



# Cost evaluation and potential funding programs

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## ENVIRONMENTAL TECHNOLOGIES VERIFICATION (ETV):

**Valuable tool for easier and faster market acceptance of innovative, smarter environmental technologies**

**Specially suitable for Technologies with a clear potential to achieve higher environmental benefits**

**An interesting instrument to boost eco-innovation**

**WHO USES TO LEAD ECO-INNOVATION?**

**Mainly SME's**

## SME's as developers of innovative environmental technologies:

Often more dynamical and able to face new challenges beyond the "state of the art"

Able to transfer research advances to commercial technologies (spin offs, professors,...)

**...BUT**

### Problems:

- Financial Risks
- Market barriers to eco-innovation
- Less confidence from the customers



**Expectations from the SME's for ETV :**

**High quality and European (international) value**

**Reliable and independent system**

**Useful as tool to improve sales and acknowledgement**

**COSTS!**

**Reasonable, affordable costs-Value for money**

**Need of co-funding tools**



A vertical sidebar on the left side of the slide, containing six identical red icons of a heart with a white ECG line, each enclosed in a green square frame.

## Estimation of costs within AIRTV :

### Based on the test cases developed

### Main considerations are about effort in terms of working hours:

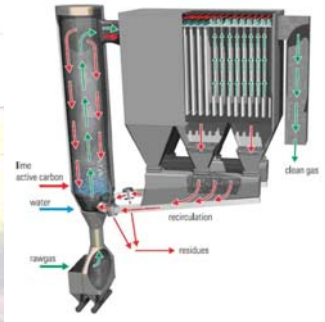
- Differences in labour costs between countries
- Consumables (but also hours) highly depending on the type of verification:
  - Based on existent data
  - Existent data + additional testing
  - Based only in new performance data

**Nine technologies selected as pilot test cases:**

**Verification based on existent data:**



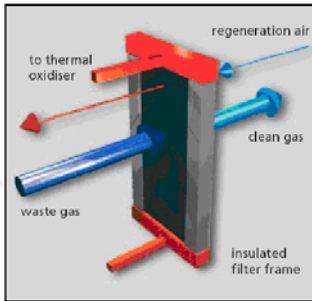
**Wet scrubber for fumes abatement, LEIA**



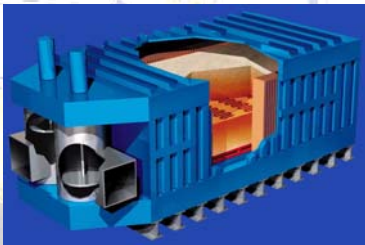
**Turbosorp® Technology, UBA-A**

**Nine technologies selected as pilot test cases:**

**Verification based on existent data:**

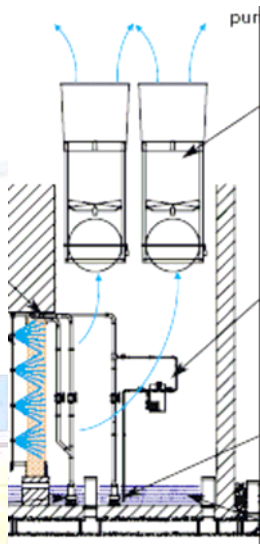


**Elosorb Technology, IFARE**

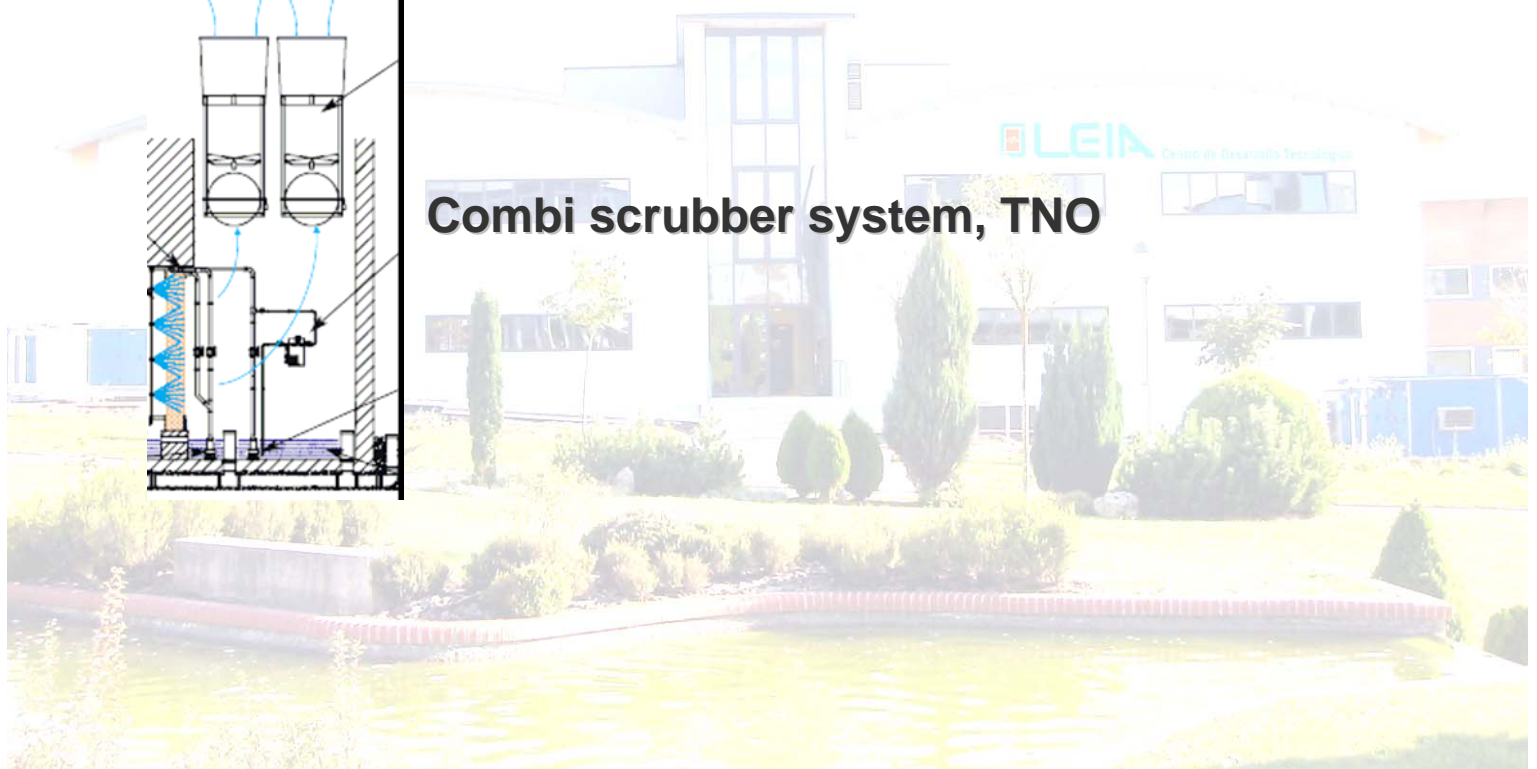


**Regenerative combustion of waste gases, TNO**

**Verification based on existent data + additional testing:**



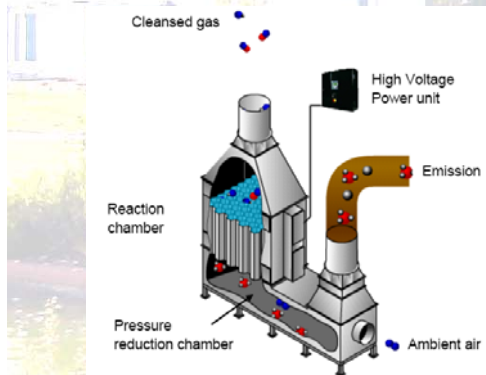
**Combi scrubber system, TNO**



**Verification based in new performance data**

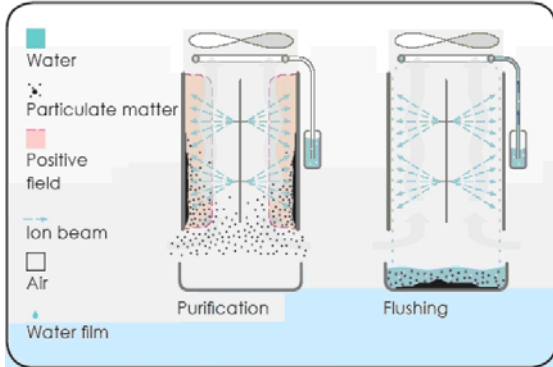


**Wet scrubber for fumes abatement, LEIA**

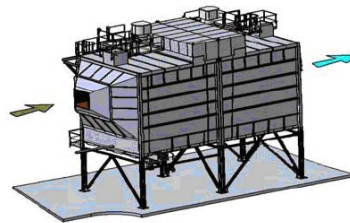
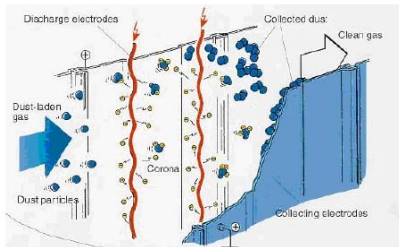


