification scheme like product certification, but provides independently proven data for decision making support, including e.g. public procurement.
- ETV intends to cover main environmental impacts with a life cycle perspective as far as relevant.

Complementarities with some EU programmes

As the objective of ETV is to support implementation of new environmental technology solutions, it is relevant to look at possible complementarities with EU programmes, especially funding schemes that at least partly support the same aim.

The LIFE+ (Environment) programme supports innovation and demonstration of environmental technologies. As monitoring and evaluation of the demonstrated technologies are integrated parts, verification according to an ETV scheme fits well into a LIFE+ project. There are also currently plans to continue LIFE+ after 2013, which might open for possibilities in this funding programme also from 2014.

Some calls in the 7th Framework Programme can benefit of the usage of ETV in the projects. In several calls new technologies are to be developed or demonstrated. Elements of verification could be part of such a project, e.g. to perform the testing according to the ETV scheme. There might also be possibilities for integration of ETV in the programme following the 7th Framework Programme, Horizon, with its focus on innovations. Further possibilities for funding might exist, also in different national schemes.

Complementarities with the Industrial Emissions Directive and BREF

The IED is the successor of the IPPC Directive. It is about minimising pollution from various industrial sources throughout the European Union. Operators of industrial installations operating activities covered by Annex I of the IED are required to obtain an integrated permit from the authorities in the EU countries. The permit conditions including emission limit values (ELVs) must be based on the Best Available Techniques (BAT). There is a specific process to determine BAT, which results in BAT Reference Documents (the so-called BREFs).

As the BREF documents provide information about best available technology, it is desirable to link ETV to this process, in order to allow a fast access to the BREF for verified technologies that qualify. The current BAT process though provides only limited possibilities. An option is to integrate ETV results into the chapter of emerging technologies in the BREF documents, which would provide technology suppliers a possibility to refer to the chapter.

Complementarities with Environmental legislation and initiatives

ETV is only one of the different instruments existing. In cases where ETV can act as a complementary tool to environmental policies, including legislative or voluntary schemes, this might be beneficial for the schemes as well as ETV. Environmental regulations (e.g. EMAS and Ecolabel) directives (e.g. Ecodesign) and policy instruments (e.g. green public procurement) have regulated verification protocols, which may be complemented by EU ETV pilot programme. Further possible interaction with other policy instruments might exist as well.

ETV is mentioned as one possible measure to improve confidence in new environmental technology in the Eco Innovation Action Plan (Eco-AP, COM (2011) 899 final). The action plan also mentions other instruments to support eco-innovation, of which some of them can benefit of ETV

3. Practical International ETV Cooperation - networking, joint and co- verification

On the route from national and regional ETV programmes towards an international ETV framework, see Figure 4, practical cooperation between the ETV programmes and operators is important to enhance trust and understanding.

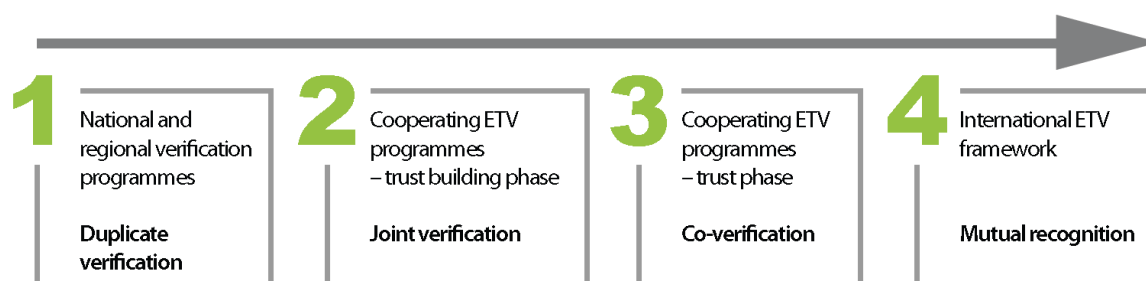


Figure 4 From national and regional to global ETV

Co- and joint verification

In order to support corporation on delivering verifications recognized by two or more ETV programmes, a set of “roadmaps” for co- and joint verification has been developed within AdvanceETV WP3. The roadmaps are consensus documents prepared in cooperation between a broad range of ETV stakeholders, Table 1, although it should be noted that the contributing organisations have not with their contributions endorsed the roadmaps in any way.

Table 1: Contributors to the roadmaps for co- and joint verification

ETV programmes	ETV operators	Other organisations
EU ETV pilot programme	DHI (Denmark)	European Committee for Standardization

DANETV (Denmark)	IVL (Sweden)	Institute for Prospective Technological Studies (EU)
US EPA ETV	Tecnalia (Spain)	Environment Agency (United Kingdom)
Canadian ETV program	Battelle (US)	HACH-LANGE (Germany)
ETV Korea	OCETA/BLOOM (ETV Canada)	DECHEMA (Germany)
ETV Japan		Deltares (Netherlands)
ETV Philippines		Institute for Ecology of Industrial Areas (Poland)
		et environment and technology (Germany)

Joint verification, Figure 5, is where a technology, product, or process undergoes a single verification process carried out collaboratively by two or more verification programmes using mutually recognized verification procedures, processes, and quality management systems. The outcome is a verification that satisfies the requirements of the respective programmes.

The intent of **co-verification**, Figure 6, is for a technology owner to obtain equivalent verification statements from two or more ETV programmes based upon the verification results obtained by a single verification organisation. This approach is different from a joint verification where two or more programmes actively participate throughout the entire verification process. In co-verification, two or more verification organisations cooperate to determine at the outset of the verification process the acceptability of the parameters to be verified and the plan for verification; and upon completion of the ETV procedure, the acceptability of the verification process and results against what was agreed upon at the outset, and whether or not to issue a verification statement.

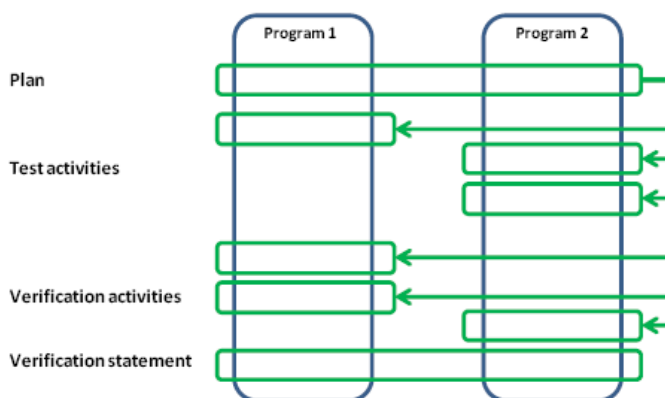


Figure 5: Illustration joint verification

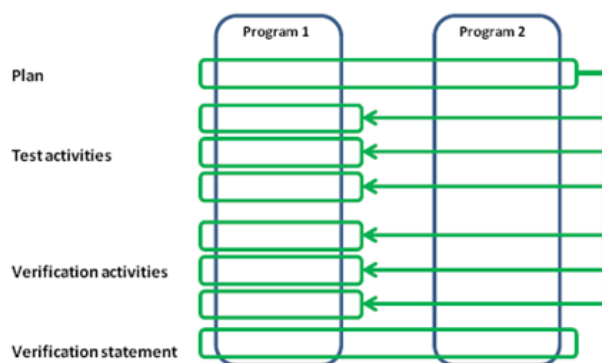


Figure 6: Illustration co-verification

In the roadmaps, detailed guidance is given on optional and required steps and operations of co- and joint verification.

A number of verifications have been completed, already.

Table 2: Completed co- and joint verifications

Vendor	Application	Type of collaborative verification	Involved ETV programmes
Sorbisense	Measurement of volatile organic contaminants in groundwater	Joint verification	NOWATECH, US EPA ETV
HACH-LANGE	Toxicity testing of effluent wastewater	Joint verification	DANETV, US EPA ETV, ETV Canada
Colifast	Automatic detection of total coliform bacteria or <i>Escherichia coli</i> in drinking water	Co-verification	DANETV, US EPA ETV, ETV Canada

The benefits of co- and joint verification for the technology owner is enabling obtaining verification statements that are recognized under more than one verification programme, i.e. in broader markets thus minimizing the ETV costs when aiming at more markets. For the technology user, the benefit is to gain access to verifications done under programmes the user may not be familiar with, while still having the benefit of a familiar verification programme vouching for the quality and validity.

