

Proposal for the Internalisation of External Costs of Road Transport in Hungary

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Hungary's Partnership Agreement¹ on the European structural and investment funds for the financial period 2014-2020 states that "the polluter pays" principle will be applied in transport. There was a substantial step forward in this direction (the implementation of the electronic distance-based toll for trucks) but also serious setbacks (enormous subsidies to car manufacturers). Thus, there is still a long way to go to implement "the polluter pays" principle in transport. In this study, we propose a step by step implementation of this principle for the period of 2021-2030.

1. External costs of road transport

Transport is responsible for 25% of the EU's greenhouse gas emissions.² This share is even much higher if all those other activities are taken into account which are necessary for transport (mining, vehicle manufacturing, road construction, oil extraction, and refinery, etc.). Moreover, transport has a high share in air pollution and other environmental and health adversities. However, the costs associated with them are currently far from being paid by the transport users. This fact has been known for a long time. For example, it has been stated in the European Commission's 1995 Green Paper "Towards fair and efficient prices for transport"³. In 1998, the White Paper on Equitable Charging for Infrastructure⁴ also states that the share of the cost of passenger and freight transport which is not borne by the user is significant in all Member States of the European Union and that these costs should be internalised in transport prices.

According to the 1995 Green Paper, taxes on road transport in the EU should be doubled just to cover its full cost of road transport. Both documents emphasize that this would not lead to an increase in total transport costs on macroeconomic level but, on the contrary, would reduce them. On the one hand, there would be a significant reduction in traffic congestion

¹ https://ec.europa.eu/info/publications/partnership-agreement-hungary-2014-20_en

² Greenhouse gas emission statistics – emission inventories. Eurostat, June 2020, <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/1180.pdf>

³ Towards Fair and Efficient Pricing in Transport. Policy Options for Internalising the External Costs of Transport in the European Union. – Commission of the European Communities, Brussels, 20.12.1995, COM(95)691 final, https://europa.eu/documents/comm/green_papers/pdf/com95_691_en.pdf

⁴ Fair payment for infrastructure use: a phased approach to a common transport infrastructure charging framework in the EU - White Paper, 1998-07-22, <https://op.europa.eu/en/publication-detail/-/publication/ceccf466-59bd-46e6-a08b-972286cebdc6/language-en>

and losses due to environmental and health damages, which are currently a heavy burden on the EU's economy. On the other hand, the revenues from extra taxes and fees on transport would be returned to the economy by the state (for example, by reducing taxes on human labour). All of this would improve the EU's competitiveness.

The White Paper also stated that "all transport participants must pay the costs they incur, including environmental and other impacts, at or as close as possible to where the impact occurs."

The White Paper specifically emphasizes the importance of internalising the external costs of urban transport in its prices. EU research programs have examined the expected impact of the introduction of road tolls and other fees in Amsterdam, Brussels, Dublin, Helsinki, London, and Naples. Studies in each city have shown that an appropriate introduction or increase of these charges in each city would help to improve the living conditions of the population and the efficiency of the economy. Reducing congestion, pollution, and accidents, as well as bringing surplus revenue back into the economy, has more benefits than the "loss" from rising transport prices. The European Commission has since then issued several reports on the extent to which transport users pay the costs which they incur in EU countries. According to the latest study⁵, published in May 2019, road transport users in Hungary, both in passenger and freight transport, pay less than a third of the costs they incur (Figures 1 and 2). In other words, road transport prices should be tripled for "the user pays" and "the polluter pays" principles (which are fundamental principles of the EU) to prevail.

