

Bulgaria's Transition to E-Tolling & the European Experience
Bansko, Bulgaria
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**Using Tolls as the Tool to Finance,
Design, Build and Operate
a Motorway Network**

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Greece makes use of PPP's and Concessions for the Development of its Motorway Network



The concession model represents the most flexible tool for constructing, maintaining and operating a motorway network, since it can be adapted to different local conditions in terms of regulation, traffic and operational conditions(*)).

* Based on PriceWater HouseCoopers "Evaluation and future of road toll concessions", for ASECAP, 2014

The Greek Interurban Network Before Concessions



Old National Road
Epirus (Initial Construction 1970)

Upgraded & Divided Sections



Old National Road
Tempi Valley

Still Substandard Sections

The Steps for the Development of the Greek Motorway Network

- The 1st Generation of Concessions included the development of Attiki Odos and Rion-Antirion Bridge (cost 2,1 billion €).
- Egnatia Odos (cost 4,5 billion €) was constructed by sections with traditional public procurement methods.
- The completion the Greek Road Network seemed difficult, as the State did not have the necessary funding available (8,5 billion €).
- In 2007 and 2009, the 2nd Generation of Road Concessions was launched and five new concessions started.
- Despite the recent economic crisis, the 2nd Generation Projects have survived and the implementation of the backbone of the Greek Road Network was completed in 2017.

Note: Expropriations and archaeological investigations are not included in the costs presented above.