Bilateral cooperation

Practical bilateral ETV cooperation, besides co- and joint verification, between the ETV programmes has until now mainly had the form of exchange of knowledge on organisation and methods of work, verification protocol exchange, specific cooperation projects and participation in/joint organisation of meetings, conferences etc. Examples of bilateral cooperation experiences between ETV programmes and operators are:

- Exchange of information on organization and operation of ETV programmes, e.g. NOWATECH, the precursor of DANETV, learning from the US ETV and ETV Canada programmes through meetings and visits
- Dissemination of verification protocols and reports and the inherent methodologies, e.g. the US ETV publication on the web

- Verification cooperation, e.g. co- and joint verifications performed by DANETV, the US and the Canadian ETV programmes, and translation/transfer of verifications from Japan to the Philippines
- Enhancing ETV interests through participation of other ETV programmes in meetings and discussions, e.g. the precursor of DANETV visiting ETV Canada, and DANETV participating in an ETV Philippines event
- Specific cooperation projects, e.g. ETV Philippines and DANETV proposing to ASEAN to develop a model for cooperation between ETV programmes in industrialised and developing countries, and DANETV preparing cooperation models for use in co- and joint verification with China, Japan, Korea and the Philippines

In essence, all the currently established ETV programmes from Denmark, US, Canada, China, Japan, Korea and the Philippines have been involved in and have prioritised participation in one or more forms cooperation.

For the technology industry, the primary benefits of the bilateral cooperation is, that operators from one ETV programme can, if involved in these cooperations, provide the industry with knowledge or status of ETV in other countries and regions, as well as being entry points for verifications under other programmes. For the technology user, the bilateral cooperation can provide access to latest information on verifications in progress globally.

Availability of ETV cooperation forms

At present most ETV programmes are open for a variety of cooperation forms, Table 3, refer to sections above for details on the cooperation forms.

Table 3: Cooperation forms available with selected ETV programmes (green: available, yellow: potentially available, grey: not available)

	EU	USA	Canada	China	Korea	Japan	Philippines
Co- and joint	green	yellow	green	yellow	yellow	grey	green
Bilateral cooperation	green	grey	grey	green	green	grey	grey
Net-working	green	green	green	green	green	green	green

ETV network

In order to enhance cooperation between the ETV operators of the world and complementary to the International Working Group (IWG) ETV forum for ETV programme owners, a virtual ETV operator network has been suggested by DHI, a project partner of AdvanceETV. The final form of the virtual network is not yet finally found, but currently, ETV operators are invited to register their interest with Mette Tjener Andersson (DHI), mta@dhigroup.com. One possible form is:

- Monthly virtual meeting based upon Skype or WebEx.
- Agenda
 - Mutual information on on-going verifications
 - Exchange of data of technology candidates for cooperation

- Conveying of contact information between technology owner and ETV operator on cooperation candidates
- Information on preparation of generic verification protocols and other tools of mutual interest and status of the ETV programmes

The benefits for technology owners would be that co- or joint verification would be offered where relevant. For both technology owners and users, a benefit would be that the technology operators delivering verifications would be working according to the latest protocols and in accordance with best practice in a global perspective. For the ETV operators, the benefit is access to the latest protocols and best practice for ETV, as well as access to knowledge on candidates for co- and joint verification cooperation.

Conclusions

In summary, ETV is expanding globally, initiatives for bilateral, regional and global cooperation are expanding, and tools and methods are being developed and shared to an increasing extent. While waiting for the ETV ISO standard, the challenge is to expand cooperation and NOT to end up with: verified everywhere to be accepted globally.

4. The route towards an internationally accepted framework for ETV (Support for the IWG-ETV)

If there is one phrase which has characterised a crucial aim of the AdvanceETV project, it is *Verified Once, Accepted Everywhere*. In simple terms, for a vendor of an environmental technology, this means global acceptance for an environmental technology once it has been tested and verified once, and once only. The opposite would mean that a vendor would need to have the technology tested and verified at least twice depending on the countries for their target markets, and possibly several times. This situation happens when there is a lack of harmonisation between ETV programmes in different countries; when there is no harmonisation, there is usually no mutual recognition. Therefore one objective of the AdvanceETV project was to provide the means for harmonisation - and hence mutual recognition - by developing a standard framework and procedure for ETV. This work was carried out by Work Package 4 (WP4) of AdvanceETV, together with the International Working Group for ETV (IWG-ETV). By the end of the AdvanceETV project, the group achieved this, and had produced both a framework and ETV procedure, which are now being progressed to become international standards.

