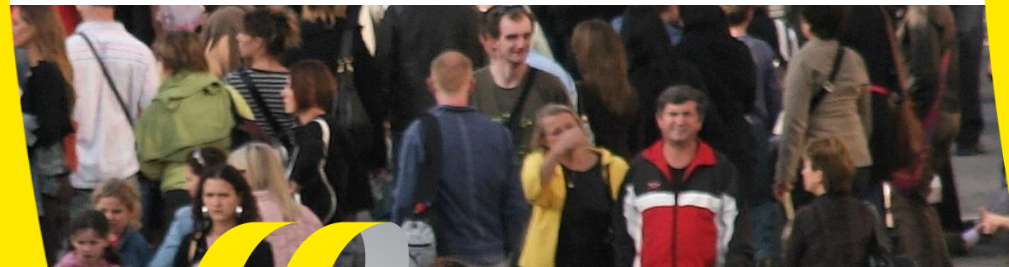# HDV CO$_2$ monitoring options and their costs

Stakeholder meeting October 17th 2016

Eelco den Boer

**CE Delft**

# CE Delft



- Independent research and consultancy since 1978

- Transport, energy and resources

- 10+ experts in transport

- Know-how on economics, technology and policy issues

- Based in Delft, the Netherlands

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# Agenda

- Type approval and registration practice
- Project framework
- Monitoring options
- Transfer data monitoring data
- Stakeholders' opinion
- Monitoring costs
- Conclusions

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# Current practice of HDV type approval and registration

- Registration procedures for heavy-duty vehicles vary significantly among EU Member States
- Number of registrations strongly differ (1,000-100,000) as well as organisation and requirements.
- CoC (Certificate of Conformity) data is used, but not all vehicles have a CoC. Also TA data is used
- OEMs have digital data available
- Some countries already implemented or started pilots with e-CoC. Digitisation of registration procedures has been started, but there is no harmonised approach in Europe
- The IVI (Individual Vehicle Information) file has been developed some years ago by EReg, providing a structured approach for registration processes
- N1 vehicle monitoring is based on various sources

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# Project framework

The objective of the project is twofold:

- to better understand and define the various options for monitoring HDV $CO_2$ emissions; and
- to make a costs assessment to feed the internal EC impact assessment on monitoring options.

Two main questions arise regarding the HDV monitoring options:

- Who should monitor and report?
- What are the costs per monitoring option?

- NOT: what should be monitored (editing board discussion).
- We worked with the hypothesis of reporting of up to 500 data points

# Study approach

- Study is largely based on interviews and expert opinions:
  - Explanation of concept, gathering opinions on monitoring options
  - Estimate of costs and impact per stakeholder by estimating the costs per stakeholder:
    - ✓ Implementation costs
    - ✓ Annual costs

|  | Member States | OEMs |
|---|---|---|
| **Interviewed (17)** | Croatia, Denmark, France, Finland, Germany, Greece, Netherlands, Slovakia, Sweden, UK, Spain, Italy | ACEA, Scania, DAF, Volvo, Daimler |
| **No or negative response (8)** | Belgium, Cyprus, Estonia, Luxembourg, Lithuania, Poland, Romania, Ireland | Iveco, MAN |
| **Not contacted (8)** | Austria, Bulgaria, Czech Republic, Hungary, Latvia, Malta, Portugal, Slovenia | Renault |

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# Monitoring options

- Option 1: MS responsible for reporting to EC/EEA, various registration procedures in Europe; harmonised VECTO output in separate file or added to IVI file.
- Option 2: OEM responsible, self-reporting to EC/EEA.
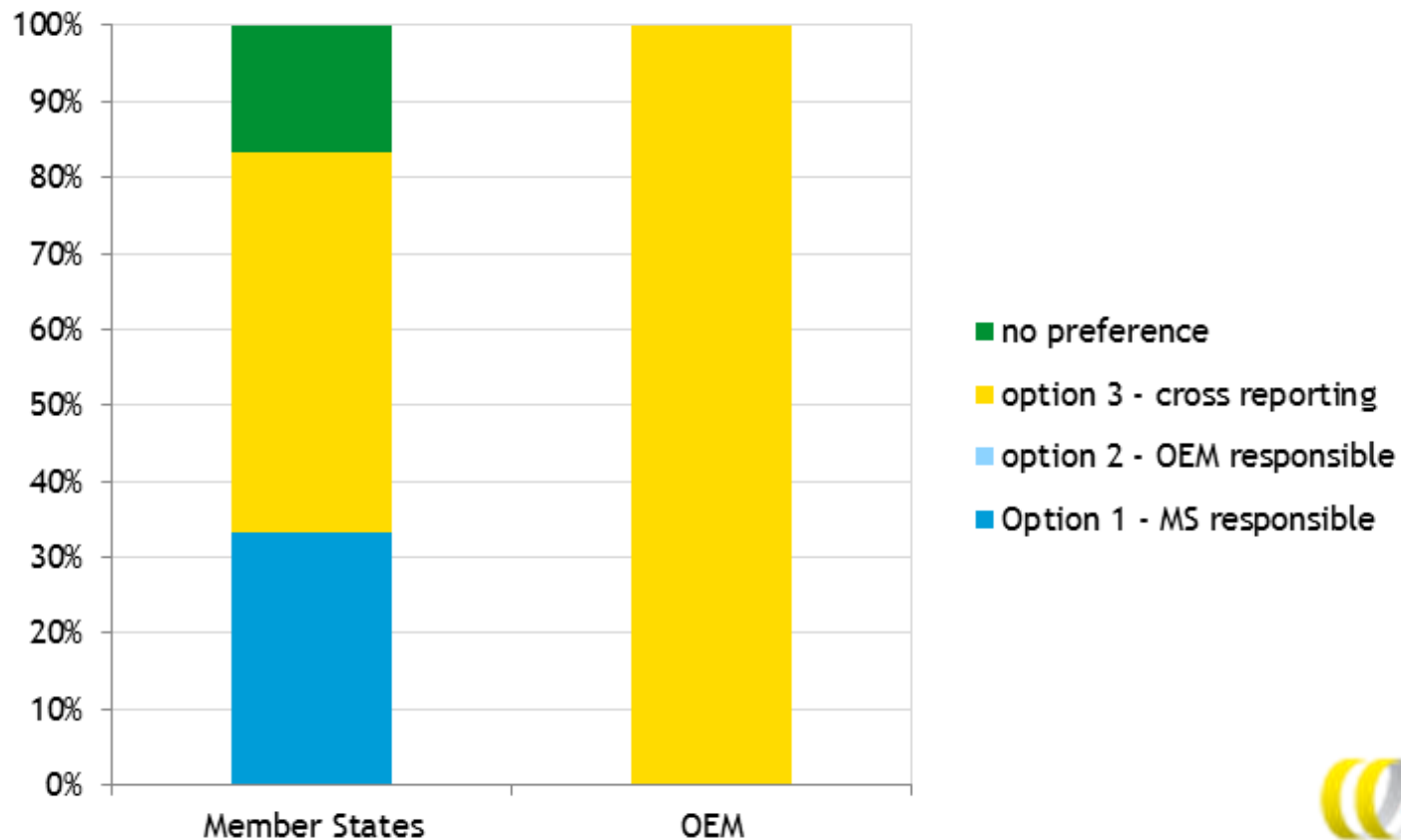- Option 3: Cross-reporting of OEM and MS to EC/EEA.
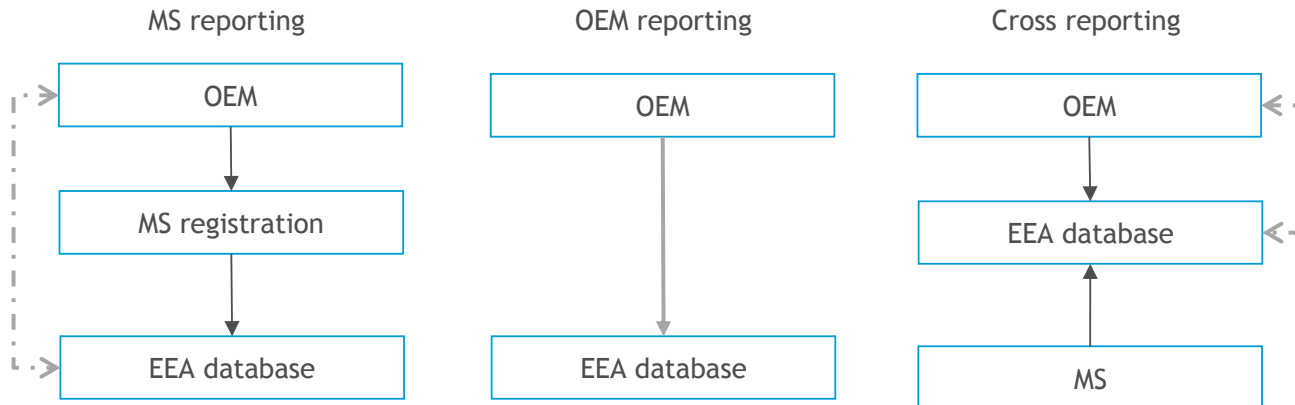