ATTIKI ODOS



RION ANTIRRION BRIDGE



EGNATIA ODOS



NEA ODOS



MOREAS



AEGEAN MOTORWAY

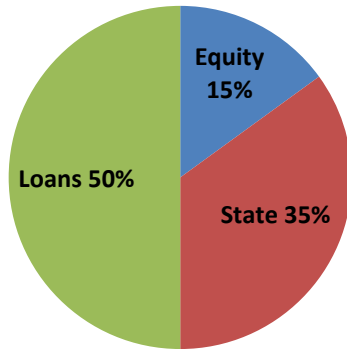


OLYMPIA ODOS



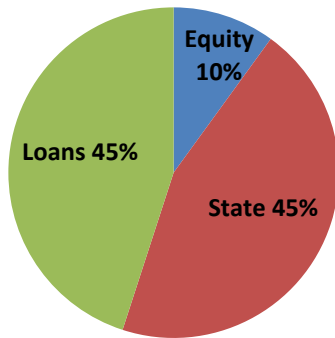
MOTORWAY OF CENTRAL GREECE

Project Financing of Concessions in Greece



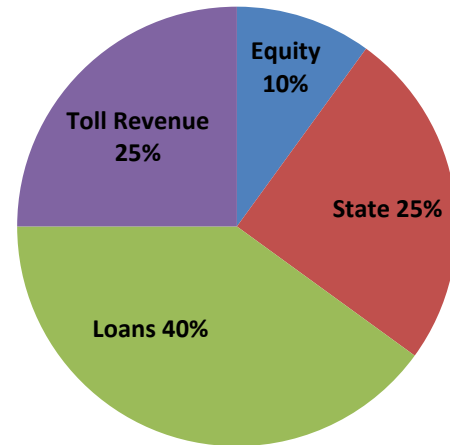
Attica Tollway

Construction Cost 1,3 billion €



Gefyra

Construction Cost 0,8 billion €



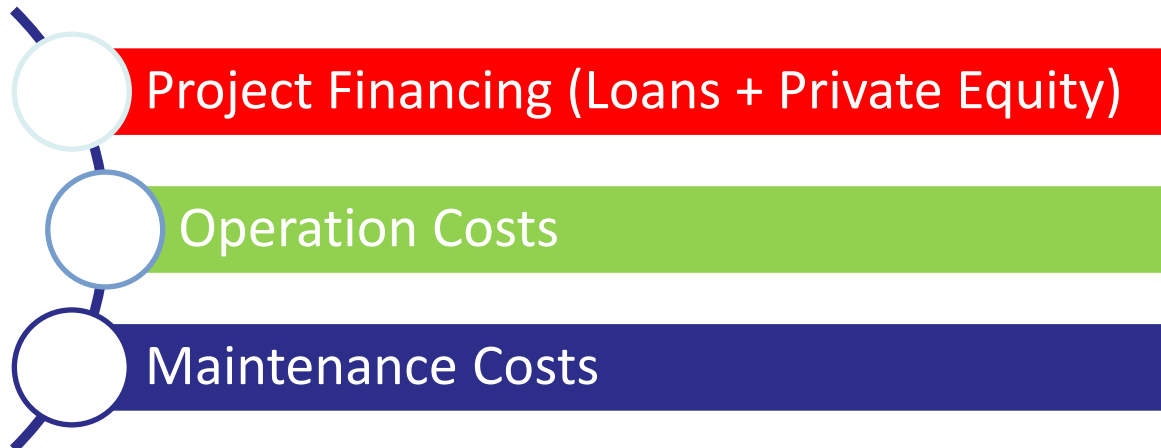
Interurban Concessions

Total Construction

Cost 8,4 billion €

Toll Revenue

Before the concessions, revenue from toll roads was not exclusively used for the purpose of maintaining these roads. There was no allowance for operation, maintenance and expansion costs. In Concessions toll revenue is used to pay:



Ultimate Goal:

Provide high-quality services to users!

HELLASTRON Motorway Network (Toll Roads)



1st Generation Concessions

- Attiki Odos (Attica Tollway)
- Gefyra (Rion – Antirion Bridge)

2nd Generation Concessions

- Nea Odos
- Moreas Motorway
- Aegean Motorway
- Olympia Odos
- Kentriki Odos

1st Public Company

- Egnatia Odos

Toll Payment Methods in Greece



- Design dating back to '90s, conventional tolling technology.
- Open System based on Mainline and Ramp Toll Stations with bars.
- ETC was introduced for the first time in 2002.
- Automatic Payment Machines introduced for the first time in 2010.
- ETC Partial Interoperability introduced in 2013.
- Tolls applied on motorways and infrastructure.

Toll Facts in Greece

- Toll system in Greece is an open system with mainline and ramp toll plazas.
- Toll rate is defined per km applied on specific charging sections of the motorway, except for Attiki Odos and Gefyra where a flat toll rate is applied, subject to vehicle categories.
- Toll charging is not distance-based for users that do not travel the entire charging section.
- There are too many toll stations in the interurban road network.
- Installation of a "fully closed" toll system is not economically feasible (high number of interchanges).



Europe: Distance-Based Tolling

Table 2.1: Overview of distance-based tolling systems, Heavy Vehicles

Tolling Schemes	Technology used	Country
Free-flow	GNSS with ANPR, and/or DSRC	Hungary, Slovakia, Belgium (2016)
Free-flow	GNSS with Infrared and/or DSRC	Germany
Free-flow	DSRC	Austria, Belarus, Czech Republic, Poland, Portugal, Turkey, UK(Dartford Crossing)
Free-flow	ANPR	UK (Dartford Crossing)
Free-flow	ANPR and DSRC OBU	Portugal (A22, ..., A25)
Free-flow	Tachograph	Liechtenstein*, Switzerland
Free-Flow	RFID	Turkey
Networks with toll plazas	DSRC	Bosnia and Herzegovina, Croatia, France, Greece, Ireland, Italy, Norway, Poland, Portugal, Serbia, Spain, UK

Source:

Study on "State of the Art of Electronic Road Tolling" MOVE/D3/2014-259, October 2015

* Performance-related heavy vehicle charge LSVA

Table 2.4: Overview of distance-based tolling systems, Light Vehicles

Tolling Schemes	Technology used	Country
Free-flow	DSRC	Belarus, Portugal
Free-flow	ANPR	Austria
Network with Toll Plazas	DSRC	Bosnia and Herzegovina, Croatia, Denmark, France, Greece, Ireland, Italy, Norway, Poland, Portugal, Serbia, Spain
Network with Toll Plazas	RFID (based on 6C tags)	Turkey