**Applied Plasma Physics Technology, VITO**

**Verification based in new performance data**



**Multifunction ion technology (GENANO),  
 VITO**



**Electrostatic precipitator, IVL**



**Low emission gas burning, INiG**

**Efforts related to the type of verification:**

**Verification based on existing data (hours)**

Highest	Lowest	Average
262	140	206

**Verification based on existing data + additional testing (hours):**

**364**

**Verification based on new performance data (hours):**

Highest	Lowest	Average
412	279	337

**Efforts related to the type of verification (expected):**

**Verification based on existing data (hours)**

Highest	Lowest	Average
220	112	150

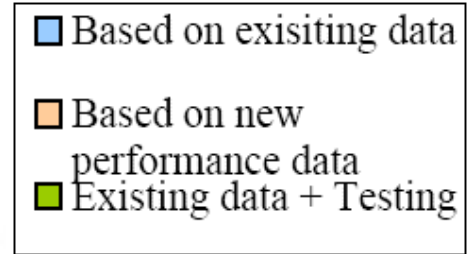
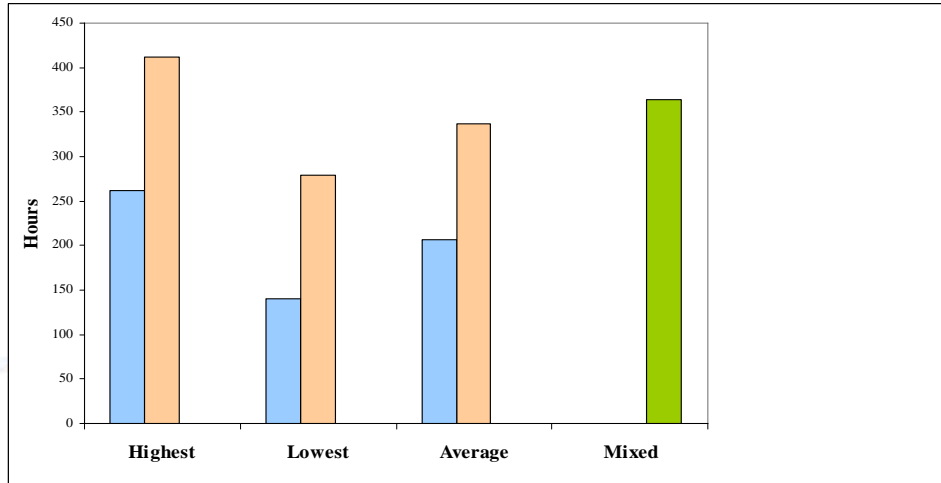
**Verification based on existing data + additional testing (hours):**

**230**

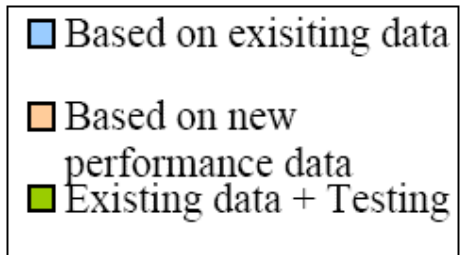
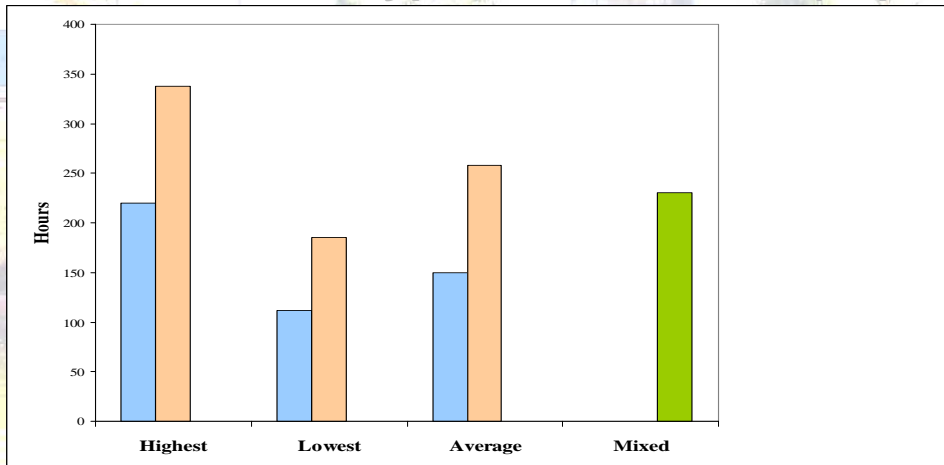
**Verification based on new performance data (hours):**

Highest	Lowest	Average
338	185	258

### Efforts related to the type of verification:



### Efforts related to the type of verification (expected):



## Translation to money

(based on Eurostat Hourly labour costs, 2006)

### Verification based on existing data (€)

Highest	Lowest	Average
5660	3025	4450
8140	4500	6610
1755	935	1380

EU 27 Average

Reference State (Western Europe)

Reference State (New member)

## Translation to money

(based on Eurostat Hourly labour costs, 2006)