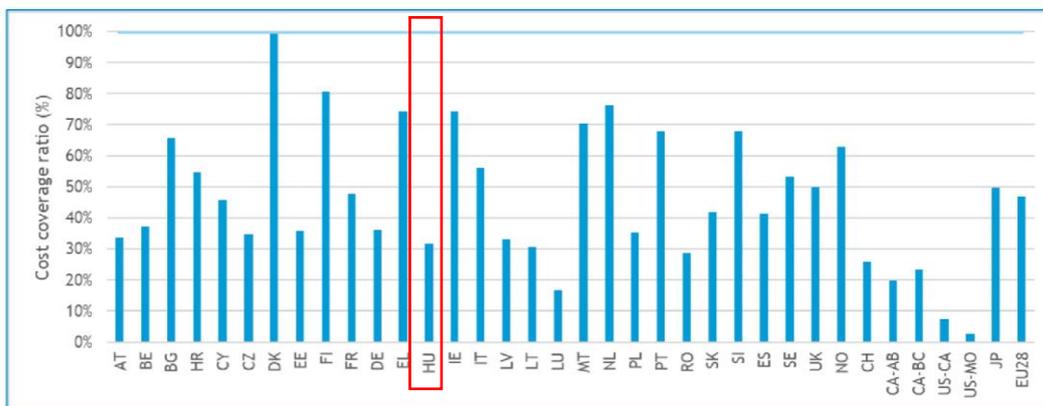


Figure 1: Percentage of road passenger transport costs borne by users in EU countries, Switzerland, Norway, Canada, the USA, and Japan
(source: European Commission, 2019)

⁵ Internalisation of transport external costs. European Commission, 2019, https://ec.europa.eu/transport/themes/sustainabletransport/internalisation-transport-external-costs_en

State of play of Internalisation in the European Transport Sector. European Commission, 2019, <https://ec.europa.eu/transport/sites/transport/files/studies/internalisation-state-of-play-isbn-978-92-76-01413-3.pdf>

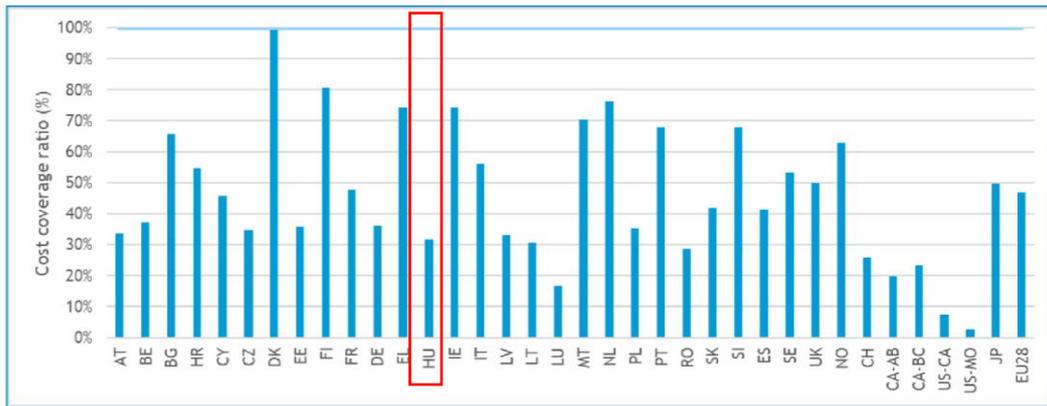


Figure 2: Percentage of road freight costs borne by users in EU countries, Switzerland, Norway, Canada, the USA, and Japan
(source: European Commission, 2019)

A similar result was obtained in 2010 by a study⁶ commissioned by the Hungarian Ministry of Economy and Transport, according to which the unpaid cost of road transport amounts to 7-13% of the Hungarian GDP (Tables 1 and 2 show the distribution in case of the lower and higher value).

⁶ The social balance of road and rail transport in Hungary. Institute for Transport Sciences (KTI), Budapest, 2010, https://www.levego.hu/site/assets/files/5529/social_balance_transport_hungary_20110131.pdf

Table 1: Differentiated values of the expanded central budgetary balance in 2006 as amended by further social impacts (taxation, trucks stop) (lower estimate) (source: KTI, 2010)

	Road				Railway		
	Total	Passenger cars	Trucks	Inter-locality bus	Total	Passenger transport	Goods transport
Budget revenues (billion HUF)	887,6	603,6	246,3	24	19,9	12,1	7,8
Budget expenses (billion HUF)	1034,9	547,9	358,5	92,5	183,9	142	41,9
Budget balance (billion HUF)	-147,3	55,7	-112,2	-68,5	-164	-129,9	-34,1
Transport performance (million goods ton-kms, veh. kms)		39290	36887	11784		9584	10167
Specific budget balance (HUF/goods ton-kms, HUF/veh.kms)		1,4	-3,0	-5,8		-13,6	-3,4
External effects (billion HUF)	-1307,8	-737,1	-364,3	-14,4	-26,8	-21,6	-5,1
Expanded balance (billion HUF)	-1455,1	-681,4	-476,5	-82,9	-190,8	-151,5	-39,2
Expanded specific budget balance (HUF/goods ton-kms, HUF/veh.kms)		-17,3	-12,9	-7,0		-15,8	-3,9
Other factors of competition distortion (tax fraud, tax evasion, truck stop)	-830,1	-554	-276,1	0	0	0	0
Total balance (budget+externality+other)	-2285,2	-1235,4	-752,6	-82,9	-190,8	-151,5	-39,2
Total specific budget balance (HUF/goods ton-kms, HUF/road-kilometres)		-31,4	-20,4	-7,0		-15,8	-3,9