Europe: Vignette

Table 2.3: Overview of time-based tolling systems, Heavy Vehicles
















Tolling Schemes	Technology used	Country
Vignette	e-Eurovignette	Belgium, Denmark, Luxembourg, Netherlands, Sweden
Vignette	Electronic vignette	UK
Vignette	Sticker	Bulgaria, Latvia, Lithuania (paper), Romania

Table 2.5: Overview of time-based tolling systems, Light Vehicles

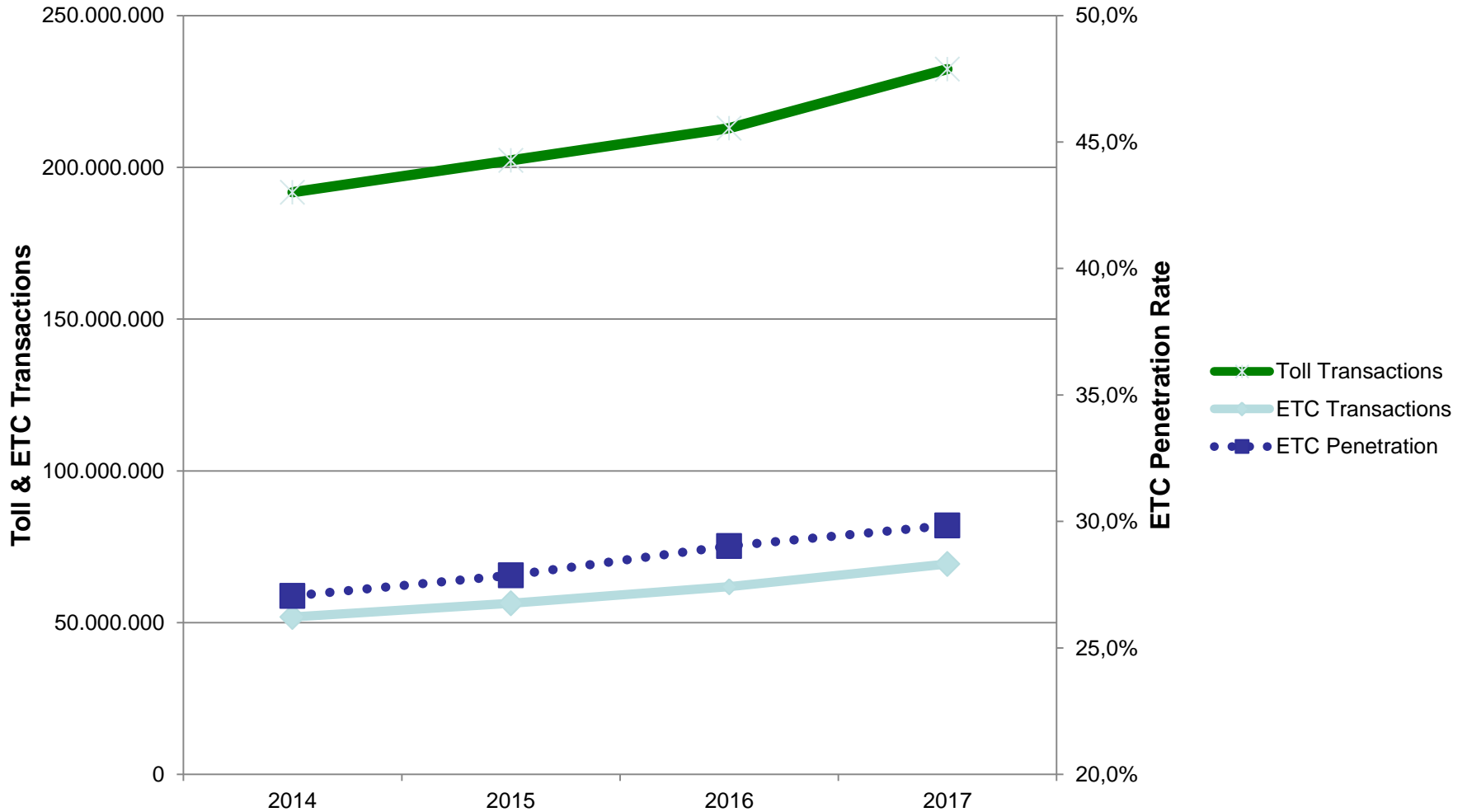
Tolling Schemes	Technology used	Country
Vignette	Sticker	Austria, Bulgaria, Czech Republic, Hungary (e-vignette), Romania (paper vignette), Slovenia, Slovakia, Switzerland
Toll with physical barrier, or free-flow	DSRC, ANPR – differs by scheme	UK