---- = data check

# Transfer of monitoring data

- The use of paper documents lacks support of all stakeholders

- HDV $CO_2$ monitoring data transfer can be done in various ways:
  - As part of an extended digital CoC (Option 1)
  - As part of a standardised XML file, which is called IVI (Option 1)
  - As part of an additional XML file (Option 1/2/3)

# Transfer of monitoring data

- Both OEMs and Member States' experts acknowledge that data transfer should be organised through exchange of XML files.

- Amendment and expansion of the upcoming digitisation of registration processes is an option, but:
  - Digitisation processes are not aligned yet, and rate of digitisation differs
  - This requires alignment between national registration authorities and OEM

# Stakeholders' opinions



Legend:
- no preference
- option 3 - cross reporting
- option 2 - OEM responsible
- Option 1 - MS responsible

# Stakeholders' opinions

- No transfer of paper documents, only digital!
- Member States' arguments:
  - Supporting option 1: credibility (MS check) and alignment with N1 monitoring. Controlled data available for national future purposes.
  - Supporting option 3: financial burden (database development)
- OEMs' arguments:
  - Supporting option 1: --
  - Supporting option 3: no need to send data on individual vehicle level. Option to include national details

Multi-stage vehicles:

- Option 1: n-stage (~40%) manufacturers need to submit VECTO data to registration authorities, which increases complexity
- Option 3: Only data of incomplete vehicles can be included in monitoring data, with use of default data

# Costs of monitoring (methodology)

- bottom-up calculation method
- Three actors: MS, OEM and EEA/EC

| Cost component | Sub-component description | Description |
|---|---|---|
| Transition costs | Implementation costs | Non-technical costs for organising the process, making arrangements between actors |
| | Database development/ IT investments | The technical implementation costs refer to investments in the development of needed databases and additional IT requirements. |
| Annual costs | Technical maintenance & IT costs | Data management costs concern the technical maintenance costs for IT systems and databases. These only apply when IT systems are in use for the sole purpose of HDV monitoring. |
| | VECTO data transfer costs | VECTO data transfer costs apply only to monitoring option 1. In this option, not all Member States use a fully digitalised registration system |
| | Reporting costs | Reporting costs are defined as costs of transfer of data to EEA and management by EEA. |
| | Costs for making checks, answering questions | EEA and EC will perform several quality checks in order to evaluate the accuracy and the quality of the datasets. |

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# Total annual costs per monitoring option



