

Environmental Technologies Verification Systems

FOREWORD	1
1 The Concept	1
2 European Verification System	4
2.1 General Statements	6
2.2 General Organisation	7
2.3 Objectives	8
2.4 Funding	10
3 European Verification Models	12
3.1 Models	12
3.2 Model “EU ETV Team as the overall manager”	13
3.2.1 General description	13
3.2.2 Functional responsibilities of the main actors	13
3.2.3 Advantages and drawbacks	15
3.3 Model “EU ETV Team as the designer and supervisor”	17
3.3.1 General description	17
3.3.2 Functional responsibilities of the main actors	18
3.3.3 Advantages and drawbacks	19
3.3 Model “without an EU ETV Team”	21
3.3.1 General description	21
3.3.2 Functional responsibilities of the main actors	22
3.3.3 Advantages and drawbacks	23
4 International Recognition	25
4 General recommendations	26
4.1 Recommendations to achieve cost-effectiveness	26
4.2 Recommendations to attract all vendors	26
4.3 Recommendations to assure programme quality	27
4.4 Recommendations to assure recognition to the programme	27

FOREWORD

At the beginning of 2004, the European Union adopted the Environmental Technology Action Plan (ETAP) to improve the development and wider use of environmental technologies. Implementing ETAP will consist of a long list of actions, one of which involves improved testing, performance verification and standardisation of environmental technologies. If implementing a European program for such purpose, it would be useful to carefully study the experience of such programs in other parts of the world. This paper provides a succinct overview of existing verification programs around the world. It is based on a detailed description of these programs carried out in an on-going IPTS project on this subject. Some of the lessons learned from the ongoing programs are described. They will be taken into consideration during the next phase of the study, when possible models for a European level program will be developed and analysed.

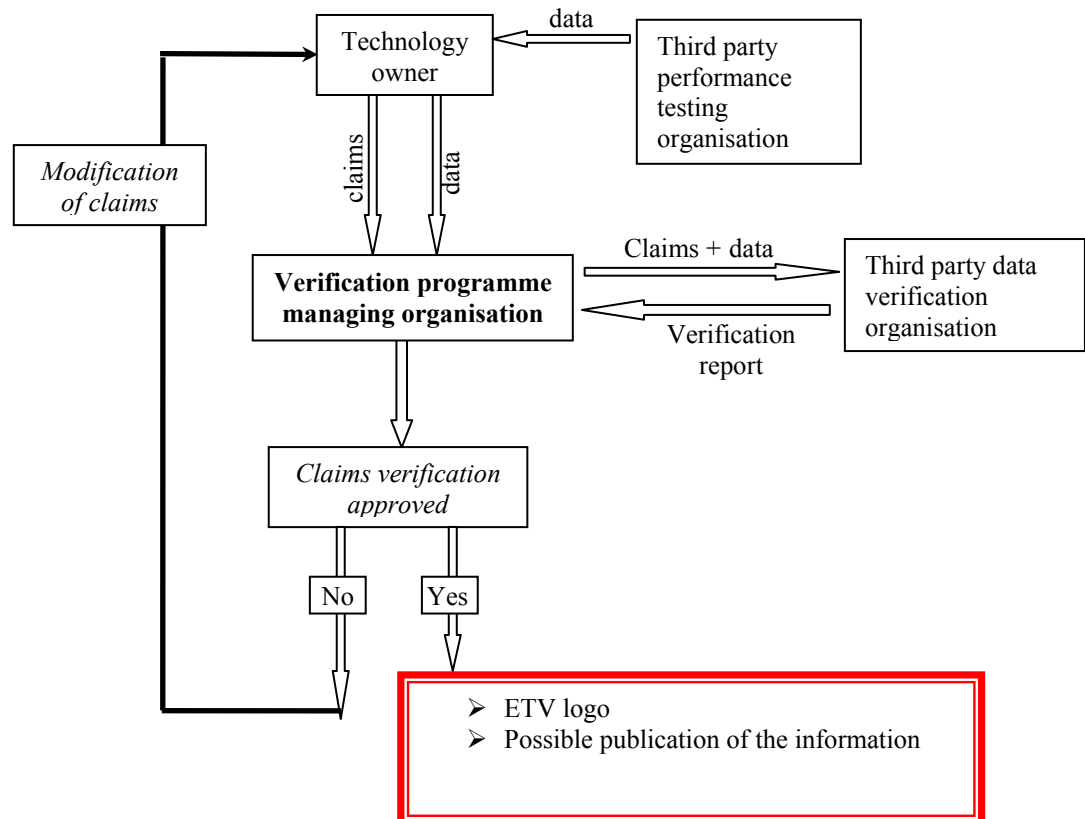
1 The Concept

Environmental Technology Verification (ETV) programs are a recent development, which originates in North America where they started in the mid-90's. The objective is to accelerate market acceptance of innovative technologies by providing users with information about performance, thereby substantially reducing the uncertainty for purchasers. Vendor-generated data have been viewed with scepticism and, consequently, high performing innovative technologies that have the potential to protect the environment have faced substantial market barriers. It has therefore been considered necessary to establish a market based verification process in cooperation with the private sector in order to overcome those market barriers and assure that data could be accessible, understandable, and credible. Verification must not be confused with certification. The former involves the independent assessment of a technology's performance without any judgement of it, while certification normally goes one step further by guaranteeing that specific standards or performance criteria are met. It is important to remember that verification is a voluntary tool.

National verification programs have been running for almost ten years in the US, Canada and South Korea. Japan started a program in 2002, which is still in a pilot phase. Many other countries, mainly in Asia, have been contacted by the North Americans and, as a result, China is now about to launch a national verification programme based on the Canadian system.

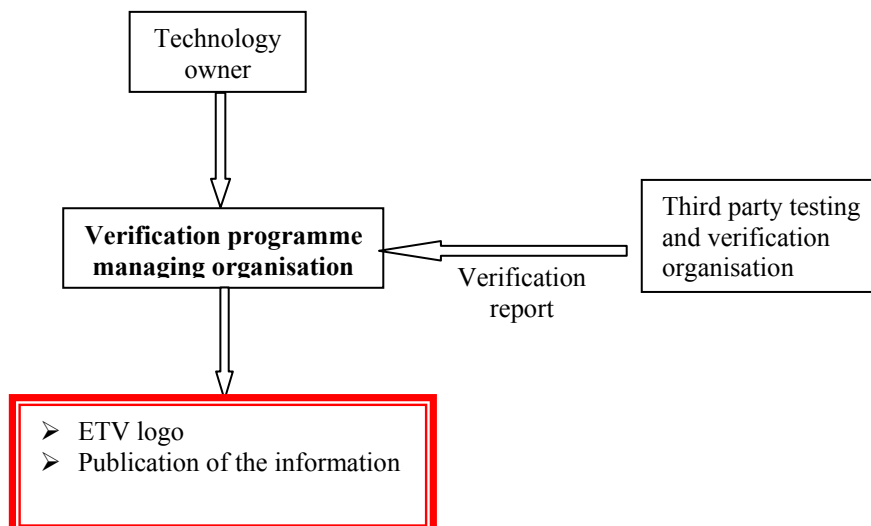
The existing programs belong to either the US (South Korea, Japan) or the Canadian (China, Bangladesh, New Jersey) model. In the Canadian model, the program managing organisation collects the claims and all the data provided by the technology owner and submits them to a third party verification organisation, which first verifies that the data are reliable and then compares them with the vendor's claim. On the contrary, in the US model, the program managing organisation has the testing of the technology entirely performed by one of its partners, a third verification organisation. One could say that the US model aims to make public the technology performance data without judging the results while the Canadian model checks whether the vendor's performance claims are true.