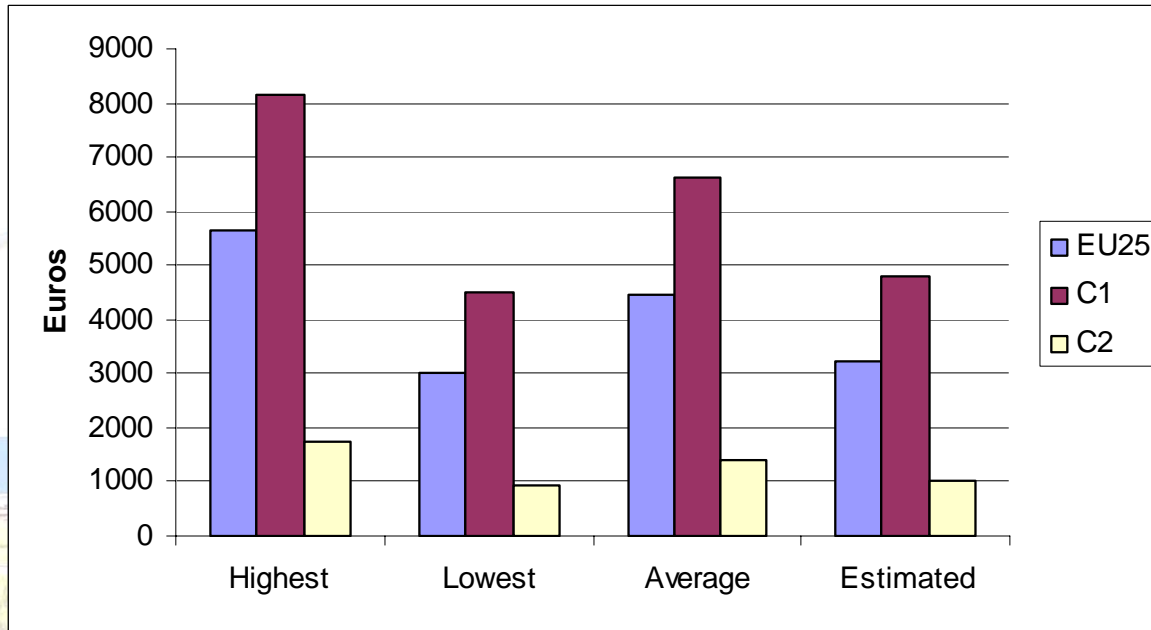
### Verification based on existing data + testing (€)

<b>7865</b>	EU 27 Average
<b>11685</b>	Reference State (Western Europe)
<b>2435</b>	Reference State (New member)

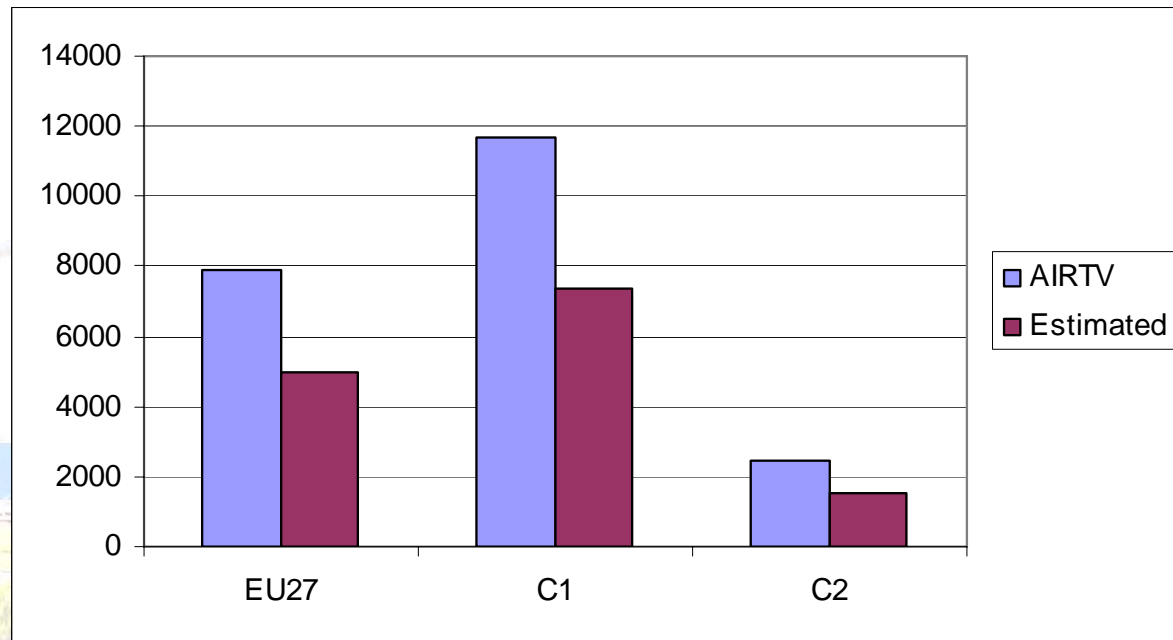
### Verification based on new performance data (€):

Highest	Lowest	Average	
<b>8900</b>	<b>6025</b>	<b>7280</b>	EU 27 Average
<b>13225</b>	<b>8955</b>	<b>10820</b>	Reference State (Western Europe)
<b>2760</b>	<b>1865</b>	<b>2255</b>	Reference State (New member)