The main task of WP4 was to determine how standards can support ETV and the global aim of mutual recognition. So the team within WP4 began by determining the needs of ETV schemes, and then assessed which existing standards could support ETV. The types of standards included those for testing, analysis, quality assurance, management systems, accreditation and performance-standards for specific types of environmental technology.

Then the team determined what gaps there were in the available standards, and determined what types of standards would be needed to serve as a basis for harmonised approaches and mutual recognition. Ultimately, one aim was to have an international standard or standards which would serve as a structure for harmonised ETV schemes. During this work programme, the members of WP4 worked closely with the other WPs of AdvanceETV, in order to ensure that the results of WP4 were aligned to the work and other outputs of the project, notably the

General Verification Protocol (GVP), which now serves as the foundation for the EU's ETV pilot programme.

At the same time, the IWG-ETV had set up a working group to determine the necessary Quality Assurance (QA) aspects of ETV. This group was given the task of identifying the necessary functions of an international ETV framework, also with mutual recognition in mind; therefore it was beneficial for the IWG-ETV and AdvanceETV to work together, considering their mutual aim of mutual recognition. This in turn would mean identifying the elements of a framework, the organisational structures, supporting standards, and procedures. The combined group then developed a QA strategy and framework for ETV, suggesting the framework for consideration by the IWG-ETV. This proposed framework and strategy was proposed in a document called *Strategic Options for Quality Management and Mutual Recognition of ETV*.

The proposed framework described four levels of organisation (Figure 7), including all the stakeholders with an interest in the operation of ETV schemes, e.g. verification bodies, test bodies, analytical laboratories, accreditation bodies, standards organisations, and the bodies providing governance. The QA requirements included the application of management systems, certification standards and accreditation, which would be applied depending on the level of the organisational structure. The IWG-ETV approved the proposed framework and strategy, so WP4 began work on two documents, working closely with the QA group of the IWG-ETV, and the other work packages of AdvanceETV.