There is no similar approach to any of these on national level in Europe and it furthermore seems that the knowledge is poor regarding the programs in Canada and the US. However, most stakeholders so far contacted consider such a scheme on a European level to be of significant importance for the dissemination of environmental technologies and, thus, furthermore for the competitiveness of this industry.



Canada Model

applied in Canada, New Jersey, China, Bangladesh



USA Model

applied in USA, Japan, South Korea

As IPTS had anticipated before the starting of the project, there are no national programmes dealing with the verification of environmental technologies at European level. There is however some examples of sectorial programmes focused on specific technologies.

The Monitoring Certification Scheme (MCERTS) in UK is managed by the Environment Agency's Monitoring and Assessment Process and operated on behalf of the agency by SIRA Certification Service (SCS). This programme provides for a certification of monitoring devices, the competency certification of personnel and the accreditation of laboratories based on international standards. MCERTS scheme addresses the following types of monitoring systems:

- Continuous Emissions Monitoring Systems (CEMs)
- Manual Stack Emission Monitoring
- Continuous Ambient Air Quality Monitoring Systems (CAMs)
- Portable Emissions Monitoring Equipment
- Continuous Water Monitoring Equipment
- Self Monitoring of Effluent Flow
- Chemical testing of soil

A similar scheme exists in Germany focused on Continuous Emissions Monitoring Systems managed by the Umweltbundesamt (UBA) on behalf of the Ministry of Environment (BMU).

The UK Environment Agency and UBA agreed in 2000 on measures to minimize the burden on instrument manufacturers seeking both certification and approval under these schemes.

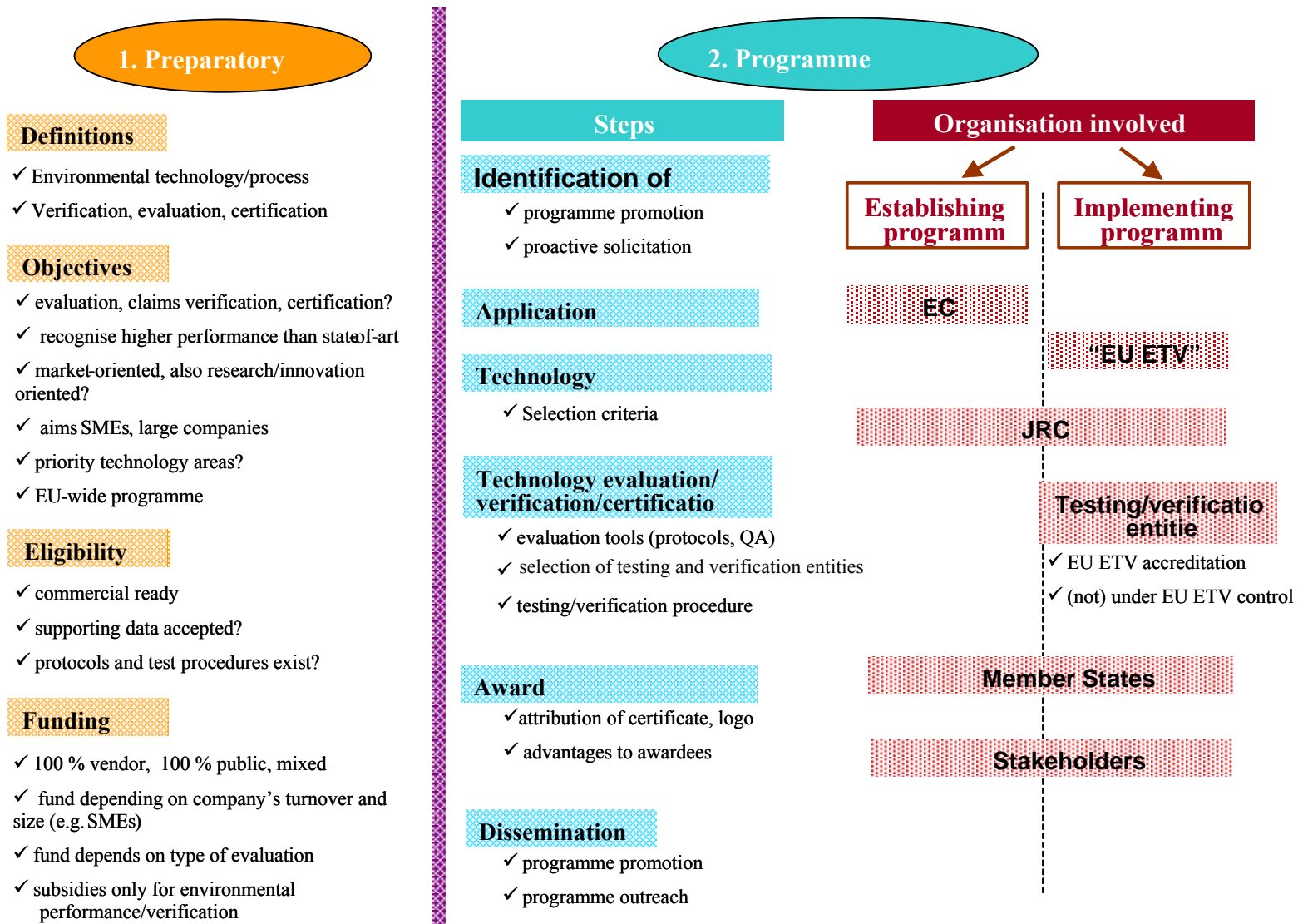
2 European Verification System

Two different phases should be considered when designing a possible European Environmental Technologies Verification System:

- Preparatory phase: definitions, objectives and principles are defined.
- Organization phase: definition of the precise procedure of the programme, contents of each step, evaluation tools and definition of the different entities involved in the programme.

An overall view of the major components of a verification programme and the choices to be made when designing such a programme is shown in the figure on the following page.

This chapter summarizes the main issues to be considered when designing a European system as well as the different alternatives that could be adopted.