Table 2: Differentiated values of the expanded central budgetary balance in 2006 as amended by further social impacts (taxation, trucks stop) (higher estimate) (source: KTI, 2010)

	Road				Railway		
	Total	Passenger cars	Trucks	Inter-locality bus	Total	Passenger transport	Goods transport
Budget revenues (billion HUF)	790,8	540,6	230,1	12,6	1,0	0,6	0,4
Budget expenses (billion HUF)	1034,9	547,9	358,5	92,5	183,9	142	41,9
Budget balance (billion HUF)	-244,1	-7,3	-128,4	-79,9	-182,9	-141,4	-41,5
Transport performance (million goods ton-kms, veh. kms)		39290	36887	11784		9584	10167
Specific budget balance (HUF/goods ton-kms, HUF/veh.kms)		-0,2	-3,5	-6,8		-14,8	-4,1
External effects (billion HUF)	-1307,8	-737,1	-364,3	-14,4	-26,8	-21,6	-5,1
Expanded balance (billion HUF)	-1551,9	-744,4	-492,7	-94,3	-209,7	-163	-46,6
Expanded specific budget balance (HUF/goods ton-kms, HUF/veh.kms)		-18,9	-13,4	-8,0		-17,0	-4,6
Other factors of competition distortion (tax fraud, tax evasion, truck stop)	-1513,1	-1237	-276,1	0	0	0	0
Total balance (budget+ externality+other)	-3065,0	-1981,4	-768,8	-94,3	-209,7	-163,0	-46,6
Total specific budget balance (HUF/goods ton-kms, HUF/road-kilometres)		-50,4	-20,8	-8,0		-17,0	-4,6

Based on the data presented in the table, in both cases, the costs of road transport significantly exceed revenues. This balance needs to be improved in line with EU principles.

2. The internalisation of the external costs of road transport in Hungary

According to Clean Air Action Group (Levegő Munkacsoport), it is necessary to impose a distance- and pollution-based toll on road users at first in Budapest⁷ and then on all roads in Hungary. The toll would depend on the following six factors:

- 1) the distance travelled,
- 2) the environmental characteristics of the vehicle,
- 3) the mass of the vehicle (for cars: own mass; for heavier vehicles: maximum permitted mass),
- 4) the time of the day/week (e.g. higher in peak hours),
- 5) the place (e.g. higher in cities, lower in the countryside),
- 6) the probability of congestion on the given section of the road.

As a first step, we recommend the introduction of a daily Budapest sticker, which must be paid for each car that travels within the administrative boundaries of Budapest. Owners of cars registered in Budapest could pay an annual or monthly amount. There could be two types of annual or monthly fees: lower for those who agree not to drive their car during rush hour in the morning and afternoon. Such a version may also be popular with the majority of car users because two-thirds of car owners in Budapest do not use their car on working days. These “introductory fees” should be low; their main purpose is to prepare for the implementation of the nation-wide toll.

Trucks with a total permitted weight of more than 3.5 tonnes already pay mileage tolls on motorways and main roads, and almost all of them already have GPS tracking equipment. Regarding this fact, all trucks operating in the country can be obliged to install a GPS unit. The system should be implemented in cooperation with Nemzeti Útdíjfizetési Szolgáltató Zrt. (National Toll Payment Services PLC).

The IT and logistics background is already available for the imposition, collection, and control of such a system, so it can be implemented quickly with the right strategy.

At the same time, the current parking system should be modified, too. Clean Air Action Group has made detailed recommendations for such a modification.⁸ In the first step, the various discounts and subsidies must be removed, then generally parking fees should be raised and widely extended.

With these modifications, the demand for parking in Budapest and other cities can be significantly reduced. At the same time, the revenues must be used to compensate the residents of the area concerned.

The proposed road toll system and the parking fee system could be integrated into a unified common system.

