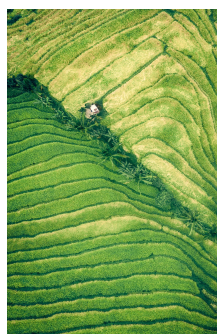


ETV - Agriculture

Agriculture and Agri-food: Defining the Challenge



The agricultural and agri-food sector is characterized by complex relationships between business and the environment, across four main areas:

- Crops;
- Livestock;
- Fisheries/Aquaculture;
- Forestry.

The long-term viability and sustainability of this vital sector depends on a healthy environment, supportive communities and an efficient supply chain, with interconnected infrastructure, services and technologies.

Innovative technologies are required especially where there are shortages of land or water, or where there are pressing soil or climate issues. A triple bottom line approach is necessary - economically, socially and environmentally – to drive increased productivity combined with environmental protection and ecological restoration, supported by innovative eco-efficient technologies that are affordable and sustainable.

Sector needs

Sector strategies

Decision support

Leading by example

This newsletter explores:

1. Agricultural and agri-food sector issues (including climate change; emissions; environmental quality; sustainability).
2. Sector strategies and enabling policies to address issues/problems moving towards global sustainability and greater resiliency.
3. Decision support tools applicable to this sector (e.g. - ISO 14034 ETV; strategic sourcing, knowledge-based procurement practices and the role of ICT).
4. Examples of agricultural sector leadership.
5. Strengthening verification capacity and improving market acceptance of ETV as a key decision support tool



1. Agriculture and Environment: Addressing the Issues



The intricate issues which characterize the agricultural and agri-food sector present society with a conundrum ... The sector is highly vulnerable to environmental and societal pressures, while at the same time having a significant corresponding impact on environmental quality and ecosystem integrity. Some of these compounding issues are highlighted below.

Climate Change



Risks of adverse impacts to agriculture and food systems include changing climate and environmental conditions, leading to potential disruptions to global food production and distribution. Changing environmental conditions include drought, heatwaves, heavy precipitation events, storm damage, pests and invasive species.

Emissions



The agricultural sector is one of the biggest contributors to ammonia pollution and nitrogen accumulation, which impacts plant species diversity and composition within affected habitats. Common, fast-growing species adapted to high nutrient availability thrive in nitrogen-rich environments and often out-compete species which may be more sensitive. Ammonia pollution also impacts species composition through soil acidification and direct toxic damage to leaves. This affects the susceptibility of plants to frost, drought and pathogens, including insect pests and invasive species. If changes in species composition are large, sensitive habitats may be lost.

Water Quality and Availability



Agriculture also presents risks to water supply and treatment systems, due to reduced water quality and declining water supply for communities, industry, and utilities. This is further exacerbated by changing precipitation patterns, melting glaciers, diminishing snowpack, and earlier or more variable spring runoff.

Biotechnology



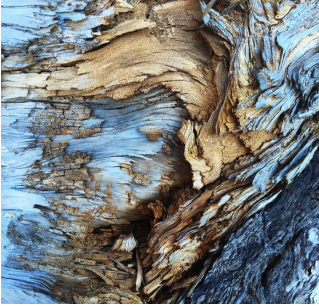
Genetically modified crop varieties - resistant to drought, water logging, soil acidity, salinity and extreme temperatures - can help sustain farming in marginal areas and restore degraded lands to production. Similarly, pest-resistant varieties can reduce the need for pesticides. Addressing food safety and environmental concerns requires transparent, quality-assured testing and verification protocols.

Innovative Technologies and Sustainability

Agriculture presents potential risks to ecosystem resiliency that need to be managed, to ensure the long-term viability of ecosystems and their capacity to provide sustainable benefits. Promising technologies are continuing to emerge to address these issues, combining increased production with improved environmental protection. Examples include organic agriculture, no-till nutrient management and integrated pest management.



Integrating quality and best practices



Innovation Entrepreneurship Investment



Decision support



ISO 14034 ETV



2. Agricultural sector: Strategies and enabling policies

Effective strategies and enabling policies for moving the agricultural and agri-food sector towards global sustainability and greater resiliency require the commitment and capacity to integrate quality systems and best practices in a manner that encourages innovation, entrepreneurship and investment.