2.1 General Statements

To be useful and successful, some of the main characteristics of the EU ETV programme:

SHOULD BE	SHOULD NOT BE
<ul style="list-style-type: none">• Defined by clear definitions of its scope• A tool to ease market access• A tool to promote innovation• A tool that provides confidence to the buyers• Close to the vendors, to national, local and regional industries• A simple process (simple and quick procedures)• A single European-wide programme• The programme should benefit from a broad recognition	<ul style="list-style-type: none">• Expensive• Time consuming• Lengthy• Built without consensus on its scope and on its objectives• A network of programmes implemented at a national level• Become a possible “money machine” for testing labs• Complicated in terms of application procedures, testing process, etc.

- **Prerequisites, minimum requirements**
 - ✓ The main goals of building up such a programme in Europe should be the promotion of environmental technologies through a reliable assessment, which would give confidence to buyers and would attract vendors.
 - ✓ To attract vendors and be close to the market (useful to buyers), the future EU programme should gather three main advantages:
 - have clear objectives;
 - ease market access;
 - be affordable to both vendors and the EU, in terms of money and time spent. In other words, the programme should be useful provided it is neither time consuming nor expensive.
 - ✓ Simple and quick procedures are considered as a key factor of success.
 - ✓ It should be a European-wide programme relying on national resources and competencies.
- **Possible drawbacks to take into account**
 - ✓ Some participating EU vendors consider the US programme as a “money machine”, mainly due to its cost, to the lack of expertise of some testing centres which, in addition, may charge extra fees for additional tests even if the error in testing procedure is their own mistake.

2.2 General Organisation

	Benefits	Limits
<i>EU-level programme</i>	<ul style="list-style-type: none">• Guarantees a minimum level of quality• Guarantees comparability between technologies from different countries• Guarantees availability of testing expertise for all technology areas• Guarantees a link to the EU regulations and environmental objectives	<ul style="list-style-type: none">• Language issues• Difficulty to involve all Member States equally
<i>Programme implemented at the national level</i>	<ul style="list-style-type: none">• Better targets the SMEs' specific needs, at the local level• Removes language issues	<ul style="list-style-type: none">• Difficulty to coordinate the national programmes• Possible lack of competence for specific technologies in some nations

- **Prerequisites, minimum requirements**
 - ✓ An EU-level programme is considered as the best option.
 - ✓ Each technology area should make use of competences wherever they are throughout the EU.
 - ✓ The organisation should anyhow take into account specific needs of SMEs.
- **Specific features of a European programme**
 - ✓ A European wide programme will need to deal with a large number of languages, and the organisers may decide to adopt one, or a few, language(s) as official languages to the programme. This could become a true issue for SMEs in particular if verification procedures require writing and speaking in a language other than their own.

2.3 Objectives

Specific objectives of the future EU programme should be defined, choosing between various possible options: evaluation, verification or certification. The following table summarises the main definitions that have been discussed and agreed upon by the steering committee of this study. It also outlines some consequences linked to each definition.

	Tentative definition	Benefits	Limits
Evaluation	<ul style="list-style-type: none"> To obtain a set of credible, third-party performance data, without technology judgement, approval or endorsement (as provided by the US ETV programme) <p>Synonyms: measure, estimate, test</p>	<ul style="list-style-type: none"> Adequate way to evaluate a new technology for which no minimum requirements have been established 	<ul style="list-style-type: none"> A simple test report is not very useful to buyers Necessity to have minimum requirements to give value to the programme If technology is evaluated for a certain application, a disclaimer should be issued for other applications
Verification	<ul style="list-style-type: none"> To establish or prove the truth of the performance of a technology under specific protocols and adequate data quality assurance procedures, with reference to predetermined criteria. These criteria can be defined by: <ul style="list-style-type: none"> the vendor: in this case, the claims given by the vendor are verified, without technology approval or endorsement. This option is called “claims verification” in the ETV Canada programme. the buyers, stakeholders, etc. : the minimum performance criteria can be defined to allow comparison with best performing products as a reference. <p>Synonyms: confirm, corroborate, substantiate, validate</p>	<ul style="list-style-type: none"> Having minimum performance requirements gives value to the programme and leads to establish comparisons between technologies, to establish a benchmark (commercial argument towards vendors) 	<ul style="list-style-type: none"> Minimum requirements are difficult to establish for a new technology not well known Enables to identify the best available technology
Certification	<ul style="list-style-type: none"> To guarantee technology meets the officially defined requirements (e.g. international standards, regulations, etc.) <p>Synonyms: ensure, warrant, guarantee</p>	<ul style="list-style-type: none"> Certification is the best way to deal with critical applications, often subject to regulation 	<ul style="list-style-type: none"> Minimum requirements difficult to establish for a new technology not well known

- **Prerequisites, minimum requirements**
 - ✓ Whatever objective is decided for the programme (evaluation, verification or certification), the aim of the testing procedure will be to deliver third-party verified credible data.
- **Suggestions**
 - ✓ The programme could offer the choice between an evaluation, a verification or a certification, at various costs depending on the added value.
 - ✓ The programme could be developed in 3 stages:
 - Verification of the claims

- Verification that the ET meets the requirements set by the users, stakeholders groups, etc. (verification) or by the administration, regulations, etc. (certification).
 - The latter verification system is used until a proper certification process is developed.
- ✓ The majority of the opinions seemed sceptical regarding the ability of a simple **evaluation** programme (as in the US ETV programme) to attract vendors and to give value to buyers. Nevertheless, it is generally admitted that it seems the simplest way to assess innovative technologies for which no minimum requirements have been established.
- ✓ Importance for the programme to deliver added value to the vendors has often been underlined. The assessment with respect to predetermined criteria or minimum performance, enabling to make comparisons between technologies, has been recognised as a real value for the programme. According to the definitions established earlier, only **verification** (but not claim verification) and **certification** provide such an assessment.
- ✓ Various, sometimes opposite, opinions appear concerning **certification**:
 - “ETV should not exist separately from certification”.
 - ETV should be compulsory for technologies that are regulated.
 - “Certification should be offered”. Certification could cohabit with evaluation/verification, but certification should address technologies related to regulated applications.
 - “ETV should not offer a certification, this was stated when the ETAP was written”.

2.4 Funding

The following table summarises various options to be considered regarding the funding of the future EU programme.