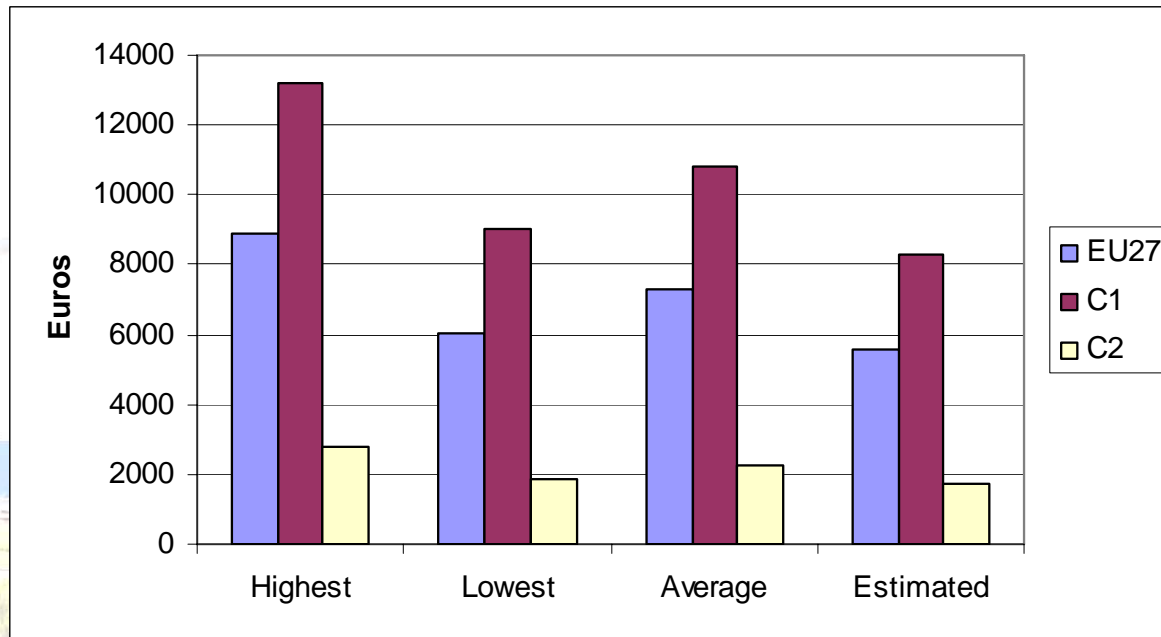
## Verification based on existing data



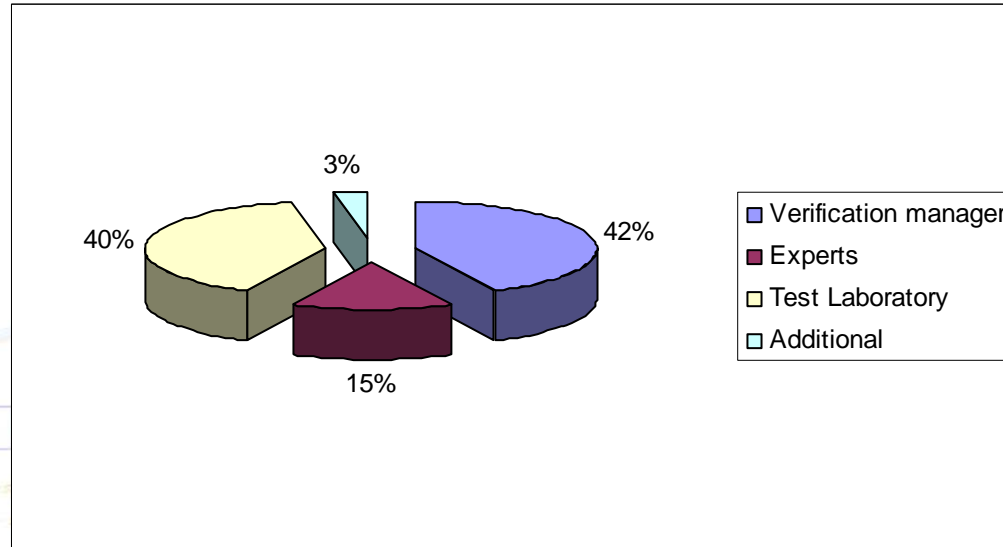
## Verification based on existing data + additional testing