Innovation is a key driver for achieving environmental sustainability, requiring businesses worldwide to adapt and adjust their production processes towards greater resiliency. Innovative environmental technologies provide solutions that address pressing environmental challenges such as:

- Pollution prevention, control and remediation;
- Efficient use of resources, including recovery and recycling;
- Climate change resiliency, adaptation and mitigation; and
- Environmental monitoring and surveillance.

Sustainable entrepreneurship is a business-driven concept which focusses on increasing social and economic value by:

- Demonstrating and implementing effective eco-efficiency applications;
- Optimizing the intrinsic strengths of existing infrastructure;
- Integrating renewable and decentralized options with conventional systems;
- Ensuring resource security, resiliency and reliability;
- Measuring, tracking and benefitting from more efficient resource use.

3. Agricultural sector: Decision support tools

Benchmarking and verifying the performance of programs, projects and technologies are important drivers for the development, deployment and successful adoption of sustainable solutions. Often, the missing element is a comprehensive approach for assessing sustainability to assist decision-makers in determining which technology options are most appropriate in meeting the needs and expectations of stakeholders. Governments should lead by example and ensure that procurement policies and procedures reflect sustainability objectives.

ISO 14034 ETV

Environmental Technology Verification (ETV) is a quality-assured process that provides independent confirmation of the performance of environmental technologies based on objective evidence, supporting informed decision-making and enhancing the effective demonstration, deployment and market acceptance of innovative technology-based solutions.

ETV provides a credible, impartial account of the performance of technologies which contribute to the attainment of environmental objectives through:

- Specific, quantifiable environmental benefits (e.g., technologies with more beneficial or less adverse environmental impacts); or
- Superior measurement of environmental impacts (e.g., environmental monitoring and surveillance technologies).

Three key principles help ensure that verifications are performed and reported accurately in a manner useful to stakeholders:

Flexibility**Credibility****Transparency**

- Flexibility in specifying relevant performance parameters and test methods;
- Credibility in generating reliable performance data using robust, quality-assured test procedures;
- Transparency in assessing the evidence and verification results in reports that are clear, complete, and objective.

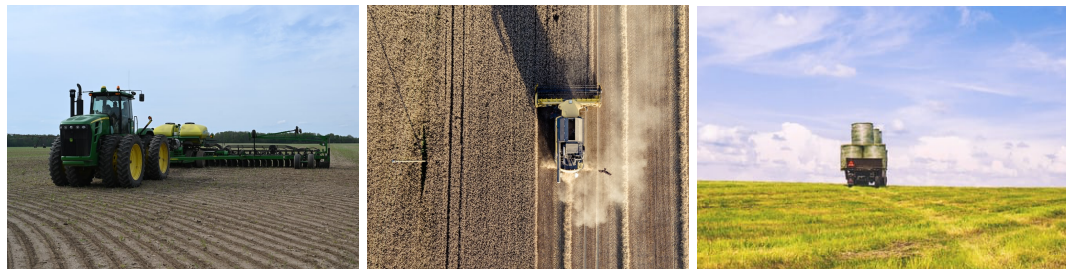


The ISO 14034 ETV process can effectively support strategic sourcing by verifying the performance of technologies whose innovative features or technical and/or environmental benefits are not fully reflected in existing product standards.

Strategic sourcing and knowledge-based procurement**Strategic sourcing**

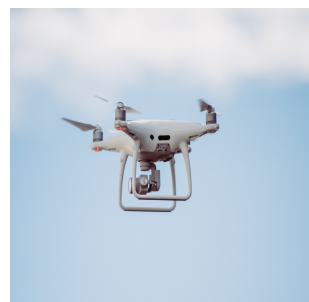
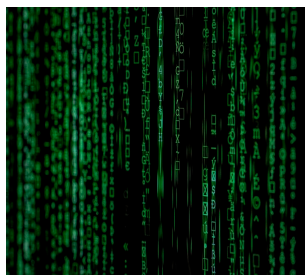
Strategic sourcing is the process of developing channels of supply at the lowest total cost, not just the lowest purchase price. It expands upon traditional purchasing activities to embrace all activities within the procurement cycle, from specification to receipt and payment of goods and services. The strategic sourcing process continuously improves and re-evaluates a company's purchasing activities.

There are distinct differences between strategic sourcing and procurement. Procurement involves tactical day-to-day transactions such as issuing purchase orders to suppliers, whereas strategic sourcing involves strategic planning, supplier development and contract negotiation, using supply chain infrastructure and outsourcing models. Strategic sourcing is typically customized to meet a company's individual needs.