Total annualised costs
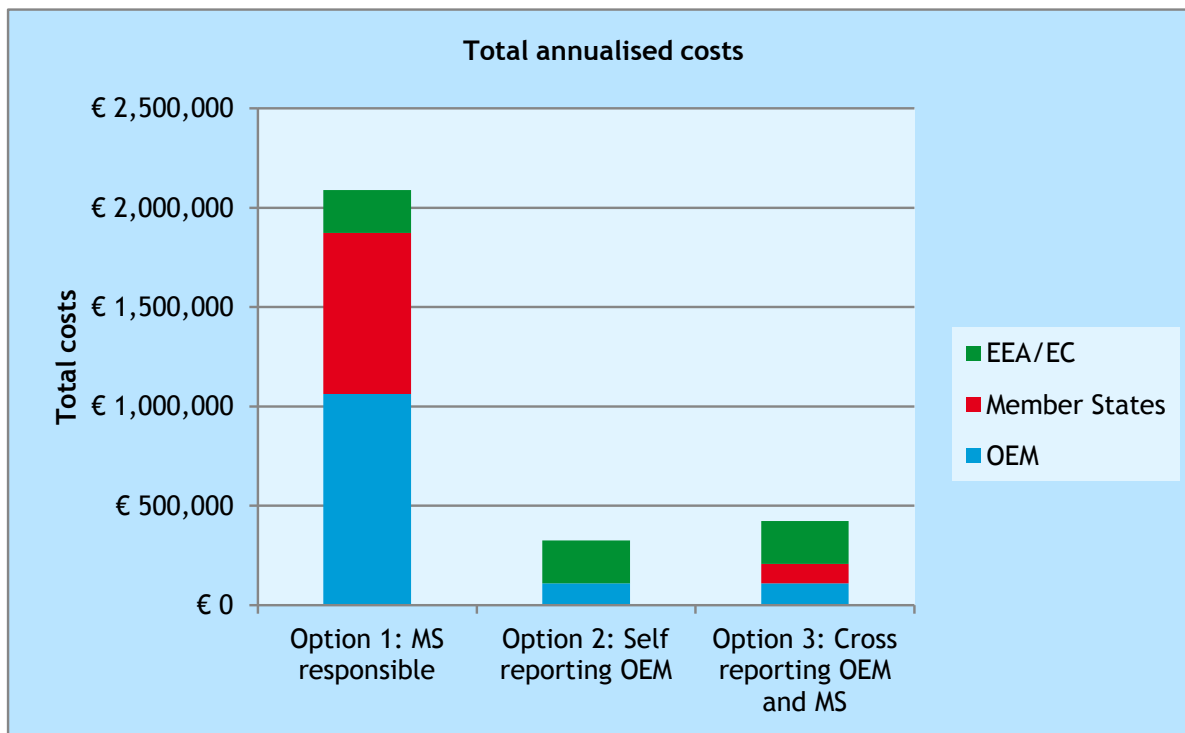
# Decisive cost factors

| Actor | Cost component | Option 1: MS responsible | Option 2: Self-reporting OEM | Option 3: Cross-reporting OEM and MS |
|---|---|---|---|---|
| OEMs | Transition costs | high | low | low |
|  | Annual costs | high | low | low |
| MS | Transition costs | high | -- | -- |
|  | Annual costs | medium | -- | low |
| EC/EEA | Total | medium | medium | medium |
| Overall | Total/yr. (EUR) | 2.1 million | 0.3 million | 0.4 million |

Decisive:

- The costs of the development of IT-systems by Member States (transition + recurring)
- The costs of transfer of individual vehicle VECTO result data by OEMs (recurring)

# Costs of monitoring option 1(Member States)

- Transition:
  - IT costs based on interviews  (0 - EUR 100,000, reflecting the rate of digitisation
  - Implementation : EUR 16,500
- Annual costs: EUR 1,500 – EUR 80,000, reflecting the rate of digitisation