Criteria	Funding	Benefits	Limits
Whole programme	100% vendor		• SMEs may be excluded
	Mixed funding	• Flexibility possible	
	100% public		• The global cost would be very high, and should not only be the EU responsibility • EU subsidies not justified in every case (large companies for instance)
Definition/scope : <i>If the programme targets environmental performance of any technology</i>	100% vendor	• The vendor should pay for the non-environmental part of the performance tests	
	Mixed funding	• EU subsidies should target environmental sound technologies only.	• Difficult for the programme to be cost-effective unless priority technologies are defined
	100% public	• EU ETV programme's policy would be in line with the definition of ETAP and with the EU environmental policy, and should thus at least be partly financed by the EU.	
Type of evaluation/ verification performed	100% vendor		• Evaluation or claim verification, but these are less valuable to buyers
	Mixed funding	• Verification with minimum requirements or in order to establish a benchmark and/or certification should be partly or entirely subsidised because the result contributes to public knowledge	
	100% public		
Tests/protocols	100% vendor	• Tests : they are considered as of vendor's profit only (Private side of the process)	• SMEs may be excluded from the programme if they have to pay for the entire procedure
	Mixed funding		
	100% public	• Protocols: they are considered as public knowledge (Public side of the process)	

- **Prerequisites, minimum requirements**
 - ✓ The EU should not deliver the entire funding required for such a programme.
 - ✓ SMEs should be supported specifically, otherwise they would face real difficulties to participate in the programme.
 - ✓ Testing a non-EU technology would be at full charge of the vendor.
- **Suggestions**
 - ✓ Mixed funding at the beginning, during a pilot phase. After this period, large companies could be considered to pay full cost while SMEs continue to receive support.
 - ✓ Mixed funding is considered as the most flexible method, as it could be made variable according to various criteria such as :
 - Definition/scope and type of evaluation: mixed funding according to the value of the programme. Applicable if the future EU programme offers a choice between evaluation/verification/certification. The more value the vendor gets, the more he pays.
 - Funds can depend on company's turnover and size (e.g. SMEs)

3 European Verification Models

3.1 Models

Three models relative to the overall organisational structure of the programme have been developed. They initially differ in the degree of involvement/responsibility of a dedicated “EU ETV Team”, which is the only entity that would have to be created “from scratch” for the programme.

The starting point for each of the models is therefore:

- **Model “EU ETV Team as the overall manager”:** the EU ETV Team designs, operates and supervises the programme, using the competences available Europe-wide.
- **Model “EU ETV Team as the designer and supervisor”:** the EU ETV Team designs and supervises the programme, and entrusts verification entities with the task of operating the programme.
- **Model “without an EU ETV Team”:** the EU ETV programme operates without any dedicated EU-level entity. It is based on testing networks of specialised labs and stakeholders, which are contracted by the EU ETV programme administrators. Once appointed, they are free to set up the organisation structure they wish, provided they comply with the programme’s general objectives and outcome.

Hereafter, the three models are described, and their main advantages and drawbacks are given.

Several assumptions were made before elaborating the models. These are:

- The objectives, scope, and definitions for the programme are considered to be set.
- No testing laboratories or verification centres will be specially created to perform the ETV programme tests and verifications. The programme will rely on existing centres throughout Europe.
- All three models are applicable, irrespective of the alternatives chosen for the programme:
 - whether the programme involves evaluation, verification or certification,
 - whether testing and verification stages are concomitant or are performed by two different entities,
 - whether the vendor chooses the test lab and verification centre or the ETV managing organisation does.
 - whether data collected/measured by an entity (independent laboratory, the vendor, etc.) outside the framework of the programme can be used or not.

Therefore, regarding these features of the programme, whichever option presented could be implemented.

3.2 Model “EU ETV Team as the overall manager”

3.2.1 General description

The EC (or ETAP coordinators) designates the EU ETV Team and together they lay the foundations of the evaluation programme (programme scope, objectives, strategies and general protocols).

The EU ETV Team coordinates, executes and supervises every step of the evaluation process. When developing the evaluation tools, the EU ETV Team can appoint a test lab or verification centre to establish a test plan or a protocol for a specific technology. In the same way, it appoints a test lab, and a verification centre if relevant, to perform tests and verification on a case-by-case basis.

The EU ETV Team can collaborate with thematic stakeholders groups, when scientific or technical support is required or when defining priority technologies for instance.

It can also call upon national or regional organisations to locally act as an intermediary between the vendors (often small SMEs) and the EU ETV Team. Once he has applied, the vendor does not intervene in the process, and the EU ETV Team is his sole contact point.

As the EU ETV Team requires a large staff to run the entire programme, substantial EU subsidies are necessary.

The EC (or ETAP coordinators) is in charge of auditing the programme and verifying its cost-effectiveness, and redefining strategies if necessary.

3.2.2 Functional responsibilities of the main actors

1. EC (or ETAP coordinators)

- Create and oversee the EU ETV Team.
- Contribute in laying the foundations of the programme, together with the EU ETV Team: definitions, objectives, eligibility criteria, quality management procedures, funding considerations, organisational principles and general strategies.
- Define the annual budgets.
- Audit the programme, in terms of compliance with the objectives and quality management procedures, and of cost-effectiveness.
- Assess the programme outputs and redefine strategy if necessary.

2. EU ETV Team

- Lay the foundations of the programme, together with the EC: definitions, objectives, eligibility criteria, funding considerations, organisational principles and general strategies.
- Decide on the priority technology areas.

- Establish quality management procedures.
- Establish programme-level protocols.
- Communicate programme activities, progress, outputs and recommendations to both the EC and the general public.
- Run the programme:
 - Promote the programme at EU level and identify the technology vendors potentially interested in the programme
 - Review the vendor applications
 - For each technology to be evaluated,
 - Establish the specific protocols and the test plan
 - Define minimum performance requirements (if relevant)
 - Select the appropriate test labs and verification centres to perform the tests and verification
 - Review and approve the verification reports.
 - Create and maintain a means to communicate the programme opportunities and results (website, large scale publication, specific newsletters, etc.).
- Designate and coordinate the stakeholders groups and their activities.
- Award certificates and logos to successful vendors.

3. Stakeholders groups

- Participate in defining priority areas, according to market needs.
- Participate in identifying vendors of targeted technologies.
- Participate in defining the minimum performance requirements (if relevant).
- Guide the EU ETV Team in selecting the appropriate test labs and verification centres.
- Are involved in drafting and updating the protocols and test plans.

4. Test labs and verification centres

The EU ETV Team designates them for their expertise on a case-by-case basis, either to:

- help develop the specific protocols and test plans for a technology,
- or execute the tests and verification.

One same test lab or verification centre can be appointed to develop the protocols and test plans on the one hand, and perform the tests and verification on the other hand.

The other option is to have these two phases performed by two separate test labs (or verification centres).

They are contracted to perform specific tasks under the supervision of the EU ETV Team.

3.2.3 Advantages and drawbacks

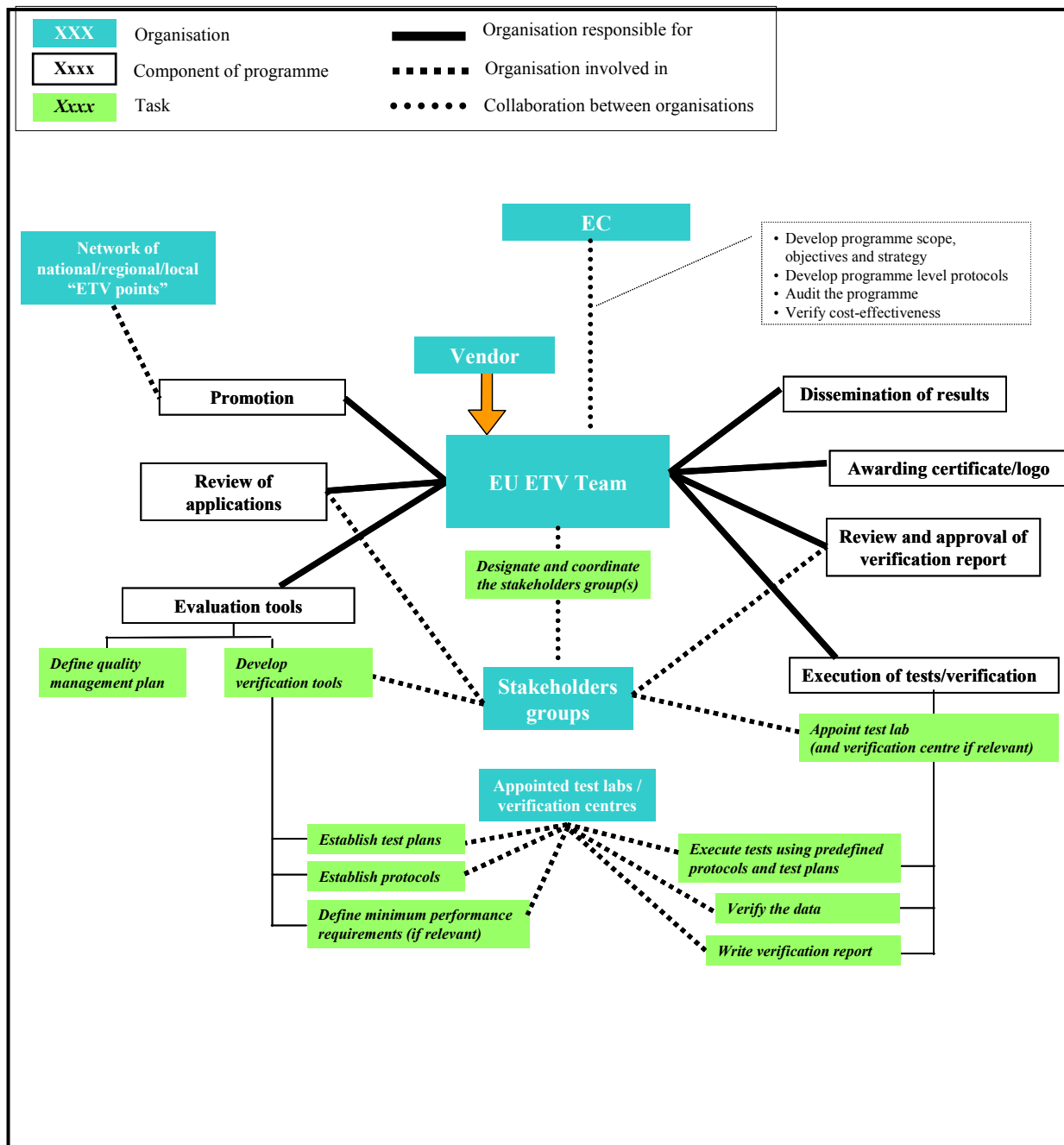
Advantages

- The ETV Team can see to it that all the competences around Europe are used.
- This organisational structure best guarantees that the value of the evaluation is equivalent irrespective of the test labs and verification centres involved.
- Appointing two separate test labs (or verification centres), one to develop the protocols and test plans, and the other to perform the tests and verification, enables to enhance the quality of the whole procedure since the competences of two expert organisations are put face to face.

Drawbacks

- This organisational structure is costly to the EC because it requires a lot of staff on the EU ETV Team.
- This programme structure may appear as a huge, inaccessible “machine”, particularly to SMEs.

Model “EU ETV Team as the overall manager”



Main Features	Advantages	Drawbacks
<ul style="list-style-type: none"> • EU ETV Team is responsible for every component of the programme • EU ETV Team coordinates, executes and supervises every step of the process • Stakeholders groups intervene in most steps 	<ul style="list-style-type: none"> • The EU ETV Team can see to it that all the competences around Europe are used 	<ul style="list-style-type: none"> • Costly because requires a lot of ETV staff • May appear as a huge, inaccessible “machine” to SMEs in particular

3.3 Model “EU ETV Team as the designer and supervisor”

3.3.1 General description

The EC/ETAP coordinators designate the EU ETV Team and together they lay the foundations of the evaluation programme (programme scope, objectives, strategies and general protocols).

The EU ETV Team’s role is to coordinate and supervise the evaluation process. It is responsible for the compliance with the objectives and quality management procedures. It designates thematic verification organisations (VO), the number of which depends on the priority technology areas addressed by the programme. The verification organisations are public or private research or test organisations that are contracted to, or have an agreement with the EU ETV Team to assist in implementing the EU ETV programme.

The VOs execute the entire evaluation process, except for awarding the certificate and/or logo, and for disseminating the results of the programme. They are in charge of developing the evaluation tools, for which they can appoint a test lab or verification centre when specific technological expertise is required (test plans and protocols). In addition, the VO appoints other test labs to perform the tests when itself is not qualified. Regarding the verification stage, the VO may also rely on another verification centre if necessary.

The VO processes the vendor applications and the vendor is directly in contact with the VO who decides whether the vendor may/must participate in the process. For example, the vendor may be requested to choose (and pay) the testing lab if the testing and verification procedure adopted requires it. The vendor is only in contact with the EU ETV Team at the end of the process, when awarding the certificate/logo.

The VO can decide to collaborate with thematic stakeholders groups, for scientific or technical support, for guidance on market needs or selection of qualified test labs, or for promotion or review purposes.

It can also call upon national or regional organisations to locally act as an intermediary between the vendors (often small SMEs) and the EU ETV Team.

The VOs are financially independent in running the programme, although they do however receive some public funding, proportionate to their achievements and/or success and/or needs.

The EU ETV Team is in charge of auditing the VOs and verifying that their procedures and outcome comply with the programme requirements.

3.3.2 Functional responsibilities of the main actors

1. EC (or ETAP coordinators)

- Create and oversee the EU ETV Team.
- Contribute in laying the foundations of the programme, together with the EU ETV Team: definitions, objectives, eligibility criteria, funding considerations, organisational principles and general strategies.
- Define the annual budgets.
- Audit the programme, in terms of compliance with the objectives and of cost-effectiveness.
- Assess the programme outputs and redefine strategy if necessary.

2. EU ETV Team

- Lay the foundations of the programme, together with the EC: definitions, objectives, eligibility criteria, funding considerations, organisational principles and general strategies.
- Decide on the priority technology areas.
- Establish quality management procedures.
- Establish programme-level protocols.
- Appoint the thematic VOs in relation with the priority technology areas.
- Communicate programme activities, progress, outputs and recommendations to both the EC and the general public.
- Create and maintain a means to communicate the programme opportunities and results (website, large scale publication, specific newsletters, etc.).
- Award certificates and logos to successful vendors.
- Audit the VOs, in terms of compliance with the objectives and quality management procedures.
- Assess the output of the VOs and redefine their objectives if necessary.

3. Thematic Verification Organisation (VO)

- Run the programme
 - Promote the programme at EU level and identify the technology vendors potentially interested in the programme.
 - Review the vendor applications.
 - For each technology to be evaluated,
 - Establish the specific protocols and the test plan,
 - Define minimum performance requirements (if relevant),
 - Perform the testing and verification or select the appropriate test lab and verification centre to perform them.
 - Review and approve the verification reports.
 - Designate and coordinate the stakeholders groups and their activities.

4. Stakeholders groups

- Participate in identifying the vendors of targeted technologies
- Guide the VO in selecting the appropriate test lab and verification centres.
- Participate in defining the minimum performance requirements (if relevant)
- Are involved in drafting and updating the protocols and test plans

5. Test labs and verification centres

When the Thematic VO does not have the expertise, it appoints a specialised test lab or a verification centre to help in developing the specific protocols and test plans for a technology or to execute the tests and verification. They respect the protocols and the quality management procedures, implement the test plans when provided by the VO, and write a test or verification report.

3.3.3 Advantages and drawbacks

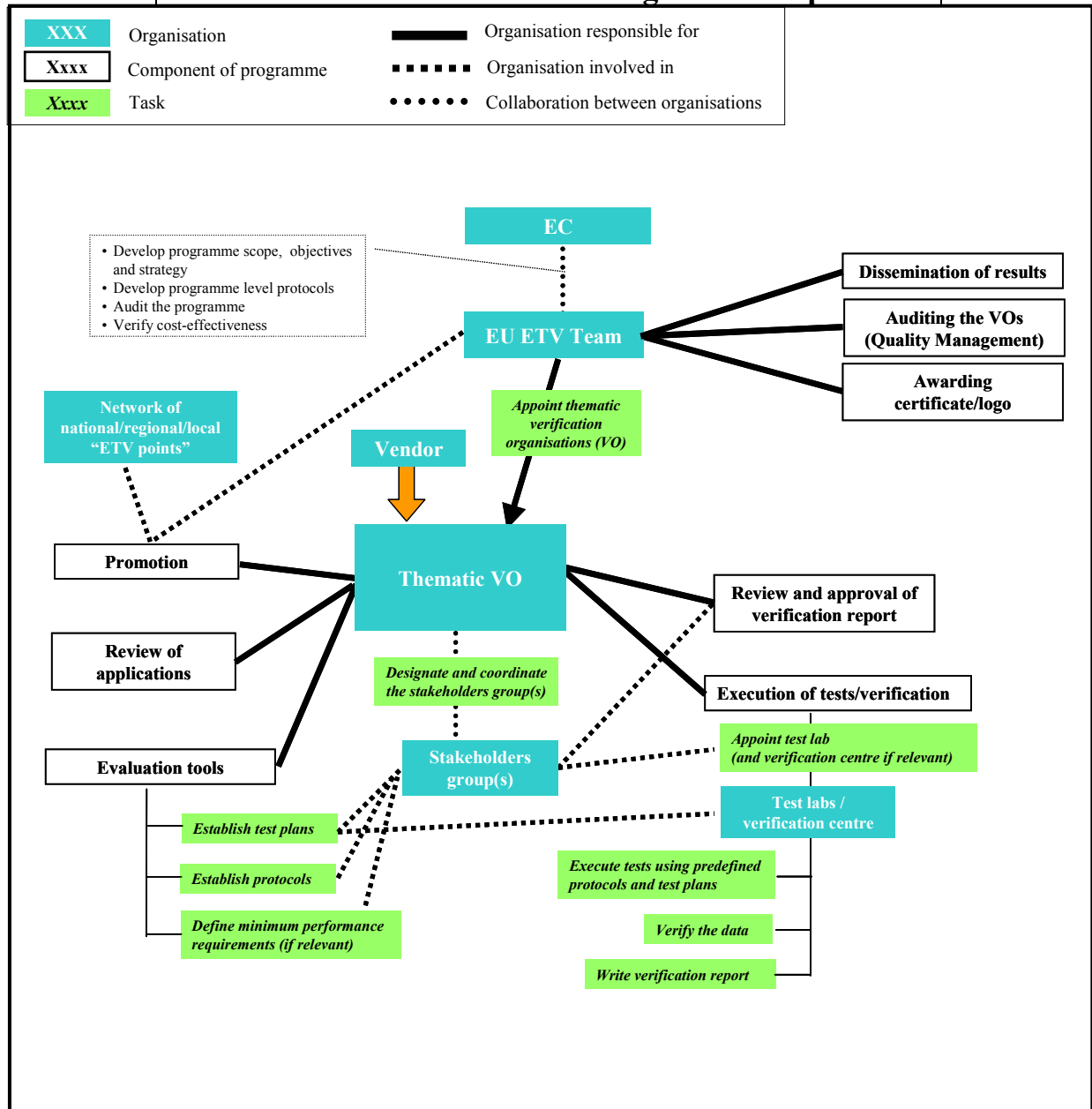
Advantages

- This model is less costly to the EC. It is up to the VOs to find an economical balance by charging the vendor and/or other stakeholders involved.

Drawbacks

- This model will operate correctly provided that supervision and auditing by the EU ETV Team is efficient.
- Unless the EU ETV Team establishes specific directives, a VO may give priority to some test labs and not make use of all the competences available around Europe.

Model “EU ETV Team as the designer and supervisor”



Main Features	Advantages	Drawbacks
<ul style="list-style-type: none"> • EU ETV Team only establishes the general protocols and strategies of the programme, and guarantees that the outcome complies with the objectives and the quality management procedures. • The Verification Organisations (VO) are in charge of making the programme operate correctly and cost-efficiently. 	<ul style="list-style-type: none"> • This model is less costly to the EC, it is up to the VOs to find an economical balance by charging the vendor and/or other stakeholders involved. 	<ul style="list-style-type: none"> • This model will operate correctly provided that supervision and auditing by EU ETV Team is efficient. • Unless the EU ETV Team establishes specific directives, a VO may give priority to some test labs.

3.3 Model “without an EU ETV Team”

3.3.1 General description

The EC and the ETAP coordinators (hereafter called the programme administrators) together define the broad outlines of the evaluation programme (programme scope, objectives, and strategies, and the minimum requirements for the outcome).

The programme is then entrusted to a public or private sector organisation, following two potential approaches:

1. An organisation is entrusted the entire programme (as in Canada), through a contract with the EC or under a licence agreement.
2. The programme is fragmented into thematic sub-programmes, each being entrusted to networks of experts and stakeholders (hereafter called Testing Networks).