Knowledge-based procurement

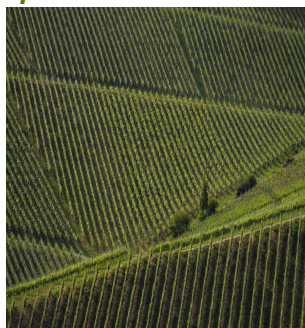
*Comprehensive performance verification
with global market reach
Accurate, Reliable, Credible*

The role of ICT



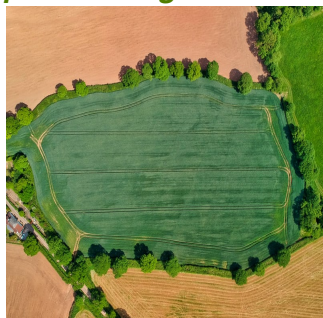
Combining the knowledge and experience of farmers and livestock managers

Integrating site specific information



Fostering trust among stakeholders

Implementing precision agriculture



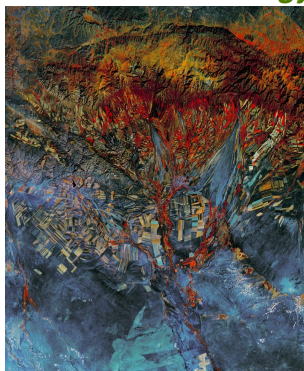
The role of Information and communication technology (ICT) in the agricultural/agri-food sector

The increasing use of information and communication technology (ICT) is profoundly changing the agricultural/agri-food sector, presenting opportunities and challenges that require the engagement of both advocates and skeptics of technology in an open dialogue on the future of “smart farming”.

What are the opportunities, challenges, and potential solutions?

Opportunities	Challenges	Solutions
Use of unmanned aerial vehicle technologies with autonomous flight control and lightweight hyperspectral cameras to calculate biomass development and the fertilization status of crops.	Decision-support tools that allow farmers to differentiate between plant diseases based on optical information.	Combining the knowledge and experience of farmers with these new technologies.
Virtual fence technologies that facilitate livestock herd management based on remote-sensing signals and actuators (i.e., attached to livestock).	Decision-support tools that facilitate the use of remote sensing data to manage livestock.	Combining the knowledge and experiences of livestock managers with these new technologies.
Development of a network of weather and climate data, allowing optimized management of agricultural resources.	ICT that records the input of resources and the output of products, raising questions of property rights and use of data. (i.e., Who owns the data?)	Integrating site-specific weather forecasts, yield projections, and probability maps for diseases and disasters.
Converting spatially explicit big data into information and advice, not only for farmers, but also for regulatory authorities who may use the data for surveillance and control.	The potential misuse of data, which creates additional legal and ethical challenges for regulation and monitoring.	Establishment of a regulatory framework that guarantees high-quality data while at the same time fostering trust among all involved stakeholders.
Reducing the ecological footprint of farming through minimized or site-specific application of inputs, such as fertilizers and pesticides.	Potential for increased risk of unsustainable intensification practices. For example, although disease outbreaks may be delayed by fungicides, there may be a concomitant risk of generating resistant fungal strains that could be more devastating once they overcome prevention measures.	Implementation of precision agriculture systems that mitigate leaching problems and greenhouse gases emissions.