Source: Study on “State of the Art of Electronic Road Tolling” MOVE/D3/2014-259, October 2015

HELLASTRON – Key Figures (2017 Data)

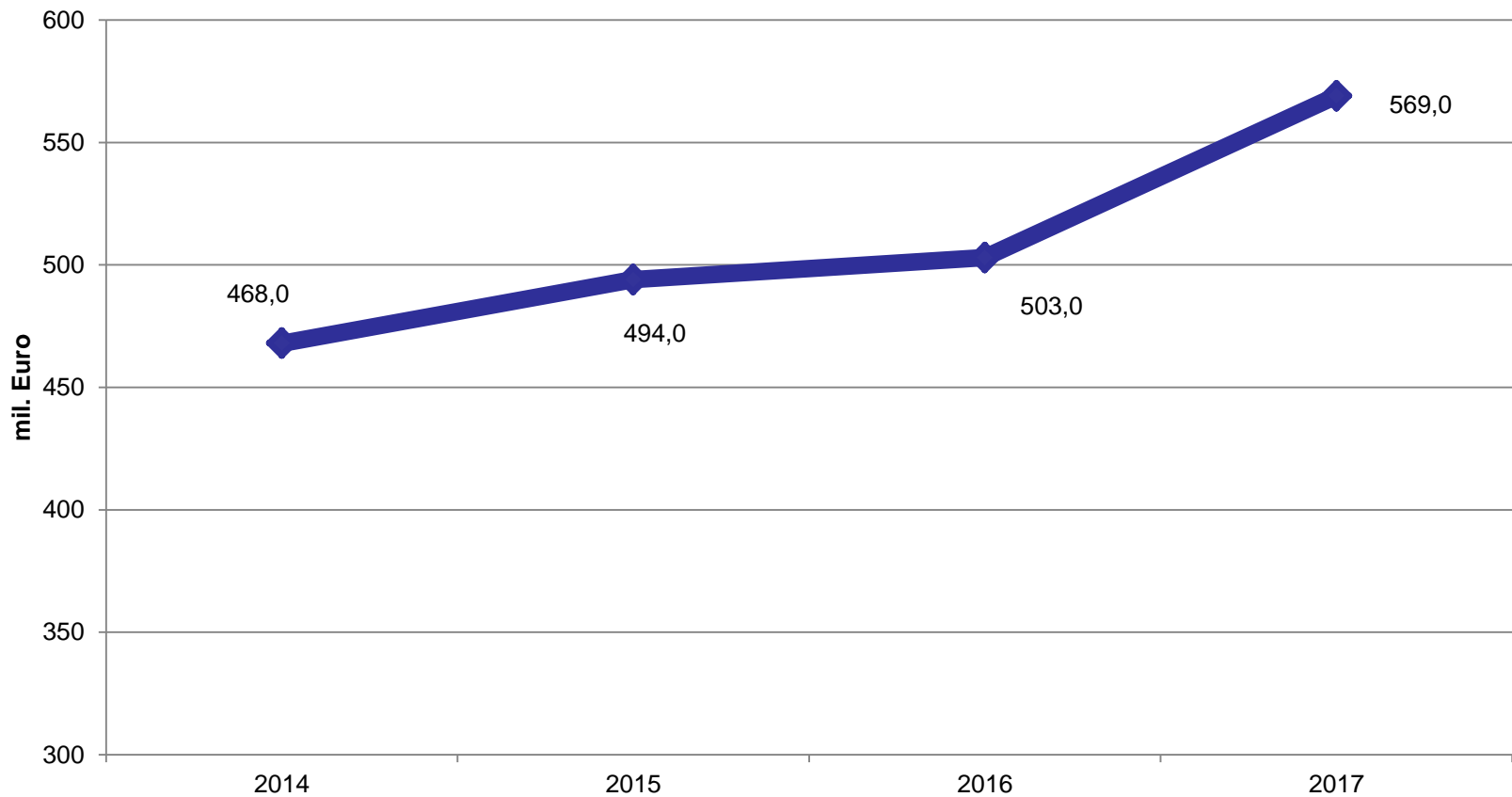
		 Length in Operation (Km) Συνολικό Μήκος Αυτοκινητοδρόμων σε Λειτουργία (Χλμ)	 Total Annual Average Daily Traffic (*1) Μέση Ημερήσια Κυκλοφορία Έτους (*1)	 Annual Vehicle Kilometres travelled (millions) Ετήσια Διανυθέντα Οχηματοχιλιόμετρα (Εκατομμύρια)	 Total number of Toll Stations Συνολικός Αριθμός Σταθμών Διοδίων	 Total number of ETC tags Συνολικός Αριθμός Ηλεκτρονικών Πομποδεκτών που έχουν Διατεθεί	 Staff in Concession & Operation Αριθμός Εργαζομένων στις Εταιρίες Παραχώρησης και Λειτουργίας
		70	51.281	1.311	39	596.897	950
	Attiki Odos Αττική Οδός	70	51.281	1.311	39	596.897	950
	Gefyra Rion-Antirion Γέφυρα Ρίο-Αντίρριο	4	10.414	13	1	15.243	89
	Egnatia odos Εγνατία Οδός	887	9.854	3.140	13	0	900
	Nea Odos (PATHE & Ionía) Νέα Οδός (ΠΑΘΕ & Ιόνια)	366	18.187	1.958	25	74.158	523
	Moreas Μορέας	205	7.285	545	12	0	304
	Aegean Motorway Αυτοκινητόδρομος Αιγαίου	263	10.704	899	16	38.211	499
	Olympia Odos Ολυμπία Οδός	202	22.775	1.680	16	47.211	523
	Kentriki Odos Κεντρική Οδός	137	9.466	197	10	2.617	174
HELLASTRON Total/Σύνολο:		2.133	139.966	9.743	132	774.337	3.962