Annualised total costs for MS of HDV monitoring option 1
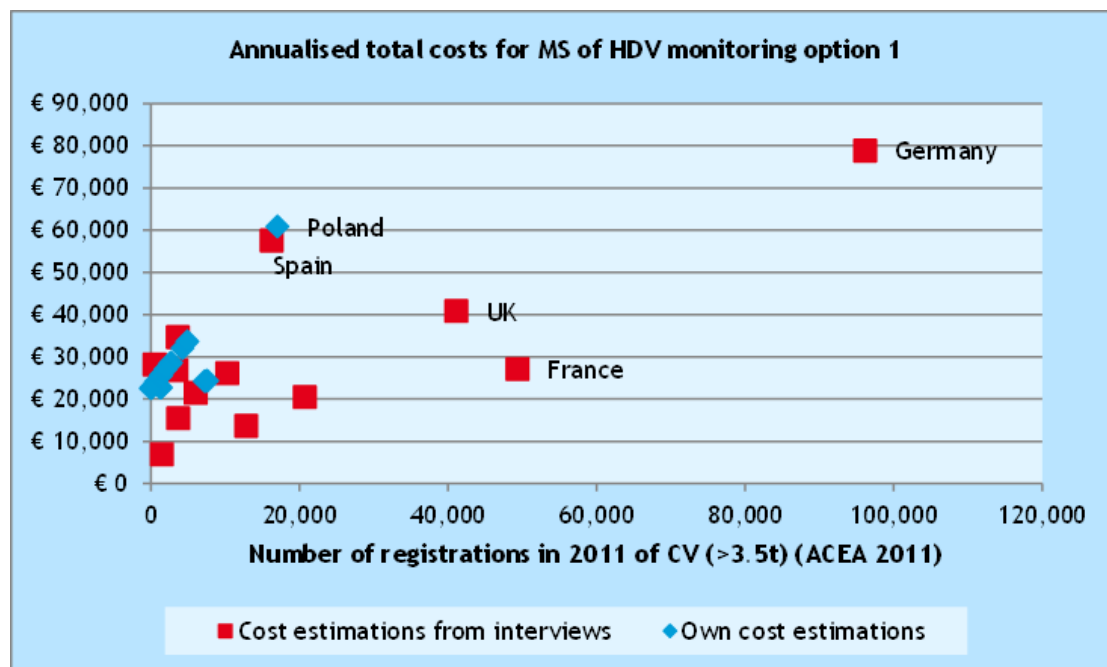
# Costs of monitoring option 1(OEM/EEA)

Transition costs:

- No IT-costs: monitoring is a follow-up of certification process
- OEMs have to agree with 28 MS on registration procedure
- If MS require different file structures, the costs will be higher (EUR 125,000 – 250,000 per OEM)

Annual costs:

- 5 mins. per vehicle (inclusion of VECTO result file in existing data flow)
- EUR 75,000-180,000 per OEM)
- Checks and controls: EUR 20,000

EEA/EC:

- Transition costs: EUR 250,000
- 2,5 fte at EEA/EC + data management: EUR 180,000

# Cost of monitoring Option 2 (OEM)

- Transition costs:
  - No IT development costs
  - Implementation costs: EUR 16,500 per OEM
- Annual costs:
  - Reporting OEM to EEA: EUR 7,000
  - Making checks/answering questions: EUR 7,000

EEA/EC:
- Transition costs: EUR 250,000
- 2,5 fte at EEA/EC+ data management: EUR 180,000

# Costs of monitoring option 3 – cross reporting

OEM:

- Transition costs:
  - No IT development costs
  - Implementation costs: EUR 16,500 per OEM
- Annual costs:
  - Reporting OEM to EEA: EUR 7,000
  - Making checks/answering questions: EUR 6,750

Member State:

- Extraction of VIN numbers from registration database: EUR 3,500

EEA/EC:

- Transition costs: EUR 250,000
- 2,5 fte at EEA/EC + data management: EUR 180,000

# Conclusions

- No transfer of data by paper documents (pdf)
- OEMs prefer cross reporting of OEM and Member State
  - Labour intensity
- MS are not unanimous in their opinion, both option 1 and 3 mentioned
  - Credibility vs. costs

- Monitoring will cost between EUR 1 and EUR 5 per vehicle registered in the EU
- Option 1 – MS reporting is 5 times more expensive than Option 3- cross reporting.
- Decisive costs categories:
  - IT development by Member States
  - Transition and annual costs of OEMs (agreeing on file structure+ transfer of individual data files per vehicle)

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