

ITS for evaluation of CO2 emissions

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**Workshop UN-ECE
WP24**

Brussels 2013-05-15



Ressources, territoires, habitats et logement
Énergies et climat Développement durable
Prévention des risques Infrastructures, transports et mer

Présent
pour
l'avenir

Summary

- **ITS to help sustainability**
 - **Objective: technical systems to support a public policy**
 - **Methodologies**
 - **Standards**
 - **Specifications for interoperable deployments**
 - **Public awareness**
 - **Generalization**
- **International cooperation**
 - **Research**
 - **Standards**
 - **Agreements**



ITS for the climate

Objective of the 2009-2010 French laws:

- **20% reduction of transport emissions in 2020 (bringing them back to 1990-level)**
- **Promotion of modal shift (freight and persons)**

Among other measures: Information on GHG emissions :

- **Information on the environmental impact of products**
- **Yearly assessment on GHG emissions of public entities (state activity and local authorities) and private companies (staff over 500 persons)**
- **Information on CO2 emissions from transport services, to be used by all studies and assessments**

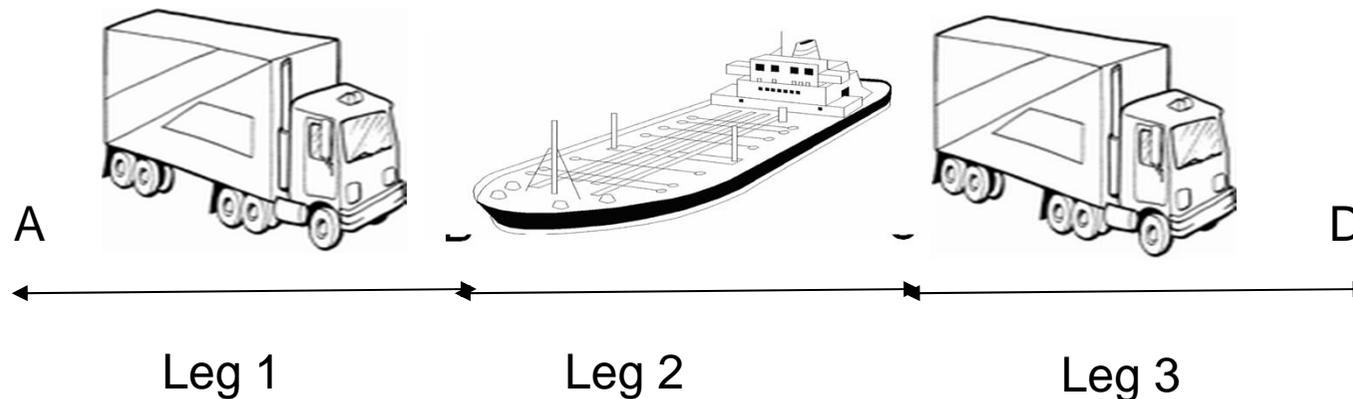
Information on Transport Services CO₂ Emissions

■ Main characteristics

- CO₂ emissions only (CEN standard allows for all GHG emissions)
- Information has to be given by every person or entity in charge of organizing or selling transport services
- All modes of transport are concerned (aviation, maritime, road, rail, urban transport and inland waterways)
- Trips taken into account : at least a departure or an arrival in France, the international part of the journey is also included
- No exclusion for « small » services (packages deliveries, cabs)
- All loaded and empty trips are taken into account
- Mandatory information

Methodology for Calculation

- **Identification of the different legs of the transport service**
 - Leg : section of a route within which the cargo or the passenger is carried with a given vehicle
- **Calculation of CO₂ emissions for each leg**
- **Sum of the results for each leg**



Categories of Values

- **The following categories of values, given by order of preference, may be used :**
 - **Specific measured values**
 - **Transport operator vehicle-type or route-type specific values**
 - **Transport operator fleet values**
 - **Default values (for small companies or when data is not available)**