HELLASTRON Toll Transaction Data



HELLASTRON Revenue

Annual Toll Revenue (million Euro – not including VAT)



Expand Beyond Conventional Tolling



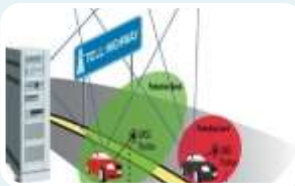
Examining Toll Technologies for Developing Full Distance Base Tolling Regime



Dedicated short-range communication (DSRC)



Radio-frequency (RFID)



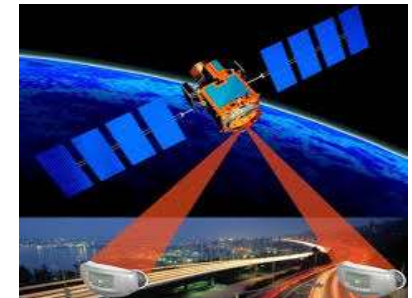
Satellite positioning (GNSS, GPS)



Video tolling (ANPR)

Greek State Plans for National GNSS + ANPR Tolling

- Distance-based toll charge.
- Incorporation of the new tolling system into the existing one, smooth transition to the new free-flow system.
- Support the development of the interface to address issues related to the operation of the system (Identification of Greek and foreign vehicles, enforcement, traffic data confirmation, system collectability, etc.).
- Contribution to the creation of the required institutional framework for the operation of the system (Toll recovery, infringement management, revenue sharing, income guarantees, etc.).
- Implementation of the required conventional changes and adjustments to incorporate the requirements of the new free-flow toll system.
- Gradual transition from the existing system to the new one.



Thank you!



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