In both cases, the organisation(s) in charge of implementing the programme is (are) free to develop its own programme structure and methods, provided they are in line with the broad outlines defined by the programme administrators.

The first approach being rather straightforward, only the second approach is described below.

The programme operates on a basis similar to that of other EU programmes, such as the tendering procedure used by DG Research for the Framework Programme. With the potential help of existing structures (Networks of Excellence, certification bodies, CEN Working Groups, etc.), the programme administrators draw up the specifications (or Terms of Reference) for the full operation of a thematic evaluation programme over a determined time-period (from one to 5 years for instance).

The testing network (TN) contracted by the administrators is thus fully responsible for promoting and operating the programme in a designated technological field and delivering the awards to the successful vendors.

The TNs are free to organise and run the programme as they wish, provided the outcome complies with the specifications defined by the administrators. In particular, the TNs should set up satisfactory quality management procedures. The involvement of a stakeholders group in the TN should be made compulsory, thus allowing to consider the TN's method (organisational structure and operating procedures) as valid provided it is accepted by all the stakeholders.

The TNs promote the programme and process the vendor applications. Depending on the programme structure developed by the TN, the vendor will be more or less involved in the evaluation process.

Although the TNs could also be entrusted with the dissemination of the results, continuity and coherence of the global programme would be better ensured if the results were centralised and disseminated by a European-level organisation such as the ETAP coordinators or the EEA. For similar reasons, the same organisation should also participate in promoting the programme.

The TNs are awarded an amount of money to honour the contract they made a bid for. If contract periods are long, the administrators may require intermediary achievement reports upon which the allotment of part of the funding is dependant.

3.3.2 Functional responsibilities of the main actors

1. Programme administrators (EC or ETAP coordinators)

- Lay the foundations of the programme: definitions, objectives, eligibility criteria, funding considerations, organisational principles and general strategies.
- Decide on the priority technology areas.
- Draw up the specifications (or Terms of Reference) for the full operation of a thematic evaluation programme over a determined time-period and launch a call for tenders.
- Define the annual budgets.
- Review and approve the thematic network's intermediary and final achievements reports.
- Assess the TNs in terms of compliance with the minimum requirements of the contract.
- Maintain a means to promote the programme, communicate the programme opportunities and the information provided by the thematic networks.
- Create a global framework to gather the results achieved by the TNs (website, large scale publication, technology database, etc.).
- Assess the programme outputs and redefine strategy if necessary.

2. Testing Network

- Compose the network so that all the stakeholders are represented.
- Design and implement their own programme structure, operating procedures and quality management procedures, in compliance with the minimum requirements set in the contract.
 - Define the entire verification procedure
 - Define the test labs and verification centres involved
 - Run the programme
- Communicate programme activities, progress, outputs and recommendations to both the EC and the general public, through a website, specific newsletters, etc.).
- Award certificates and logos to successful vendors

3. Existing structures (Networks of Excellence, CEN Working Groups, etc.)

- May provide the administrators with scientific and technical support, and guidance on market needs when drawing up the specifications for the tender and reviewing the TN achievement reports.

4. Stakeholders groups

They may be built up if required by a TN's self-established programme structure.

5. Test labs and verification centres

They may be appointed if required by a TN's self-established programme structure.

