AdvanceETV

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Coordination Action on Environmental Technology Verification

NEWS

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SEVENTH FRAMEWORK PROGRAMME

EDITORIAL

EU ETV pilot programme and international perspectives on Environmental Technology Verification (ETV)

Innovative environmental technologies are needed in order to prevent or reduce environmental impacts of economic activity or to contribute to the optimal use of natural resources.

ETV can help new eco-innovations to get a faster access to the market by providing credible, third-party checked and scientifically sound information on the technology's performance.

End of May 2011 an ETV conference and workshop on "Helping eco-innovations to reach the market – European and international perspectives on Environmental Technology Verification (ETV)" was held in Brussels, Belgium.

An important item of the agenda was the detailed introduction of the European ETV scheme, the "EU ETV pilot programme" and its current stage of development. As its start is coming closer the "EU ETV pre-programme" has now evolved into the "EU ETV pilot programme".

Based on stakeholder consultation international recognition of the verification results is of great relevance and so the conference addressed also international activities in the field of ETV with an introduction to the existing ETV systems worldwide and their characteristics. In the International Working Group (IWG) on ETV different states are working together towards "Verified once, accepted everywhere" which means that a technology verified in one programme will be accepted as verified in other programmes. Joint and co-verifications among several ETV systems of different technologies are carried out as first steps on the way to mutual recognition.

Discussion and the practical application of verification according to the EU General Verification Protocol (GVP), the basis and core document for verification according to the upcoming EU ETV pilot programme, were focussed during the subsequent ETV workshop. The final publication of the GVP is expected for autumn 2011 as part of the launch of the new EU Eco-Innovation Action Plan, the follow-up of the Environmental Technologies Action Plan (ETAP).

Following the publication of the GVP, verification bodies can apply for accreditation to work under the EU ETV pilot programme and thus become ready to operate under the programme. At this time, there will also be a call for the establishment of European verification bodies. Operation of ETV under the EU ETV pilot programme will most likely be possible from spring 2012 when the first verification bodies have been accredited.

The last article of this newsletter introduces the reader to the complex relationship between environmental regulation, innovation, and sustainable development within the context of an increasingly globalizing economy – which shows where ETV could fit in to encourage and promote innovative environmental technologies.

To learn more about ETV and to keep up-to-date about the progress of the EU ETV pilot programme and international developments on ETV please visit the EU ETV website (http://ec.europa.eu/environment/etv/index.htm) and the AdvanceETV website (www.eu-etv-strategy.eu).

The AdvanceETV partners

During the ETV conference and workshop on "Helping eco-innovations to reach the market – European and international perspectives on Environmental Technology Verification (ETV)" that was held in Brussels, Belgium. (Photo: DECHEMA e.V.)

ETV Conference and Workshop "Helping Eco-Innovations to Reach the Market – European and International Perspectives on Environmental Technology Verification"

On 24 – 25th May 2011 the ETV Conference "Helping Eco-Innovations to Reach the Market – European and International Perspectives on Environmental Technology Verification" was held in Brussels, Belgium. The conference was followed by a workshop on 26th May 2011.

CONFERENCE

The EU ETV pilot programme

The first day of the conference focussed on the introduction of the EU ETV pilot programme that is currently being implemented in Europe.

ETV and policy

The "Europe 2020 Strategy" was introduced together with its flagship „Innovation Union" initiative, which aims to improve market conditions and access to finance for research and innovation, so that innovative ideas can be turned into products and services that create growth and jobs. ETV as an "innovation market support tool" can help address market needs and overcome obstacles by providing independent, reliable, science-based information on the performance of innovative technologies.

The positive experiences of the Danish centre for verification of climate and environmental technologies (DANETV) were presented. Established in 2008, DANETV has played a key role in developing and implementing ETV.

Conference participants were also introduced to the results of a recently completed study on the market potential of ETV. The study provides a detailed assessment of the likely demand for an EU ETV scheme and identifies the technology areas where ETV offers the highest value.