Ensuring access to innovative technology



Increasing transparency of production and processing along value chains



Accountability

Opportunities	Challenges	Solutions
With current ICT, it is possible to create a sensor network allowing for almost continuous monitoring of the farm, including theoretical and practical frameworks to connect the states of plants, animals, and soils with the needs for production inputs, such as water and fertilizers.	High costs to adopt technology for individual farms and limited knowledge and skills can be significant adoption hurdles, especially in developing countries. Thus, access to the latest technologies may remain restricted to big and industrialized farms; or focused on the production of well-known and widely grown crops (such as wheat, maize, and rice).	Ensuring that access to innovative agricultural technology is not restricted.
Smart farming can make agriculture more profitable for the farmer with healthier products that can be sold at higher prices, which is a key strategy in using land more efficiently and boosting consumer acceptance.	Optimizing management to increase product quality (e.g., higher amounts of antioxidants and other secondary metabolites based on optimal fruiting densities in orchards; or physiologically more amenable milk products based on individualized feeding rations of livestock); and use of ICT to register products (i.e., registration as to which farm produced a certain product under which circumstances).	Decreasing resource inputs will save farmers money and labour, and increased reliability of spatially explicit data will reduce risks. Also, increasing the transparency of production and processing along value chains offers the potential for new, more direct forms of interaction among farmers and consumers.
Site-specific information enables new insurance and business opportunities for the entire value chain, from technology and input suppliers to farmers, processors, and the retail sector.	Accountability for errors or mismanagement that may lead to economic and environmental consequences. (For example, who is responsible for traces of fungicides left behind on harvested fruits when that fungicide has been applied too late? Is it the farmer, the provider of the software, or the producer of the sensor?)	If all farming-related data are recorded by automated sensors, the time needed for prioritizing the application of resources and for administrative surveillance is significantly decreased.

4. Examples of leadership in the agricultural sector



Verification of Environmental Technologies for Agricultural Production



VERA (Verification of Environmental Technologies for Agricultural Production)

VERA is a multinational collaboration among the Environmental Protection Agencies in Denmark, the Netherlands, Germany and Flanders for testing and verifying environmental technologies within the agricultural sector, including:

- Air cleaning technologies;
- Livestock housing and management systems;
- Technologies for reduction of gaseous emissions from land applied manure;
- Covers and other technologies for reduction of gaseous emissions from stored manure;
- Slurry separation technologies.

The purpose of this cooperation is to ensure that agricultural technologies with verified environmental performance are accepted in the collaborating countries.

The structure of VERA constitutes a Board, with representatives from the environmental authorities from each of the collaborating countries, and an international group of VERA experts, with experts from each country for each of the above areas appointed by the national environmental authorities.

The group of international experts develops and revises the verification protocols and comments on the documents produced at various stages of the verification process (e.g., test plans, test reports and the statements).

The VERA Board is responsible for the general verification rules, overall strategy and planning. The Board also approves the verification protocols developed by the experts.

The VERA Secretariat, which is currently held by NEN (the Dutch standardisation organisation), coordinates the Board and the Group of experts, and publishes the VERA statements on the VERA web site.

The verifications are performed by verification bodies in each of the collaborating countries.

ETA-Danmark A/S is currently the sole appointed VERA verification body. ETA-Danmark is accredited by DANAK for verification of environmental technology in accordance with EU ETV GVP and ISO 14034. ETA-Danmark is also a member of the VerifiGlobal Alliance and hosts the VerifiGlobal Secretariat.



***Agricultural sector companies and solution providers with technologies
that have been evaluated through VERA***



JH AGRO A/S develops, manufactures and markets environmental solutions for animal production. The company has worldwide technology patents addressing acidification and slurry separation. JH AGRO A/S is part of the Hyldgaard Group, which has more than 30 years combined experience in agricultural slurry handling technologies.

JH Acidification NH₄⁺ system

In the “JH Acidification NH₄⁺ system”, sulfuric acid is added to slurry to reduce the pH from about 7 to 5-6. When the pH value of the slurry is lowered, ammonia (NH₃) is converted to ammonium (NH₄⁺). Ammonium does not evaporate but stays in the slurry as plant available nitrogen. The treatment reduces ammonia evaporation by up to 50 % on a cow farm.



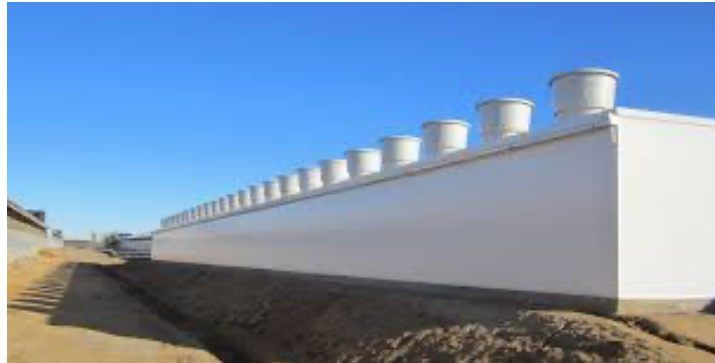
JH SmellFighter

The “JH SmellFighter” technology uses a relatively simple mechanical process to efficiently reduce odor from pig manure. The SmellFighter separates out the solid fractions of the slurry, so that only the liquid is pumped back into the shed. This reduces the smell significantly. The solid fractions can be used as soil improvement or sent to a biogas plant or digester. The JH SmellFighter has demonstrated satisfactory operational stability for use in pig sheds, which have slatted floors and plain vacuum-transition of the slurry with a verified 50% of ammonia emissions and a 51% reduction in odour.



