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Evaluating success in PPP road projects in Europe: a comparison of performance measurement approaches

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Abstract

This research aims to identify how to measure the level of success of a Public Private Partnership (PPP) projects using case studies along Europe. The analysis is based on a Performance Measurement System (PMS) using a step-by-step approach. Altogether 13 PPP road projects in the EU have been chosen to test the PMS. Two measurement approaches have been used to analyse the performance of these case studies. Herein, altogether 29 performance measures (PMs) and 9 key performance indicators (KPIs) that have been developed systematically have been considered. The first approach used has evaluated the number of successful and failure performance measures in order to show different level of success in projects. In this approach, the weighting used for the performance measures are considered equal. The second approach has been then used to weight the PMs using a Delphi analysis first, and then to evaluate overall performance. The comparison of the results reveal that there are dominant PMs and KPIs that determine the success of a project. The results illustrate how PPP projects may be evaluated to extract conclusions about the success/failure of a project from a global view, showing the areas and elements that need to be considered along this process.

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Keywords: case studies; Delphi Study; Key Performance Indicators (KPIs); Performance Measures (PMs); Public Private Partnership (PPP); roads; success analysis

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1. Introduction

There is an increasing interest on the subject of project success both in the academic and managerial community. The concept includes Critical Success Factors (CSFs); and the way to measure the criteria refers to Key Performance Indicators (KPIs). Although analysis of success could vary according to the type of sector and class of project, there is no clear consensus about the method of measuring the success of projects using KPIs.

Many authors define project success in different ways; Ashley *et al*. (1987) describe project success as "achieving results much better than expected or normally observed in terms of cost, schedule, quality, safety, and participant satisfaction"; Shenhar *et al*. (1996) indicates that project success should be perceived as major vehicles for organisational and societal prosperity. Likewise, defining success can differ according to different contextual factors of a project. It takes more of a subjective form depending on what someone wants to look at in a project. For example, a project can be successful in terms of achieving cost targets; however, it may be unsuccessful in the view of time targets. Similarly, a project can be successful from a private partner point of view but it may not be a success in view of user perspective. A project is traditionally being considered successful when it has satisfactorily met the "iron triangle" measures: time – finished on-time; cost – within budget; and quality – finished according to specifications (Atkinson, 1999; Khosravi and Afshari, 2011); or a good combination of these measures (Phua, 2004). Nguyen *et al*. (2004) have measured success of a project using this traditional approach, but also includes the measurement of project development in accordance with stakeholders' satisfaction. Furthermore, Savindo *et al*. (1992) base the success of the project on the achievement of expectations of different stakeholders, such as the owner, the planner and engineers, the constructor or the operator; introducing, therefore, the participants' requirements. Authors such as Pinto and Slevin (1988) and Bryde and Brown (2005) also identify the main elements of project success as satisfaction of the stakeholders. