Good practice factsheet

Core Theme 2

Energy savings from highways and national roads in Slovakia

Core Theme and topic	CT2 – Concrete examples of measuring energy saving impacts (WG2.1)
Name of work programme/project	Energy savings from Highways and National Roads
Project scope and description	
Short description of the calculation method	Calculation of energy savings in the transport sector by construction of new highways. The method is based on comparison of the use of highways and old parallel routes, usually the 1st class roads. The primary purpose of this method is to calculate CO_2 emissions and fuel consumption from transport using highways and savings in comparison to parallel routes. Data was converted from fuel savings to calculate energy savings. The challenge was to understand the difference between emissions, fuel savings and energy savings. Since the method was developed, it has been easier to convert from fuel savings to energy savings.
What is the scope of the method?	This is a national bottom up (BU) method developed by the Transport Research Institute in Zilina. It is primarily applied by the transport and environmental sectors. The new application can also be used by the energy sector.

Who are the key people involved?
e.g. - in data gathering process
     - in monitoring process
     - in savings calculations
	The organisation responsible for data gathering, the method and monitoring of the method use is the Transport Research Institute. The results are used by the Ministry of Transport, Construction and Regional Development, Ministry of Environment and Ministry of Economy. The results will also form a part of the central monitoring system for energy efficiency, which is now under development by the Slovak Innovation and Energy Agency.

What is the targeted energy-use/programme/measure the method covers?	Savings are based on the final energy consumption of transport (about 21% of total final energy consumption). The method covers energy consumption of all road transport.
How are the work and other possible resources (e.g. development of the monitoring system) needed to execute the method financed?	The methodology and the calculation of fuel and CO_2 savings are the intellectual property of the Transport Research Institute in Zilina. The improvement of the method to calculate energy savings was carried out by the Ministry of Economy as a part of the national energy efficiency action plan (NEEAP) assessment.

What are the costs for the data gathering/monitoring and savings calculations?	The development of the methodology and the calculation of savings took 2 person-months (4 researchers involved). Collecting specific data on transport flow and its average patterns were special research projects. The next year's calculation will require adaptation of all parameters by development coefficients. In some cases, where the intensity of transport flow differs significantly, the average values should be measured directly on the concrete parts of highways.
When did you start to use the method and how often are the calculations updated?	The method was converted from emissions and fuel consumption calculations specifically for NEEAP and used for the first time in the 2nd NEEAP energy savings calculations. Reporting is primarily needed to calculate energy savings, thus for national reporting it is necessary to calculate annually. The primary use of the calculations is for NEEAPs.
Project Outcomes & Communication	
What are the key achievements?	We have gathered all necessary data regarding fuel savings, environmental protection and energy savings.
What are the outcomes and benefits?	We know how much energy is used in highways and that, even though energy savings are not the top priority for highway planning, there are some measurable savings which can be achieved.
What are the key lessons learned?	An unexpected result was the high level of savings available, even allowing for the increasing intensity of transport on the new road. Other important experience came from the possibility of quite accurately calculating the expected results of planned construction work.
Is there anything you would do differently in future?	We could include the energy consumption associated with the construction phases of the highway, which would decrease the final savings for the first years.
What makes this a good practice example?	It is a good and pragmatic method showing the clear and direct impact of highways and national roads on energy consumption in transport. It will be used again in future.
Web links to further information?	http://www.emisia.com/copert/ (software for CO_2 emissions calculation)
Contact details of named person for further information	Miroslav Mariaš, Ministry of Economy, Miroslav.Marias@mhsr.sk Michal Dorčík, Transport Research Institute, dorcik@vud.sk
Please indicate if this case study can be made available to the public?	Yes
Specific to this topic	
Data gathering/monitoring process	The following data sets are required for this calculation method: length of highway sections and parallel road sections, average fuel consumption of a passenger car on different classes of roads, share of diesel/gasoline passenger cars, average fuel consumption of different HGV categories on different classes of roads, share of different HGV categories, prices of gasoline/diesel, price per tonne of CO_2. The organisation responsible is the Transport Research Institute in Zilina.

Assumptions and reference values used in calculations	• Average fuel consumption of HGV on I. class roads: 32,75 l/100 km • Average fuel consumption of HGV on motorways: 28,5 l/100 km • Average fuel consumption of passenger car on I. class roads: 7,6 l/100 km • Average fuel consumption of passenger car on motorways: 6,75 l/100 km • Average price of gasoline: 1,23 EUR/l (2010) • Average price of diesel:1,13 EUR/l (2010) • Average price per tonne of CO_2: 12,8 EUR/t (2010)
Does the method overlap with other methods and how is double counting avoided?	No overlap with other methods.
Is it possible to use this method for primary energy savings calculations?	This method is not currently used for primary energy savings. If petrol and diesel could have conversion factors between primary and final energy consumption, then it could be possible to calculate primary energy consumption as well as savings.
Do you consider data gathering processes or method to be replicable in other MS?	Yes, it is possible. There is a need for certain data, including average consumption and the composition of average transport flows.