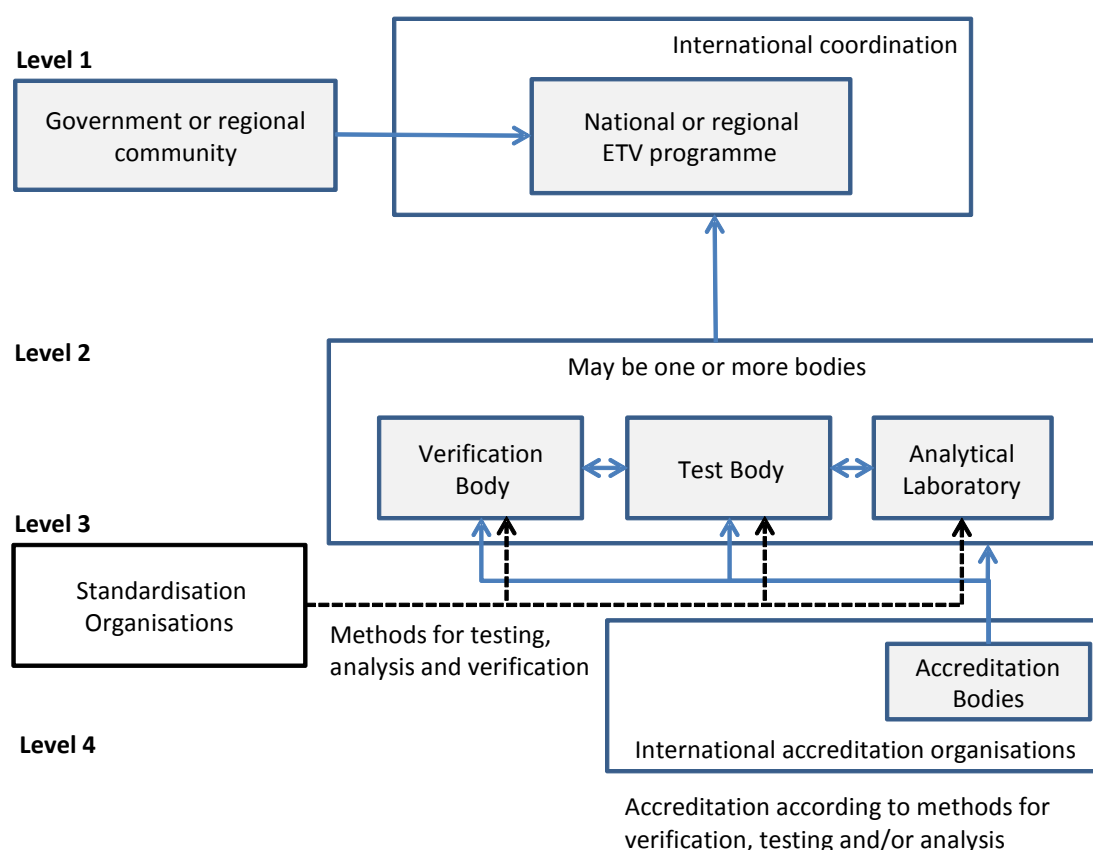


Figure 7. Four level framework for ETV programmes

The two WP4 documents were:

- **An *ETV Framework and Policy*:** This is a descriptive, policy document which describes how ETV programmes work at all the organisational levels.
- **An *ETV Procedure*:** This describes the processes of verification, and provides a harmonised framework for mutual recognition.

During this time, other WPs of AdvanceETV were also developing a policy and framework document for ETV schemes in the European Union (EU), and the GVP. As these two documents were developing in parallel to the documents produced by WP4 and the IWG-ETV QA group, it was essential to ensure that the *ETV Framework and Policy*, and *ETV Procedure* were aligned to both the EU's requirements, and the wider, international requirements of the ETV schemes outside Europe.

The *ETV Framework and Policy* describes the organisational structure developed by the IWG QA Group, the roles and responsibilities of the organisations within it, and in simple terms, the QA requirements. The *ETV Procedure* then goes into more detail, describing the process of verification, together with more details on the QA requirements for the organisations which perform testing, analysis and verifications. These QA requirements include the requirements for management systems and accreditation where appropriate. As the *ETV Procedure* was aligned to the needs of the EU as well as the wider ETV community, then AdvanceETV's GVP can be considered as an application of the *ETV Framework and Policy*, and *ETV Procedure*.

In summary, if a country's ETV scheme meets the requirements of the *ETV Framework and Policy*, and *ETV Procedure*, then the verification reports should be accepted internationally. In order to strengthen both the *ETV Framework and Policy*, and *ETV Procedure*, the IWG-ETV and AdvanceETV are now working together to progress these documents to become international standards through the International Standards Organisation, ISO. The aim is to develop one ISO standard based on the two documents from WP4. If this project is successful, then AdvanceETV will have produced an important foundation for mutual recognition, and fulfil the aim *Verified Once, Accepted Everywhere*.

The potential impact (including the socio-economic impact and the wider societal implications of the project so far) and the main dissemination activities and exploitation of results

AdvanceETV drafted the EU General Verification Protocol (GVP) based on the analysis of former EU FP6 projects dealing with ETV. The GVP is the main technical reference for the EU ETV Pilot Programme that was launched in December 2011 by the European Commission together with the Member States (Belgium, Czech Republic, Denmark, Finland, France, Poland, UK) in order to improve the penetration of innovative environmental technologies into the EU and eventually global markets. The primary goal of the EU ETV Pilot Programme is to provide independent and credible information on new environmental technologies by verifying that performance claims put forward by technology developers and vendors are complete, fair and based on reliable test results. The confirmed performance claim is presented in a form of a Statement of Verification which can be used by the vendor or manufacturer in their marketing efforts and help building a trustworthy business relationship with potential customers and investors.

On international level AdvanceETV provided an important input to the International Working Group on ETV (IWG-ETV) and its Quality Assurance Group. The 2 documents “ETV Framework and Policy” and “ETV Procedure” form the basis of the proposal for a new ISO-ETV Standard with an accreditation framework developed by IWG-ETV. The ISO-ETV Standard will define and describe all phases of the ETV process, while the accreditation framework will give guidance on the accreditation of organizations involved in the ETV process.

The process for the development of an ISO standard on ETV with an accreditation framework that will strongly support international harmonisation will take some time (according to the ISO/IEC directives: up to 36 months¹). Technology owners who would like to have their technology verified and accepted in more than one ETV system before the development of the ETV standard is completed can perform a joint or co- verification using the joint and co-verification roadmaps developed within AdvanceETV. The benefits of joint and co-verification for the technology owner is enabling obtaining verification statements that are recognized under more than one verification programme, i.e. in broader markets thus minimizing the ETV costs when aiming at more markets.