General Verification Protocol (GVP):

Several presentations addressed different aspects of the EU ETV pilot programme, including its general structure and management, and the General Verification Protocol (GVP). The GVP as a core document was developed based on the results of earlier and ongoing EU R&D projects and the experience gained through other international verification programmes. It provides a detailed description of the different steps of the verification procedure and the prerequisites, functions and responsibilities of the parties involved (see also issue 2 of the AdvanceETV newsletter, September 2010).

International perspectives on ETV

After an intensive introduction to the European ETV pilot programme on day 1 the second conference day highlighted some of the international perspectives on ETV.

International Working Group (IWG) on ETV

International ETV activities, including the work of the International Working Group (IWG) on ETV, were presented. IWG membership currently includes Canada, the Philippines and the EU. The USA, Japan, Korea, China, Cambodia and Malaysia participate on the IWG as observers.

The IWG is working towards international recognition of ETV so that a technology verified in one programme will be accepted as verified in other programmes (=mutual recognition).

The IWG Work Plan was developed in February 2009. IWG Members are now drafting and finalizing position papers on 12 specific work activities. It is expected that this will be completed by the end of 2011.

Joint and co-verification:

Joint and co-verification are two options for collaborative environmental technology verification, in the absence of a common international standard for ETV (see also issue 3 of the AdvanceETV newsletter, April 2011).

Joint verification is suitable when two or more programmes want to cooperate closely, but are not yet fully familiar with the detailed requirements of the other programme or programmes.

Co-verification requires more knowledge and trust between the respective programmes, since one programme alone undertakes the full verification procedure. In co-verification, the other programme or programmes are only integrated in the initial phase and the final phase of the verification procdure.

A practical example of joint verification was introduced by DANETV, involving the company HACH-LANGE, a supplier of water analysis instrumentation. Joint verifications of HACH-LANGE's "LUMIStox" and "ECLOX" technologies, respecively a laboratory and a field luminescent bacteria testing system, were performed by DANETV (DHI), Battelle, US EPA ETV, Environment Canada and ETV Canada. Throughout this collaboration, there was good cooperation and knowledge sharing with the company and among the respective ETV programmes.

WORKSHOP

After two days of introductory presentations on the EU ETV pilot programme and international ETV activities, the workshop focused on the future practical application of the EU ETV pilot programme, especially the GVP.

The morning session of the workshop on 26th May 2011 addressed the "Functioning of the EU ETV pilot programme". The afternoon session addressed the topic "From technology performance to environmental impacts and sustainability assessment". Both sessions began with an introductory presentation followed by group discussion.

MAJOR CONCLUSIONS

ETV – in general:

ETV is most beneficial where:

- Products are discrete and innovation is fast paced.
- New products are more expensive than existing ones, but can offer superior environmental performance.
- Technology is typically laboratory tested and the testing of environmental performance is complex.
- Markets are populated by relatively homogeneous technologies.
- Risk averse customers prefer to buy market proven techniques.
- The relationship between buyer and seller is underdeveloped, especially in emerging markets.
- No product standards currently exist and/or certification/standards are unharmonised across EU.

Costs and funding:

- Technology verification costs were identified as a potential barrier for SMEs on the way to promote their innovative technologies. So it is necessary to look for the possibility of public or private funding and other funding mechanisms. Sufficient consultations and preparations are required with vendors, buyers and regulators to ensure that the costs of the verification process are shared.
- Verification could become a recommended element when applying for public funds (e.g. Research and Technology Development – RTD).
- Cost is relative and related to the added value – from the vendor's perspective it depends on the return on investment expected.
- As the scale of testing significantly influences the costs testing should be done at the smallest scale that produces consistent and reliable results.
- In order to save costs verification should be started to be addressed at the development stage (to allow for verification using existing test data).