3.3.3 Advantages and drawbacks

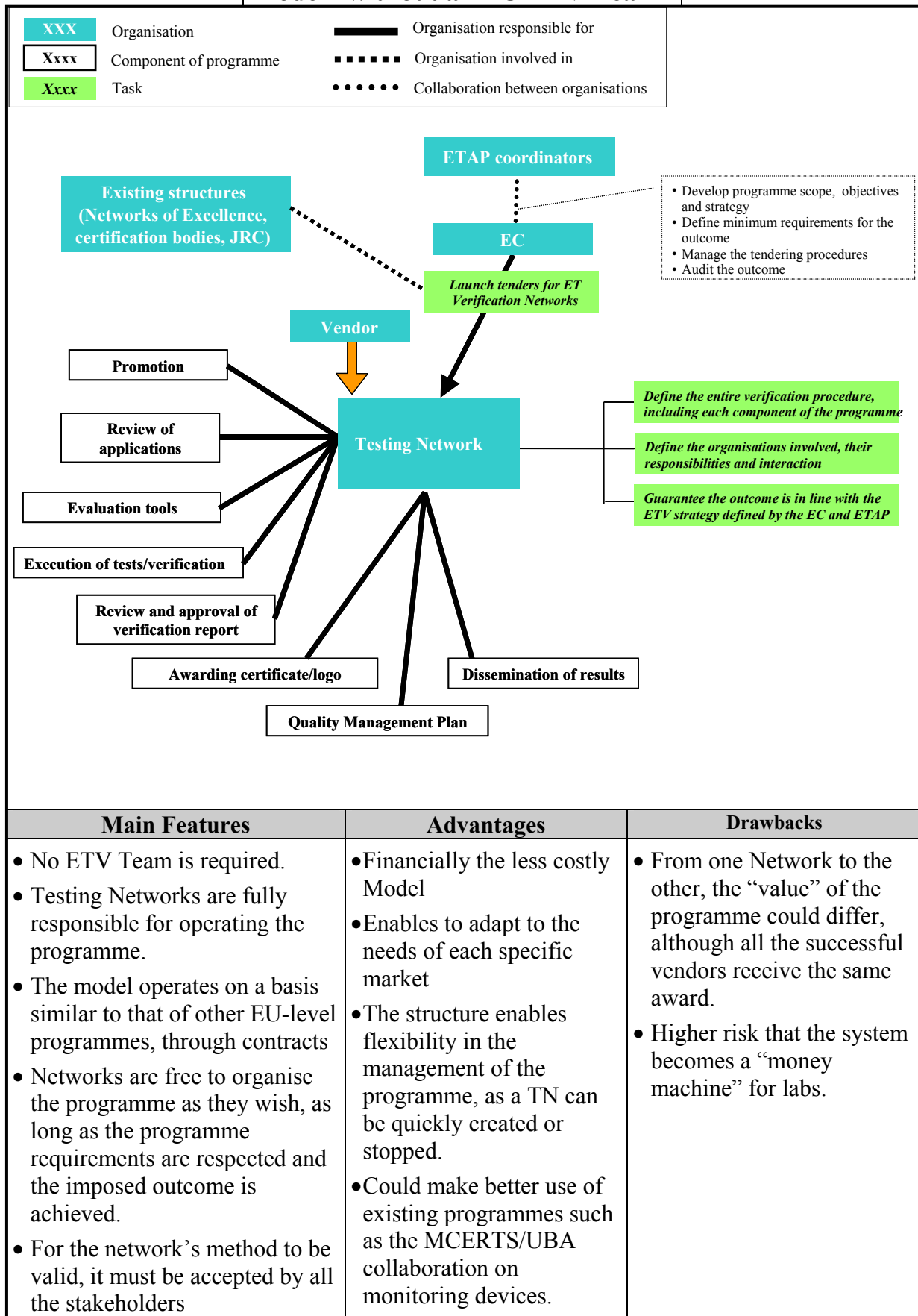
Advantages

- This organisational alternative is financially the less costly. The TNs receive an amount of money for the contract, and it is up to them to implement an evaluation method that both complies with the programme minimum requirements and is financially profitable.
- Because a separate tendering procedure is executed for each TN individually, this alternative enables to adapt to the specific needs of each market.
- Compared to the approach where a single organisation is entrusted the entire programme, the structure based on TNs is more flexible, as it enables to easily and quickly implement any change, in EU policy or in market needs for instance, by creating the relevant TN. In the same way, because of the short-term commitment, a TN can be stopped when no longer relevant.
- This way to proceed could make better use of existing programmes such as the MCERTS/UBA collaboration on monitoring devices, as the TNs could build up around these programmes and thus more easily achieve financial equilibrium.

Drawbacks

- Although all the successful vendors receive the same award through the EU ETV programme, the “value” of the awarded certificate could differ from one network to the other since the TNs are rather autonomous and might let profitability prevail over high-quality evaluation procedures.
- This alternative presents a higher risk that the system becomes a “money machine” for testing labs or verification centres.

Model “without an EU ETV Team ”



4 International Recognition

	Benefits	Limits
EU ETV open to non-European technologies	<ul style="list-style-type: none"> • Allows the international recognition of the programme (mutual recognition) 	
Mutual recognition of verified technologies with other ETV programmes	<ul style="list-style-type: none"> • The market for ETs is global, thus recognition of verification outside of Europe would benefit the vendors 	<ul style="list-style-type: none"> • Vendors may choose to have their technology verified in other countries where the process is shorter, simpler, less restricting or cheaper.
Use of procedures, protocols, QMPs established by other ETV programmes	<ul style="list-style-type: none"> • Useful as a starting point, although they should be improved for the EU programme • By using the experience gained in other countries, the EU could speed up the launching of EU ETV 	<ul style="list-style-type: none"> • Risk of being influenced by already established programmes
Harmonisation of procedures, protocols, QMPs with other ETV programmes	<ul style="list-style-type: none"> • Unavoidable in principle. EU ETV programme should be designed so as to enable harmonisation later on 	<ul style="list-style-type: none"> • Will be complicated and long to establish (as it is for standardisation both worldwide and Europe-wide) • Might slow down the launching of the EU ETV programme, therefore should be tackled once the EU ETV programme is well-established • Not necessary if reciprocal agreements have been concluded

- **Suggestions**
 - ✓ It is generally considered that reciprocal agreements should be concluded with equivalent programmes in other countries. However, some experts believe this should be done only once the European programme is well established.
 - ✓ Europe should also harmonise its programme with those of other countries, because the market is global so it would be useful if the evaluation were accepted everywhere. However, once again, the priority is to implement ETV in the EU, and harmonisation with other countries should be considered afterwards, as it would be a long and time-consuming process and the implementation of a European programme would be slowed down if harmonisation were developed concomitantly.
 - ✓ Current projects on Testing Networks (6th Framework Programme) should provide the general protocols to be used in future verifications.
 - ✓ The European programme should be designed in such a way that any possible future harmonisation procedure is facilitated.

4 General recommendations

Throughout the study, many requirements and suggestions have been put forward, mainly based on the stakeholders viewpoints and the lessons learned from the existing programmes. The most important ones are listed below, presented as recommendations that are applicable, whichever programme structure is eventually implemented.

4.1 Recommendations to achieve cost-effectiveness

- The way the programme should be funded is a crucial issue. A good balance needs to be found between:
 - public funding, considered as essential because of both the gain in “public knowledge” provided and the environmental considerations involved,
 - private contribution, proportionate to the information provided by the programme (performance data, etc.) and the resulting enhanced market opportunities. The vendors should be concerned of course, but also should the other stakeholders such as professional associations, end-users, etc.
- Use protocols and test plans already implemented in Europe or around the world as a start point when developing evaluation tools for a technology
- Avoid situations where only one testing lab/verification centre is in charge of evaluating a technology. The resulting monopolistic position could lead to increased prices.
- Opening the programme to all environmental technologies could be unproductive if evaluated technologies are either too new or on the contrary widely established. Instead, defining priority technology areas that cover a true need on the end-user side would make the programme more efficient.
- For the programme to be worth the cost of its implementation, the number of technologies to be verified should be sufficiently high. Such considerations should be taken into account when defining the priority technology areas.

4.2 Recommendations to attract all vendors

- Make the programme attractive to the vendors, either by means of incentives, or as a true market opener Europe-wide.
- Create a network of national or regional level contact points, who act as an intermediary between the vendors (often small SMEs) and the EU ETV managing organisation. The contact points could be involved in promoting the programme locally, identifying technologies that should be evaluated, assisting the vendors in filling out their application form, etc.
- Administrative tasks should be simple and kept to a minimum for the vendor.
- The time-scale to obtain the ETV certificate/award should be reasonable (around 6 months).

4.3 Recommendations to assure programme quality

The programme must evaluate technology performance with a high-level of reliability, which involves:

- Independent third-party technology performance testing and verification by widely recognised expert organisations,
- High-quality evaluation tools,
- Making use of all competences Europe-wide in order to tackle potential discrepancies between the experts views,
- Frequent and thorough auditing procedures.

In addition, a specific accreditation system could be set up for test labs and verification centres to qualify for the programme evaluation process.

4.4 Recommendations to assure recognition to the programme

- Going through the programme must be worth the investment and thus be a true market opener for the vendor.
- It should be kept in mind that the programme's prime objective is to support the development and promotion of environmentally sound technologies, and not just to produce detailed reports on technology performance based on high-quality, time-consuming test procedures ...
- It is essential that technology buyers be represented in the evaluation process, so that the programme methods and outcome (performance data, verification certificates, logos, etc.) are recognised by them. As the end-users are the market-drivers of the technologies, the more value they give to the programme, the greater will be its success.
- If the market is not ready to introduce a new technology, having it evaluated too early can be a waste of time and money. Hence, the selection of priority technology areas is essential for the programme to be useful.
- If markets in developing countries are targeted, it is important to make sure that the evaluation requirements are adapted to that specific market. Such an approach may lead to the need for different types of certificates for one same product, depending on the market area.
- Harmonisation of the EU ETV programme with the other programmes implemented worldwide would enhance the recognition of the programme, and also broaden the market perspectives for the European technology vendors. European stakeholders consider this harmonisation process should be undertaken once the European level programme is running. However, the programme should be designed taking into account the requirements so as to ease the subsequent harmonisation phase.