Acidified slurry is more homogenous and easier to handle and separate. Using the SmellFighter also has positive effects as an add-on technology to the JH Slurry Acidification system that needs less energy and less sulfuric acids to lower the pH of the slurry. A fully automatic slurry handling system inside the shed or barn to take out the solids of the slurry means virtually no more clogging up of pits inside the barn.

VERA  For more information, go to: <http://jhagro.com/>



SKOV A/S is a world leader in climate and farm management for animal production. The company provides customized solutions to increase the productivity of livestock production.

The SKOV Farm AirClean BIO Flex 2-stage is a biological air cleaning system that has demonstrated satisfactory operational stability for use in finishing pig units (or pens) with the following verified environmental performance:

- Ammonia emission reduction efficiency of 83 %
- Odour emission reduction efficiency of 74 %
- Total dust emission reduction efficiency at 58 %.

VERA  For more information, go to: <https://www.skov.com/en>

**ROKKEDAHL
ENERGI**



Rokkedahl Energy provides sustainable energy solutions for agriculture and industry. As a leader in heat exchangers for the agricultural sector, with almost 400 plants in operation, the company tailors its solutions to customer needs

The technology evaluated through VERA is the “Agro Clima Unit Clima+ 200 type 2.5” (ACU), a counterflow heat exchange system developed by Agro Supply for broiler chicken houses. The thermal energy of the air drawn out of a broiler house is used to heat incoming air, which saves energy and reduces ammonia emissions due to more effective drying of the litter mat caused by the ACU system.

The ACU has demonstrated satisfactory operational stability for use in broiler chicken houses with a verified 30% reduction in ammonia emissions.

VERA  For more information, go to: <https://rokkedahl.dk/rokkedahl-energi-eng/>

EIT Food - Finding Innovative Solutions for Water Scarcity

< According to the United Nations Food and Agriculture Organization (FAO), food production consumes 70% of the world's freshwater resources; not only in growing crops and raising animals, but also in processing food, where water is a major ingredient. Innovation is needed to reduce waste and optimize water use >

The European Institute of Innovation and Technology (EIT) is an independent EU body which focuses on increasing Europe's ability to innovate by nurturing entrepreneurial talent and supporting new ideas. EIT brings together leading organizations from business, education and research to form dynamic cross-border partnerships in the form of EIT Innovation Communities, which develop innovative products and services; start new companies; and train a new generation of entrepreneurs. EIT Innovation Communities include:

- EIT Climate-KIC
- EIT Digital
- EIT Food
- EIT Health
- EIT InnoEnergy
- EIT Manufacturing
- EIT RawMaterials
- EIT Urban Mobility.

EIT Food, one of the 8 EIT Innovation Communities, focuses on finding innovative solutions for water scarcity in Southern Europe. EIT Food is leading a project together with EIT Climate, EIT Manufacturing, EIT Raw Materials and BioAzul, to address the very real challenges around water scarcity.

The project, "Finding innovative solutions for water scarcity in Southern Europe" is bringing together 30 start-ups from all over Europe to provide water solutions, through innovation, entrepreneurship, education and communication



Innovative technology-based solutions include:

- Advanced sensors and drones for agricultural crop inspection, early detection and treatment of plant diseases
- Remote sensing technologies and advanced metering infrastructure for precision irrigation with real-time monitoring and reporting
- Urban greenhouses and vertical farming using modular towers in controlled environments without soil
- Aquaponics, using aquaculture, hydroponic cultivation and phytodepuration
- Production of high value algal bio-based products and proteins for food, feed and pharma
- Technology for the reduction and recycling of sludge, wastewater, organic waste and food waste
- Desalination of sea water using thermal solar energy technology
- Extraction of water from air
- Technologies for the removal and/or recovery of contaminants in water, soil and air.

The long-term objectives of the EIT Food project are to:

- Promote the transition of ideas into businesses by supporting the development of innovative solutions for water scarcity;
- Strengthen cross-networks to work together in innovation and entrepreneurship;
- Boosting innovation in regions with modest to moderate rates in innovation, creating start-ups and contributing to job creation; and
- Promote synergies with smart strategies and policy initiatives to foster financial sustainability.