## Verification based on new performance data



## Distribution of the different tasks



**V. Manager:** Meetings with vendor, technology research, verification protocol, test plan, verification report

**Experts:** Checking verification protocol, checking test plan, checking test report, checking verification report

**Test laboratory:** Performing measurements, writing test report

**Additional:** Vendor/technology manager, test site manager

## Other costs considerations Costs for the US System (Air Emission Abatement)\*

Verification Centre 2 (Air Emission Abatement)	average	max	min
	k€	k€	k€
<b>Fix costs</b>			
Information Diffusion	7.4	8.6	6.1
Stakeholders	6.2	7.3	5.2
General Management	5.6	6.5	4.6
Prioritization	1.8	2.1	1.5
Quality Management	1.3	1.6	1.1
<b>Total Fix costs</b>	<b>22.3</b>	<b>26.0</b>	<b>18.6</b>
<b>Variable costs</b>			
Testing	29.9	55.4	9.1
Verification reports	17.1	31.7	5.2
Test/QA plans	15.4	28.5	4.7
Protocols	13.7	25.3	4.2
Solicitation/selection	5.1	9.5	1.6
Audits/QA evaluation	4.3	7.9	1.3
<b>Total variable costs</b>	<b>85.5</b>	<b>158.4</b>	<b>26.0</b>
<b>TOTAL COSTS</b>	<b>107.8</b>	<b>184.4</b>	<b>44.6</b>



\*Source: “Contribution to the Impact Assessment Report of an EU Scheme for Environmental Technology Verification”, Merkourakis, Delgado, Wolf. IPTS

## Other costs considerations Costs for the Canadian System\*

	average	max	min
	k€	k€	k€
<b>Fix costs</b>			
Information Diffusion	7.4	8.7	6.2
General Management	5.6	6.6	4.7
Quality Management	1.4	1.6	1.1
<b>Total Fix Costs</b>	<b>14.4</b>	<b>16.8</b>	<b>12.0</b>
<b>Variable costs</b>			
Verification/reporting/award	17.6	23.5	11.7
<b>TOTAL COSTS</b>	<b>32.0</b>	<b>40.3</b>	<b>23.8</b>

\*Source: "Contribution to the Impact Assessment Report of an EU Scheme for Environmental Technology Verification", Merkourakis, Delgado, Wolf. IPTS

## Other costs considerations Costs for a “mix model”\*

	average	max	min
	k€	k€	k€
<b>Fix costs</b>			
Information Diffusion	7.4	8.7	6.2
Stakeholders	6.2	7.3	5.2
General Management	5.6	6.6	4.7
Quality Management	1.4	1.6	1.1
<b>Total Fix Costs</b>	<b>20.7</b>	<b>24.1</b>	<b>17.2</b>
<b>Variable costs</b>			
Claim – technology eco-profile	6	9	3
Verification/reporting/award	17.6	23.5	11.7
<b>Total Variable costs</b>	<b>23.6</b>	<b>32.5</b>	<b>14.7</b>
<b>TOTAL COSTS</b>	<b>44.3</b>	<b>56.6</b>	<b>32.0</b>

Covered only by vendor?

Not considered in AIRTV

\*Source: “Contribution to the Impact Assessment Report of an EU Scheme for Environmental Technology Verification”, Merkourakis, Delgado, Wolf. IPTS

## Relationship with expectations from SME's

### Different actions promoted by the UE to collect stakeholders opinions:

- General public consultation
- European Business Test Panel (EBTP) consultation
- Forum on eco-innovation
- Stakeholder workshops

• **Majority opinion: Below 20.000 €**

• **Second option (but far from the first): A range between 20.000-50.000 €**

**Average case: 29580 € (with testing)**

**Most costly case: 37325 (with testing)**

## Potential funding programs

### Potential type of funding for the technology vendor\*

<i>Step in verification process</i>	<i>Potential type of funding for the technology vendor</i>
Contact phase	Own capital
Application phase	Grants
	Loans
	Guarantees
	Tax incentives
Testing phase	Grants
	Loans
	Guarantees
	Tax Incentives
Assessment phase	Own capital
Publication phase	Grants
	Loans
	Guarantees
	Tax incentives

\*Source: Review of funding schemes for SMEs in technology verification

## Funding schemes that include technology verification issues\*.

Member state	Name of funding scheme	Company/ authority	The maximum funding for each type of organisations (% of eligible costs)	Maximum amount of funding per project (ME)	Type of funding: subsidy or loans	Total yearly funding budget (M euro)	Average number of ETV projects that could benefit including verification and testing	Average number of ETV projects that could benefit including only testing
Cyprus	"EUREKA Cyprus" Programme	the Research Promotion Foundation (RPF)	75%	0.17	Grant	2	22	44
Cyprus	Programme "Research for enterprises": Specific action programme "experimental development of products and services"	the Research Promotion Foundation (RPF)	45%	0.17	Grant	2.9	32	64
Germany	ERP-Innovationsprogramm	KfW Bankengruppe	50 - 100 %	2,5 - 5	Loan	707.2	7919	15716
Ireland	Science, Technology, Research and Innovation for the Environment (STRIVE) programme 2007-2013 - CGPP - Cleaner Greener Production Programme	Environmental Protection Agency (EPA)	75%	0.2	Grant	1.0	11	22
Malta	Royalties scheme	Malta Enterprise Enterprise Centre		0.05	Loan	0.2	2	4
Slovakia	Slovak RD Agency grants: programme "Promotion of research and development in small and medium sized enterprises."	Slovak Research and Development Agency	25%	0.167	grant	3.5	39	78
United Kingdom	Hydrogen fuel cell and carbon abatement demonstration programme	Department for Business, Enterprise and Regulatory Reform (BERR)	EU	no limit	grant	21.0	235	467
United Kingdom	Marine renewables deployment fund - wave and tidal stream demonstration scheme	Department for Business, Enterprise and Regulatory Reform (BERR)	25%	12	grant	21.0	235	467
<b>TOTAL</b>						<b>759</b>		