3. Compensation for price increases

⁷ It is time to implement congestion charging in Budapest. Levegő Munkacsoport, 2016, https://www.levego.hu/site/assets/files/5752/time_to_implement_congestion_charging_in_budapest_2015szept-2016dec12.pdf

⁸ A budapesti közlekedés közterület-használatának problémái és megoldási lehetőségek. Levegő Munkacsoport, 2020, https://www.levego.hu/site/assets/files/6187/kozlekedes_kozterulet_2020marc09h.pdf

The measures expounded above represent an additional expense for commuters and residents. This additional expense should be compensated by redistribution of the revenues., which already have been successfully implemented in various countries. Hereby we mention the examples of Iran, Canada, Ghana and Indonesia.

Iran

In 2010, Iran significantly increased its energy prices, generally fourfold and in some cases twentyfold. With this, Iran became the first major oil-exporting country to significantly reduce its implicit (indirect) energy subsidies.

In the past, fuel prices have been kept extremely low in Iran with huge state subsidies. This has resulted in enormous waste, pollution, constant traffic jams. In 2010, however, the government cancelled the subsidy. The population not only did not revolt, but almost unanimously supported the price increase, which enjoyed great popularity, and strengthened the government's position. The secret to success lay in thorough preparation, extensive information, and proper compensation. The distribution of the compensation was as follows:

- 50 percent of the compensation went to the population. Except for the richest 20 percent of households, all households received 40 dollars per person per month. One of the decisive arguments in the government's communication was also the aspect of social justice.
- 30 percent was provided to companies for energy-saving measures, energy efficiency investments.
- 20% was given to the public sector (schools, hospitals, etc.) to offset increased energy costs and improve their energy efficiency.

In Iran, the main goal was to eliminate waste and rationalize consumption. Compensation paid for higher energy prices benefitted most consumers, as higher prices provided an incentive to reduce unnecessary energy consumption while being able to buy more other goods and services from the money they received as compensation. The reform also improved social equality, as the poorest have benefited little from low energy prices, while the compensation paid by the government significantly improved their living conditions. The reform has virtually eradicated poverty in Iran, resulting in significant moral support for the government. The reform also boosted domestic demand, contributing to the growth of the non-energy sector and the reduction of unemployment. The reform was not intended to improve the state of public finances or increase public redistribution. On the contrary, the government has been trying to achieve a reduction in public spending. However, the significant decline in domestic energy consumption also significantly increased the amount of exportable oil, which also provided additional resources for the development of the energy sector.⁹

Canada

In Canada, the Government introduced a price on carbon pollution across the country in 2019. This includes a plan that sees the direct proceeds from carbon pollution pricing generated under the federal system returned to the province or territory of origin. Direct proceeds from the federal fuel charge are returned either directly to governments (where the federal system

⁹ Iran—The Chronicles of the Subsidy Reform. IMF Working Paper, 2011, <https://www.imf.org/external/pubs/ft/wp/2011/wp11167.pdf>

has been voluntarily adopted) or to individuals and families through tax-free Climate Action Incentive payments and to targeted sectors, including small and medium-sized businesses, schools, hospitals, non–profits and Indigenous communities. Most households receive more in Climate Action Incentive payments than they incur in total costs resulting from the federal carbon pollution pricing system. The Government of Canada does not keep any direct proceeds from carbon pollution pricing.¹⁰

¹⁰ Government Announces Climate Action Incentive Payment Amounts for 2020. Government of Canada, December 2019, <https://www.canada.ca/en/department-finance/news/2019/12/government-announces-climate-action-incentive-payment-amounts-for-2020.html>

Ghana and Indonesia

Proper communication and public involvement were key to the implementation of reforms also in Ghana and Indonesia.¹¹ The similarity in these successful reforms was also that they reduced social inequalities.

The deregulation of petroleum product pricing in Ghana was accompanied by a set of measures, targeted to get support from the broad population. It consisted of 3 steps: poverty and social impact assessment (PSIA), studying the impact of the subsidy; widespread communication campaign by the government; introduction of the several programs, providing assistance to the poor population. For example, the abolition of tuition fees has had a significant impact on the wider community, as well as the abolition of public transport fares and increased health spending in poorer areas.

Indonesia has been experimenting with the reform of oil subsidies since 1997. However, this policy could achieve success only by reforms in 2005 and 2008. Reasons for that were efficient policy targeted cash transfers to the poor and providing an affordable alternative energy source, which minimised the opposition and even helped the popularity of the president. Moreover, during the second wave of the reforms, the public became better informed about the reasons and objectives, which helped in better understanding and acceptance of the measures.