Food

<https://www.eitfood.eu>

For more information, contact:
Elvira Domingo, RIS Programme Manager
EIT Food, CLC South
Email: elvira.domingo@eitfood.eu

5. Strengthening verification capacity and improving market acceptance of ETV as a key decision support tool

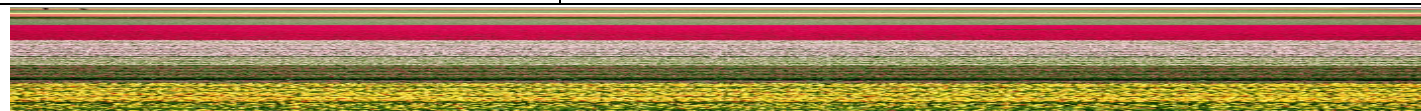


Efforts are continuing to encourage and support increased market uptake of ISO 14034 ETV. Key issues to be addressed are explored below:

Issue: Lack of understanding and limited acceptance of ETV as a key decision support tool

Solution: Marketing and stakeholder engagement reflecting market needs and expectations.

Context	What VerifiGlobal is doing
<p>Market-driven environmental performance verification requires meaningful engagement with key sector stakeholders to identify suitable performance parameters and relevant criteria. As a process standard, ISO 14034 focuses primarily on a 'supply side' perspective, providing a transparent, independent process for quality-assured verification of environmental performance claims put forward by technology vendors. Greater emphasis on the 'demand side', taking into account the information needs of technology users, buyers, regulators, and other parties, makes it easier for affected stakeholders to define the performance parameters of interest prior to testing and verification.</p> <p>Four inter-related objectives underpin the overall market transition from the notion of 'environmental technology' (i.e., 'end-of-pipe' technologies) to 'environmental performance of technology' (i.e., the environmental performance of 'production and consumption' technologies). These are:</p> <ul style="list-style-type: none"> • Defining baseline operating conditions and existing performance benchmarks, targets and measurement requirements for technologies, processes and systems; • Implementing technology, process, and system efficiency improvements to optimize supply chains; • Harnessing innovation, demonstrating results, and disseminating solutions that increase the market penetration of environmentally sound 'clean' technologies and approaches; • Proactively influencing and transforming market conditions through fully integrated solutions that shape and lead the market. 	<p>The mission of VerifiGlobal is to strengthen long term, sustainable performance through improved efficiency, quality assurance and accountability. VerifiGlobal helps clients communicate the benefits of innovative solutions and demonstrate effective performance of innovative solutions through independent performance benchmarking and verification. This helps advance viable, eco-efficient solutions that create value and reduce risk. The VerifiGlobal Secretariat is located in Copenhagen (Denmark) operating under the auspices of ETA-Danmark.</p> <p>VerifiGlobal supports both supply-side innovators and demand-side customers. On the supply-side, VerifiGlobal develops and maintains an extensive network of partner organizations and experts, enhancing the depth and scope of its service offerings and its market capacity to support technology innovators. On the demand-side, VerifiGlobal helps stimulate and create market demand by testing, demonstrating and verifying clean technology products and services, building market receptor capacity and supporting the early adoption of innovative technologies.</p> <p>Performance benchmarking is an effective stakeholder engagement strategy used by VerifiGlobal to target users of performance information. This includes government and industry association program managers, as well as technology investors and buyers. Performance benchmarking involves sector-based consultation and dialogue to better understand stakeholder needs and expectations and to facilitate the identification of relevant performance parameters that can be independently measured and verified.</p> <p>To support these objectives, the new VerifiGlobal Forum has been established. The VerifiGlobal Forum is a public and private sector network of organizations that provides a mechanism for dialogue and information-sharing on best practices and new developments in the area of environmental performance measurement, verification and reporting. A key objective is to ensure that green procurement managers, clean technology investors and regulators have the information to reduce the risks associated with the adoption of innovative environmental technologies. These risk mitigation objectives are promoted through workshops, webinars, provision of services, and other proactive approaches</p>



Issue: Cost of maintaining verification capacity

Solution: A collaborative commitment to quality management and continuous improvement