Marketing and communication of ETV:

- A strong European brand is important to make the concept well-known.
- An EU-wide marketing and communication strategy for the ETV programme is required.
- For an effective EU-wide marketing and communication strategy, different channels should be used and a dedicated independent EU ETV website should be established.
- A common database with the existing verifications should be established and social media as well as personal contact should be used to facilitate sharing of verification information and effective communication among the different stakeholder groups.
- ETV must keep up with the pace of innovation. Direct links to testing and verification organizations should be encouraged to save time and ensure efficient programme execution.
- The active involvement of the environmental authorities and regulators is an important driver for success of the ETV (a good example for that is VERA - Verification of environmental technologies for agricultural production, www.veracert.eu, established in 2008 by Dutch, Danish and German authorities).

Verification Body (VB):

- VBs must be accredited by their national accreditation body according to the ISO/IEC 17020 Standard in order to ensure confidence and the international recognition.
- For the success of ETV the number and location of VBs (concentrated expertise in a few bodies is likely to be more efficient than geographic spread) are an important issue.

SMEs:

- A fast and flexible ETV process is appreciated especially by SMEs as for them the fast access to the market is often crucial for the survival of the company.
- The language issue needs to be taken into account as SMEs are not always fluent in English or French.
- SMEs need guidance in finding the appropriate partners (VB, testing….) and guide is needed to find additional funding mechanisms.

Standards and international acceptance:

- For vendors the international acceptance of the verification statements is of great interest.
- Understanding where existing standards already apply or could apply is a fundamental requirement. The existing standards development and conformity assessment system should be used to produce any ETV related standards that may be required (e.g. where there are gaps).
- A harmonised, international ETV framework should be established. It is important to have a uniform foundation, but allow for national flexibility and for legislation.

Verification procedure:

- Performance claims are crucial for the verification procedure and need to be defined based on eco-innovation parameters and market relevance (incl. legislative requirements) in a consistent way.
- The setup of entrance barriers to the verification procedure should be prevented by having low administrative burden and guide for applicants on the preparation of the application (=proposal for verification) should be provided.
- The relation to test bodies and analytical laboratories should be covered in the contract.

Publication:

- Agreements on reporting and the publication of verification results, as well as the conditions and requirements arising from the provision of public money, should be specified in the contract.
- The verification statement should be a fair summary containing enough credible information to make it useful and informative. It should be published in different languages.
- In the Canadian ETV system failures are not published as this can ruin a company. But if public money was involved all results should be made public.

Environmental impact and sustainability:

- The procedures of Environmental Product Declaration (EPD) and the Key Environmental Performance Indicators (KEPI) could be used to elaborate relevant performance parameters for ETV. The only problem is that EPD and KEPI don't cover all technology sectors.
- Sustainability parameters might bring additional burden (time, cost, efforts), but they also can be helpful to show that same performance is reached with using/producing less (Cost benefit of sustainability parameters is important). To integrate these parameters in the ETV scheme in a cost efficient and reasonable way only single, focused parameters should be included where appropriate.
- The results of ETV may facilitate life cycle costing estimation later on.

Sustainable development – the role of regulation in innovation

Earlier this year, two researchers[1] from the USA published a paper on the importance of regulation in stimulating and supporting environmental innovation. Whilst there is growing evidence that innovation has a critical role in sustainable development, this does not mean that there will automatically be a widespread adoption and use of innovative environmental technologies. The authors examined several factors which influence the uptake of environmental innovation, such as economics, environmental regulations and both national and international policies in environmental management. The authors found that even though the importance of environmental innovation is widely recognised, there is also a phenomenon known as lock-in which acts as a barrier to environmental innovation. In simple terms, lock-in is a resistance to change, and that strong environmental regulation, policies and tools such as ETV are needed to dissolve lock-in and to boost the uptake of innovation.

Lock-in – the paradox of innovation

Ashford and Hall describe innovation as either disruptive or incremental. All technologies were perhaps innovative at one time, and resulted in a massive change. For example, in electronics, the transistor replaced the vacuum tube, whilst the integrated circuit then superseded the transistor. All three of these technologies were disruptive when they were invented, in that they were entirely new and replaced other technologies, or created a new way of doing things.