4. A simplified model for Hungary

In the following, we present an extremely simplified model for the internalisation of the external costs of road transport and the relevant compensation in Hungary. It only illustrates the concept and gives an approximate idea about the magnitude of the costs and compensation.

In Hungary, the cost caused by road users but not paid by them is EUR 11 700 million per year¹², i.e. approx. 4 200 billion HUF. This value is HUF 100.38 per vehicle-kilometre. A possible incorporation of this unpaid cost into the prices is shown in Table 3. We propose that the costs be internalised by a distance- and pollution-based road toll levied on each car and truck on every road in Hungary.

Recent events in the world (pandemic situation, Russian-Saudi Arabian oil price war) and a significant decrease in the oil prices is a great opportunity now to implement such a road toll. Also, it could meet much better understanding and acceptance from the public, since the consumers of oil products currently don't have to pay as much as earlier.

¹¹ Case Studies on Energy Subsidy Reform: Lessons and Implications. IMF, 2013, <https://www.imf.org/external/np/pp/eng/2013/012813a.pdf>

¹² Internalisation of transport external costs. European Commission, 2019, https://ec.europa.eu/transport/themes/sustainabletransport/internalisation-transport-external-costs_en

Table 3: A simplified model of internalisation of the external costs of road transport in Hungary by the year 2030

Year	Passenger cars			Trucks			TOTAL
	Vehicle kilometer* (million km)	Road Toll Unit cost (HUF/vkm)	Road Toll Revenue (billion HUF)	Vehicle kilometer* (million km)	Road Toll Unit cost (HUF/vkm)	Road Toll Revenue (billion HUF)	Road Toll Revenue (billion HUF)
2020	30 245			11 595			
2021	30 245	10.04	304	11 595	10.04	116	420
2022	28 733	20.08	577	11 015	20.08	221	798
2023	27 296	30.11	822	10 464	30.11	315	1 137
2024	25 931	40.15	1 041	9 941	40.15	399	1 440
2025	24 635	50.19	1 236	9 444	50.19	474	1 710
2026	23 403	60.23	1 410	8 972	60.23	540	1 950
2027	22 233	70.27	1 562	8 523	70.27	599	2 161
2028	21 121	80.31	1 696	8 097	80.31	650	2 346
2029	20 065	90.34	1 813	7 692	90.34	695	2 508
2030	19 062	100.38	1 913	7 308	100.38	734	2 647

*Note: For the vehicle kilometres in 2020, we used the numbers for the year 2017 provided by Eurostat¹³

For the sake of simplicity, we used the following assumptions in our calculations:

- the unpaid costs will be internalised gradually until 2030;
- the number of vehicle-kilometers travelled will decrease by 5% per year after introduction (in comparison with the year 2020);
- the price will be raised each year by the same amount (10% of the total sum to be achieved in 2030) for each vehicle-kilometre;
- the price increase will be the same for passenger cars and trucks (per vehicle-kilometre),
- the above costs for the internalisation of external costs in function of vehicle-kilometres are average values (as we mentioned above, in practice, there must be a differentiation according to the environmental characteristics of the vehicle).

We propose that the revenue from the internalisation of external costs of passenger car use be fully redistributed to each person living permanently in Hungary who belongs to the lower 8 deciles of Hungarian society (see Table 4).

¹³ <https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>

Table 4: Annual redistribution of the revenues from the internalisation of external costs of passenger car use to 80% of the Hungarian population

Year	Redistribution (HUF/person)
2020	-
2021	39 562
2022	75 167
2023	107 113
2024	135 676
2025	161 116
2026	183 672
2027	203 570
2028	221 018
2029	236 213
2030	249 336

Note: For the sake of simplicity we supposed that Hungary's population will remain constant between 2020 and 2030.

The revenues from the internalisation of external costs of truck use might be used to reduce the harmful environmental impact of freight transport (investments into railways, city logistics, local production, and consumption, increasing road safety, etc.) and to provide training and work for those who lose their jobs due to the internalisation.

The implementation of the road toll into the current taxation system in Hungary will lead to:

- Decrease in the harmful environmental impacts (air pollution);
- Increased investments into more sustainable means of transport (railways, metro);
- Development of the city logistics;
- Induction in the production and consumption of the local production;
- More jobs.

Budapest, 26 October 2020