Context	What VerifiGlobal is doing
<p>Although ETV delivery can be publicly or privately funded (or a combination of both), the willingness and ability to pay for testing and verification services largely depends on the expected market benefits to interested stakeholders.</p> <p>The development of test methods and protocols for verification purposes can be resource-intensive and costly. Financial support for protocol development is more likely to be provided by governments and/or other stakeholders in situations where: (i) Protocols may be required for an array of technologies and might be used for subsequent testing and verification; (ii) New test methods and performance targets are needed based on technological capabilities or regulatory requirements; and/or (iii) International reciprocity is a principal objective. In some cases, there may be technical concerns about the appropriateness of particular protocols and test methods.</p> <p>Performance testing is usually the most significant cost associated with ETV. This cost is higher if re-testing is required, thus emphasizing the importance of having a credible testing and quality assurance plan in place prior to testing. Another important cost factor is the complexity of performance verification, which increases as the number of performance parameters, test methods, variables and stakeholders increases. For example, a single vendor with a single technology specifying a single performance parameter and using an established test method is typically less costly to verify compared to situations where multiple vendors, technologies, performance parameters, test methods and variables are involved. This becomes further complicated in situations where new test methods or performance standards are necessary or existing ones need to be modified.</p>	<p>VerifiGlobal provides a flexible platform to enable the use of independent performance benchmarking and verification to support a comprehensive range of stakeholder and customer needs. It provides a focal point for disseminating information on environmental performance benchmarking and verification activities, including the determination of acceptable performance parameters and the use of internationally recognized protocols. Primary features and services include:</p> <ul style="list-style-type: none"> • A consistent and uniform approach for performance benchmarking and verification to reduce assessment costs, prevent incorrect or unsubstantiated claims. • A sector focused, stakeholder driven performance benchmarking process to determine end user needs and expectations. • Assistance in defining the information required to verify performance claims for particular applications, as well as the provision of the necessary testing and verification tools to generate claims that are accurate and credible. • An international network of independent testing and verification organizations that meet the conformity requirements of ISO 14034 to ensure that all claims are treated transparently, efficiently and correctly, thereby building credibility in the marketplace. • Support to key organizations involved in developing verification protocols, assessing conformity and specifying requirements for mutual acceptance of data. • Third party oversight of projects to ensure that performance claims are credible and repeatable without posing negative collateral environmental impacts. • Provision of single window access for governments, industry and the general public in their efforts to undertake initiatives that will achieve credible and verifiable performance results <p>VerifiGlobal developed its Performance Verification Protocol (PVP) in accordance with the requirements of the ISO 14034 standard. The verification process assesses the information provided by the applicant, including the technology performance parameters to be verified, to determine whether or not it is sufficient to address the needs of the interested parties and the requirements within the intended target market. In cases where the expectations of the interested parties (e.g. regulatory bodies, end-users, funding bodies, policy makers, industrial associations, etc.) are different than the effective values specified in the performance claim proposed by the applicant, VerifiGlobal may propose modifications to the performance parameters. This stakeholder-driven approach can be effective when identifying technologies to address the specific needs of a target group and can align well with the objectives of innovative technology procurement.</p>

Issue: Integration of ISO 14034 ETV within a comprehensive suite of environmental management standards and best practices