The following dissemination activities were taken during the project duration of AdvanceETV:

Date	Type of activities	Main leader	Title	Place	Type of audience	Size of audience	Countries addressed
31.03.-02.04.2009	Presentation	DECHEMA	ETV introduction at FOKS Kick-off meeting (Focus on Key Sources of Environmental Risks)	Treviso, Italy			

¹ <http://www.din.de/cmd?menuid=47565&menubid=57983&level=tpl-unterrubrik&cmsrubid=57966&cmssubrubid=57983&cmsareaid=47565&menurubricid=57966&languageid=en>

02. – 03.04.2009	Presentation at Eco- Innovation Forum	DECHEMA	Introduction of AdvanceETV	Berlin, Germany			
27.08.2009	Presentation at final conference of LIFE project “TRITECH”	DECHEMA	Perspectives on mutual recognition of ETV – the AdvanceETV project	London, UK			
13.10.2009	1st AdvanceET V conference	All partners	”Accelerating eco- innovation through environmental technology verification”	Brussels, Belgium	technology providers, technology users, policy makers, authorities	100	Europe and beyond
11.- 13.11.2009	Presentation at 4th International Forum on ETV	DECHEMA	AdvanceETV Coordination action on Environmental Technology Verification ETV – Building a Framework for International Cooperation	Manila, Philippines			
08.12.2009	Presentation at Workshop German ETAP Group	DECHEMA	Verifizierung von Umwelttechnologie n- Arbeiten an einem Europäischen System	Berlin, Germany			Germany
March 2010	Newsletter	DECHEMA	ETV – Building a framework for international cooperation		technology providers, technology users, policy makers, authorities	2000	Europe and beyond
19.03.2010	Presentation at Workshop for German Ministry of Environment	DECHEMA	Verifizierung von Umwelttechnologie n - Arbeiten an einem Europäischen System	Berlin, Germany			Germany
24.- 26.03.2010	Presentation at “Globe 2010”	OCETA	Introduction of AdvanceETV	Vancouver, Canada			
26.4.2010	Workshop – for UKAS	EA	AdvanceETV and accreditation	London, UK	UKAS assessors and programme developers and DEFRA	6	UK
September 2010	Newsletter	DECHEMA	Boosting new technologies through performance verification: the		technology providers, technology users, policy makers,	2000	Europe and beyond

			new EU Environmental Technology Verification (ETV) pre-programme		authorities		
19. – 24.09.2010	Presentation	BLOOM	IWA World Water Congress	Montreal, Canada			international
18.- 20.10.2010	Workshop	AdvanceETV	Cross Cutting issues Workshop on Joint and Co-Verification	Bilbao	International Working Group on ETV and Advance ETV partners	29	EU-wide, USA, Canada, Japan, Korea, Philippines
April 2011	Newsletter	DECHEMA	ETV – Acting within an international framework:cooperation – mutual recognition – harmonisation		technology providers, technology users, policy makers, authorities	2000	Europe and beyond
24. – 26.05.2011	2nd AdvanceETV Conference	All partners	ETV Conference ”Helping eco-innovations to reach the market – European and international perspectives on Environmental Technology Verification (ETV)”	Brussels, Belgium	Technology providers, authorities, consultants	100	Europe and beyond
29.07.2011	Training	IETU	Internal training on ETV at the Institute of Oil and Gas	Cracow, Poland	Research	25	Poland
01.08.2011	Workshop	EA	AdvanceETV – the developing EU scheme	Stirling, UK	Environmental Regulators	16	Scotland
02.08.2011	Workshop	EA	AdvanceETV – the developing EU scheme	Stirling, UK	Environmental policy makers	15	Scotland
5.- 7.09.2011	Inter-national conference	IETU	Environmental (Bio) technologies	Gdańsk, Poland	Research	100	Poland
22.09.2011	Meeting	DHI	National ETV initiatives in Denmark and France (Danish EPA and French Ministry for Economy, Finance and Industry)	Paris, France	Possible partners in national Danish and French verification bodies and relevant authorities	8	Denmark, France
October 2011	Newsletter	DECHEMA	EU ETV pilot programme and international		technology providers, technology users,	2000	Europe and beyond