Processing

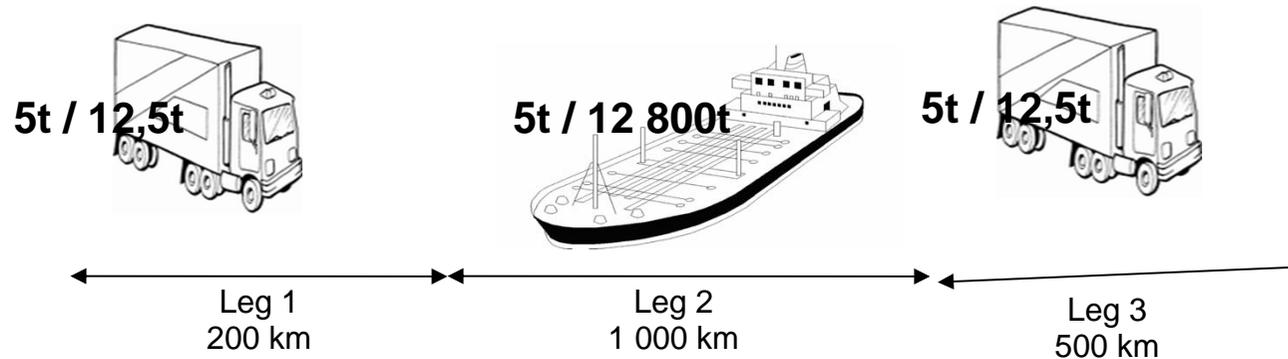
- Main formula (which can be adapted) :

$$\begin{array}{ccccccc} & & & & \text{Number of units} & & \\ & & & & \text{transported for} & & \\ & & & & \text{the service} & & \\ & & & & \text{_____} & & \\ \text{Kilometric} & & \text{Number of} & & & & \text{Emission} \\ \text{consumption} & \times & \text{kilometers} & \times & & \times & \text{factor} \\ \text{rate} & & \text{for the} & & \text{Average number} & & \\ & & \text{service} & & \text{of units transported} & & \\ & & & & \text{in the vehicle} & & \end{array}$$

A guideline is available since October 2012 with explanation on general rules and examples for diversified transport activities (34 examples)

Calculation (example 1/2)

1. The legs of the journey & the number of units



2. The mileage rates of consumption

0,342 l / km

39,20 kg / km

0,342 l / km

3. The emission factors

3,07 kg CO₂ / l

3,58 kg CO₂ / kg

3,07 kg CO₂ / l

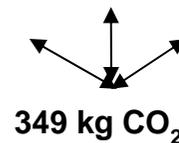
4. The quantity of CO₂ emitted at each segment

84 kg CO₂

55 kg CO₂

210 kg CO₂

5. The total quantity of CO₂



Standards

- **The French regulation for calculation is hand-to-hand with the European standard (pr EN 16258)**
- **National specifications are based on standards but with specific local adaptations depending on the context**
- **An international system need to be based on existing references, especially when semantic and security is concerned**
- **Interoperability need agreements between partners and not only standards which are used on a voluntary basis**

Communication of CO₂ Information

- **CO₂ emissions from well-to-wheels and possibly also from well-to-tank and tank-to-wheels**
- **According to circumstances, information will have to be given before or after the fulfillment of the transport service**
- **In some cases, a simplified communication will be possible : for example, for public transport (subway ticket without origin nor destination)**

French regulation on Information about CO₂ emissions from transport services

- **Article L. 1431-3 of the transport code :**
 - “ *Public or private persons organising or selling a transport service for passengers, goods or moving purposes have to provide to the beneficiary of the transport service the quantity of carbon dioxide emitted by the means of transport used.* »
- **The decree enforcing this article was published on the 25th of October 2011**
- **The ministerial orders giving the details for the application of the decree were published in April 2012**

International cooperation

- A very important work has been achieved since many years in the field of standards
- But standards by themselves are not sufficient to create the conditions for effective deployments.
- The psycho-sociological process to create trust in a technical system like ITS has several steps
 - Awareness
 - Acceptability
 - Acceptance
 - Appropriation



Recommendations

Two domains have not been sufficiently examined:

- **Agreements between authorities in charge of public policies: Climate change is a global problem, which can not be solved by local incompatible solutions**
- **Appropriate methodologies and the motivations of the end users (incentives) are linked: IFSTTAR is preparing a research consortium with some Asian Universities.**