Solution: Taking the necessary actions to ensure credibility and acceptance

Context	What VerifiGlobal is doing
<p>Although the ISO 14034 standard generally encourages inter-jurisdictional recognition of qualified testing and verification organizations, there remains limited acceptance of international accreditation. There are various reasons for this, including the reality that many decisions regarding the adoption and use of particular technologies are made at the sub-national level (i.e., provincial, municipal, local), and the need for capacity building and continuous improvement to ensure that verification organizations are able to meet the evolving needs of the marketplace. Without international recognition of the ISO 14034 ETV process, technology providers will continue to seek certification on a case-by-case basis in those markets that offer the greatest potential for revenues.</p> <p>The ETV process has been very useful in providing high quality, objective information for the environmental technology marketplace, but more needs to be done to improve the way in which the many positive outcomes of ETV technologies are reported to key stakeholders and the public. This will help create greater awareness and better understanding of the capabilities of available technologies and their role in meeting environmental goals.</p> <p>ETV outcomes can be measured in many ways, including the numbers of technologies verified and verification protocols developed. Ultimately, the most significant outcome is contribution of the ETV process in protecting human health and the environment. Relevant and timely reporting of ETV outcomes could include technology acceptance and use, pollutant or emission reductions, human health and environmental improvements, use of verified technologies in regulatory or best practices documents, economic benefits, and resource conservation.</p>	<p>VerifiGlobal conducts verification of environmental technology performance claims in accordance with the ISO 14034 ETV standard, in an effort to achieve the following outcomes:</p> <ul style="list-style-type: none"> • Robust verification - A functional quality-assured process for technology performance verification, supported by effective testing and verification protocols; • Reciprocity and acceptance - Effective engagement of interested parties when identifying relevant performance parameters, with greater potential for reciprocity and acceptance of test methods, performance data and verification results across multiple jurisdictions; • Market adoption - Accelerated market adoption of verified technologies by a broader range of users across different sectors. <p>Many of the criteria to determine competence in applying ISO 14034 are technical in nature. Judgment on whether a verification organization meets the requirements of ISO 14034 and ISO 17020 requires assessment by individuals with sufficient technical expertise. Currently, there are two options for demonstrating conformity with the requirements of ISO 14034 and ISO 17020:</p> <ul style="list-style-type: none"> • Through a peer assessment process designed in accordance with the requirements of ISO 17040 (General requirements for peer assessment of conformity assessment bodies and accreditation bodies), which conforms with ISO 17020 relative to the scope of expertise of the verification organization; and • Through ISO 17020 accreditation by a National Accreditation Body that is a member of ILAC (International Laboratory Accreditation Cooperation), the international organization for accreditation bodies operating in accordance with ISO/IEC 17011 and involved in the accreditation of conformity assessment bodies. <p>VerifiGlobal has in place a framework and guidance to assist verifiers in verifying technology performance claims in a manner that meets the requirements of the ISO 14034:2016 ETV standard at the highest level of quality and credibility. Verification experts and testing laboratories must comply with VerifiGlobal conformity requirements (i.e., ISO 17020 conformity for verifiers and ISO 17025 conformity analytical laboratories). By implementing a market-based approach and extending the community of stakeholders that benefit from quality assured information, VerifiGlobal is aiming to catalyze the following outcomes:</p> <ul style="list-style-type: none"> • Leadership in sustainable solutions knowledge and expertise to successfully commercialize innovative technologies, products and services in key markets with successful replication elsewhere. • Reduced market, technical and financial risks associated with innovative sustainable solutions, leading to growth in clean technology job creation and investment.

VerifiGlobal Alliance Members



<https://www.verifiglobal.com>



Solving the world's hardest problems.



VerifiGlobal C/O ETA-Danmark A/S Göteborg Plads 1 DK-2150 Nordhavn Tel: +45 72 24 59 00

The VerifiGlobal Alliance is a global network of 12 organizations providing testing and verification services across multiple sectors and areas of expertise. Current member organizations are - Battelle (USA), CAWT (Canada), CMI (Australia), ETA-Danmark (Denmark), Eurofins (Finland), GHIL (Canada), IETU (Poland), MASSTC (USA), RESCOLL (France), Southern Research (USA), TRCA-STEP (Canada), 350Solutions (USA).

VerifiGlobal Alliance members demonstrate their conformity with the requirements of ISO 14034 and ISO 17020 through a peer assessment process designed in accordance with the requirements of ISO 17040.

Contact VerifiGlobal about joining the VerifiGlobal Alliance.

The VerifiGlobal Solutions Network is comprised of progressive, forward-looking companies with innovative technologies that have been independently verified in accordance with the ISO 14034 ETV standard and the VerifiGlobal Performance Verification Protocol.

Contact VerifiGlobal about independent verification of your technology performance claims.



The VerifiGlobal Forum has been established to engage with cooperative and supportive organizations that recognize the importance of innovative technology solutions to address global challenges and the value of independent quality-assured technology performance testing and verification.

Contact VerifiGlobal about participation in the VerifiGlobal Forum.

ETA-Danmark A/S, a subsidiary of Danish Standards, hosts the VerifiGlobal Secretariat. Accredited by Danish Accreditation (DANAK) in accordance with ISO 17020, ETA-Danmark is the Danish verification body for both ISO 14034 ETV and the EU ETV Pilot Programme. For information on ETA-Danmark, contact Thomas Bruun: tb@etadanmark.dk

For more information about VerifiGlobal, go to: <https://www.verifiglobal.com>