\*Source: Review of funding schemes for SMEs in technology verification

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## Funding schemes that “probably” include technology verification issues

Member state	Name funding scheme	Company / authority	The maximum funding for each type of organisations (% of eligible costs)	Maximum amount of funding per project (M€)	Type of funding: subsidy or loans	Total yearly funding budget (M euro)
Austria	ERP - Programm Technologie	AWS - Austria Wirtschafts-service	25%	not readily available	Loan	not readily available
Estonia	Environmental Investment Center - Loans	Environmental Investment Center	75%	1,9 (minimum 0,03)	Loan	not available
Finland	Financing of the Foundation for Finnish Inventions	Foundation for Finnish inventions	Not readily available	0,2	Grant or loan	not available
Finland	Development Loan	Finnvera plc	75%	0,4	Loan	+/- 17 M
France	R&D-projects, innovation projects	OSEO	25%-60%, 5% to 15% bonus percentage	not readily available	Grant - Subsidy and Loan	not available
France	Contrat de développement innovation et Fonds de garantie innovation	OSEO	loan between 40.000 and 400.000 €	loan between 0,04 and 0,4 (0,6 in certain regions).	Loan and guarantee	not available
Germany	Pilot projects under the Programme for Promoting Application-Related Environmental Technologies (PFAU)	BIG Bremen - Economic Development	50%	0,15	Grant	not available