			perspectives on Environmental Technology Verification (ETV)		policy makers, authorities		
11.10.2011	Conference	DHI	Is Water Business Export Business (by the Danish Export Council)	Hørsholm, Denmark	The Danish Export advisors from the Councils, interested organisations, vendors	80	Denmark
October 2011	Flyer	AdvanceET V	Environmental Technology Verification (ETV) Joint and co-verification: An important step towards global acceptance of technology test data		Vendors, branch organisations		EU
3.11.2011	Match Making event	DHI	AquaMatch (by Amsterdam Water Week)	Amsterdam, the Netherlands	Vendors, networks	12	EU, US, Israel
8.11.2011	Meeting	The European Commission	EU ETV Stakeholder meeting	Brussels, Belgium	EU ETV stakeholders		
20.09.2010, 1.12.2010, 4.07.2011, 19.12.2011, 17.02.2012, 13.06.2012	Meeting	DECHEMA, DHI, IETU	EU ETV Steering Group	Brussels, Belgium	EU ETV steering group	20	Poland, Sweden, France, Belgium, Denmark, Germany, United Kingdom, the Netherlands, Czech Republic, Slovakia, Finland
24.11.2011	Workshop at international Environmental Fair POLEKO 2011	IETU	The European Environmental Technologies Verification Scheme – Get prepared to compete effectively!	Poznan, Poland	Industry, research, policy makers, media	50	Poland
22.-25.11. 2011	AdvanceET V materials exhibition at IETU stand	IETU	International Environmental Fair POLEKO	Poznan, Poland	Industry, research, policy makers, media	20.000 visitors of the Fair	Poland
29.11.2011	Oral information	IVL	Update on Advance ETV and ETV pre-	Stockholm, Sweden	Companies and Swedish EPA	12	Sweden

			programme				
03.01.2012	Meeting at the Ministry of Environment, Poland	IETU	Presentation of EU ETV activities incl. ongoing harmonization and internationalisation issues	Warsaw, Poland	Policy makers	6	Poland
January 2012	Newsletter	DECHEMA	Launch of EU ETV pilot programme, ETV Conference in May 2012, EU Eco-Innovation Action Plan		technology providers, technology users, policy makers, authorities	2000	Europe and beyond
11.-19.01.2012	Workshop	DHI	Presentation "Mutual recognition of ETV"	Beijing-China, Seoul-Korea Tokyo-Japan, Manila-Philippines	ETV programme owners, operators and shareholder	Total 60	China, Korea, Japan, Philippines EU
01.02.2012	Article on ETV	EA	The EU's ETV scheme – an article for the newsletter, Environmental Special Report	UK	Several thousand readers with a professional interest in environmental management	000's	UK
29.02.2012	Conference (of Danish Environmental Protection Agency, DANETV)	DHI	Quality stamp on your green technology	Copenhagen, Denmark	Danish ETV shareholders	50	Denmark
21.03.2012	Conference	DHI	Test and verification of water technologies	Copenhagen, Denmark	Water sector	50	Mainly Danish but e.g. also US, Singapore, the Netherlands
April 2012	Article	DHI, BLOOM	Verify Once, Accept Everywhere	Canada	Water sector	1000	Canada
22.-24.05.2012	3rd AdvanceETV Conference	All partners	ETV Conference "Realising eco-innovations – the European Environmental Technology Verification (ETV) pilot programme and its international perspectives"	Brussels, Belgium	Technology providers, authorities, consultants	100	Europe and beyond
26.-27.06.2012	Conference	DHI	Oil in water monitoring	Aberdeen, Scotland	Oil and gas business	60	Offshore oil producers (Scotland, Norway,

							Denmark, the Netherlands, Germany, Russia)
09.07.2012	EU Press conference Related to FP7 launch of the calls in relation to a Member- States centred communicati on strategy	EU Representati on in Poland	Presentation of AdvanceETV as a success story	Wrocław, Poland	research, policy makers, media		Poland
July 2012	AdvanceET V Brochure / Guide for proposers	IETU, DHI, IVL, EA, Battelle, DECHEMA	”AdvanceETV – Supporting the European Environmental Technologies Verification (ETV) approach and international cooperation on ETV”		All kinds of stakeholders (technology providers, technology users, policy makers, authorities)	1.000	Europe and beyond

The address of the project public website, if applicable as well as relevant contact details

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