The large-scale generation of electricity using coal-fired power-stations was also a disruptive innovation. However, even though there have been many innovations which have improved coal-fired power-generation, these innovations have been incremental. Well over half of the planet's electricity is generated using coal, which in turn creates several environmental problems. The process is not sustainable as coal is a limited resource, and because of the emissions from such power stations. Even innovations such as flue-gas desulphurisation and for reducing emissions of sulphur dioxide, or the more recent embryonic technology, carbon capture and storage for reducing emissions of carbon dioxide, are incremental innovations. The fact that we are so dependent on coal-fired power-stations – even though the core technology is well over a hundred years old – illustrates both our dependency on existing technologies and resistance to innovative alternatives. The motor car is another example of dependency and lock-in to both a technology and a means of personal transport. Although modern cars are much more fuel efficient due to innovations in engine technologies such as electronic controls, use of biofuels and hybrid systems, these are still incremental innovations and the problems of air emissions still exist, even if they are lessened. And like coal-fired power-stations, the core engine-technology used in motor vehicles is also well over one hundred years old.

Overcoming resistance and the role of ETV

In the case of power generation, there are existing sustainable, technological alternatives such as renewable energy sources, more efficient energy-using products, and tools for energy efficiency such as better insulation in buildings. Yet the uptake of even the existing, more mature environmental innovations such as these has been relatively low until recently. According to Ashford and Hall, this is due to a combination of lock-in, a resistance to unknown technologies and a lack of regulatory support for innovation.

After analysing worldwide research, regulations, policies and case-studies, Ashford and Hall conclude that sustainability needs a combination of incremental and displacement innovations. Furthermore, their use depends on government intervention through regulations, programmes and policy instruments to support innovation. In the European Union, the European Commission's Environmental Technologies Action Plan (ETAP) is an example of such a programme, especially when combined with regulations which favour innovation, such as the Renewable Energy Directive (2009/28/EC). This Directive includes sustainability criteria.

Ashford and Hall, together with many of the researchers they cite, show that lock-in is often caused by a resistance to new innovations, and an unknown performance of such innovations. This is where ETV has demonstrated a crucial role in helping to dissolve lock-in, and in turn, help bring the environmental innovations to market that will provide the foundations for sustainability.

Rick Gould (UK Environment Agency, Bristol, UK)

References
1 Ashford, N.A and Hall, R.P (2011). The Importance of Regulation-Induced Innovation for Sustainable Development, Sustainability, 2011, 3: pp270-292.

BRIEF FACTS ABOUT ADVANCEETV

Objectives:
AdvanceETV is a coordination action on Environmental Technology Verification (ETV). The overall target of AdvanceETV is 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 aims 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 (IWG) on ETV.

Time frame:
01/2009 to 07/2012

Organisations

DECHEMA e.V. – Society for Chemical Engineering and Biotechnology
Frankfurt / Main, Germany (www.dechema.de)

IVL – Swedish Environmental Research Institute
Stockholm, Sweden (www.ivl.se)

DHI
Hoersholm, Denmark (www.dhigroup.com)

IPTS – Institute for Prospective Technology Studies
Seville, Spain (www.jrc.es)

Tecnalia
Derio, Spain (www.tecnalia.com)

UK EA – UK Environment Agency
Bristol, UK (www.environment-agency.gov.uk)

IETU – Institute for Ecology of Industrial Areas
Katowice, Poland (www.ietu.katowice.pl)

Deltares – Stichting Deltares
Delft, Netherlands (www.deltares.nl)

BLOOM – The Bloom Centre for Sustainability
Mississauga, Canada (www.bloomcentre.com)

CEN – European Committee for Standardization
Brussels, Belgium (www.cen.eu)

Battelle – Battelle Memorial Institute
Columbus, Ohio, United States (www.battelle.org)

et – environment and technology
Esslingen, Germany (www.et-ertel.de)

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