\*Source: Review of funding schemes for SMEs in technology verification

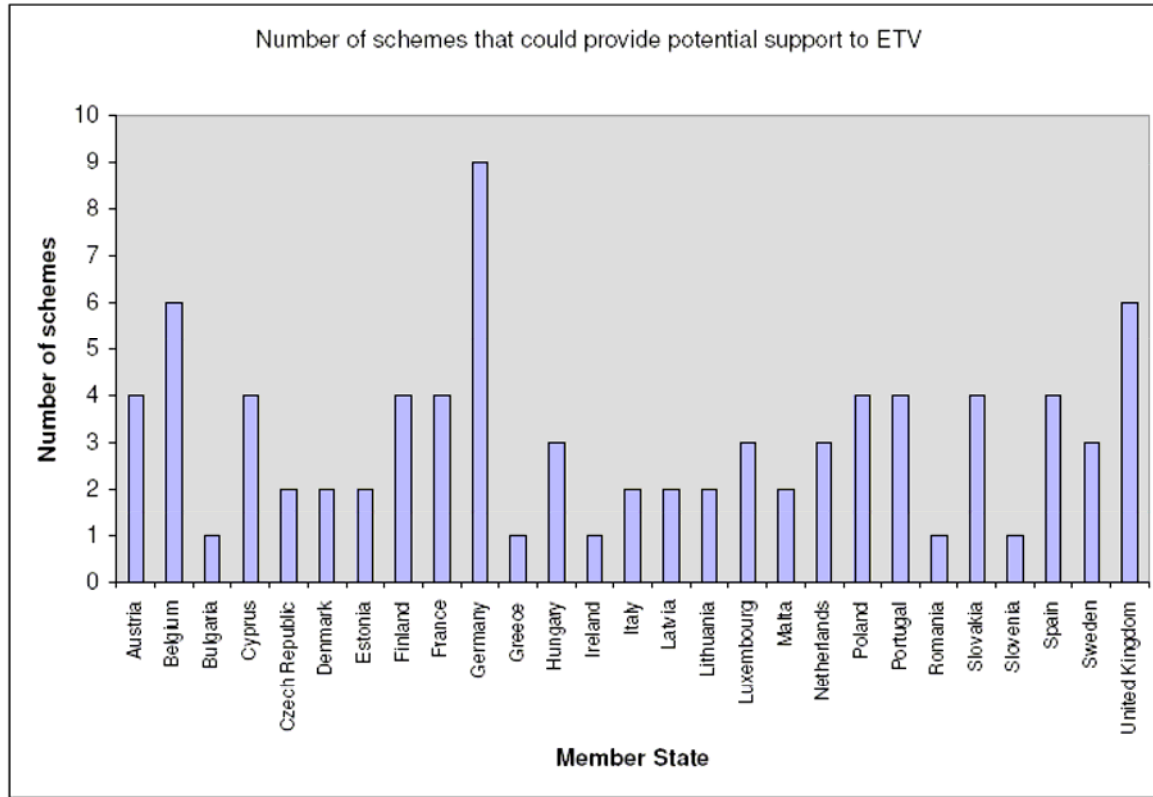


## Funding schemes that “probably” include technology verification issues

Germany	Launching innovative products and services on the market	BIG Bremen - Economic Development	50%	0,04	Grant	not available
Luxembourg	Innovation loan	Societe Nationale de Credit et d'Investissement (SNCI)	SME 25% Large company 25%	not readily available	Loan	not available
Luxembourg	General investment support scheme for SMEs	Ministry of Middle Classes, Tourism and Housing	50%	0,1	Grant - subsidy, interest rate subsidies	not available
Portugal	SIFIDE Fiscal Incentives	AdI - Agência de Inovação	no maximum	no maximum	Tax incentive	not available
Slovenia	Slovenian Enterprise Fund - SEF	Slovene enterprise Fund			Guarantees, grants	55 M
Spain	InnoEmpresa - Lines of action II (technological innovation and quality)	MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO	Aid ceilings vary depending on the area in which the project is being carried out : up to 50%	not readily available	Grant - subsidy	not available
United Kingdom	Applied Research Grants - Carbon Trust	Carbon Trust	SME 50% Large company 50%	0,32	Grant	not available

**\*Source: Review of funding schemes for SMEs in technology verification**

## Number of Schemes that could provide potential support to ETV



**\*Source: Review of funding schemes for SMEs in technology verification**



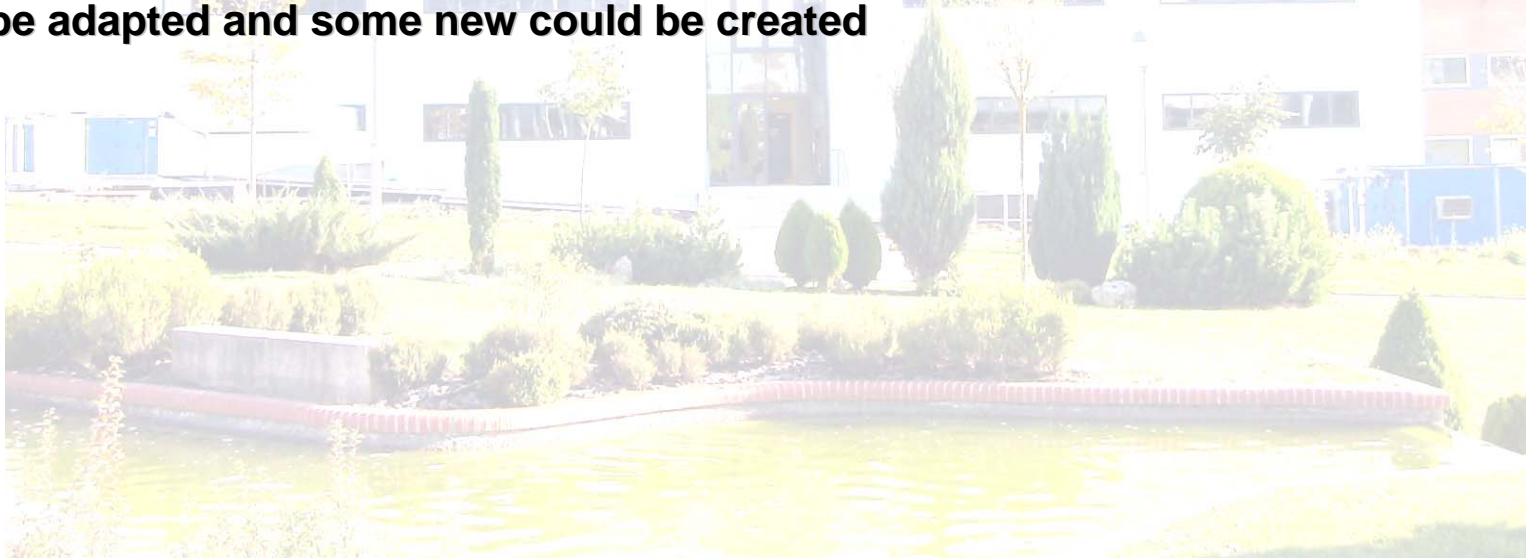
## Conclusions:

- **Environmental Technologies verification is a valuable tool for boost ecoinnovation, specially for SME's, helping to overcome the gap between research and market**
- **Vendors expect some characteristics from the ETV system to be useful, but this implies some costs**
- **The type of verification, specially the use of existing data, will have an important influence over costs**
- **For verification of air emissions abatement technologies, effort in terms of working hours could vary from 140 to 412 hours**
- **Variable costs in terms of money will strongly depend on the technology complexity and type of verification, but also on the country where it is developed**



## Conclusions:

- **Some variable costs should diminish (between 20-30%) when a real system exists. In the other hand, the results are conditioned by the fact of being a research project**
- **Fixed costs would mean an important part of the total costs, if these structures are to be maintained only with vendor's payment**
- **Costs could be out of the range considered as affordable by the companies**
- **Some funding schemes already exist, anyhow other potential schemes should be adapted and some new could be created**



# THANK YOU FOR YOUR ATTENTION



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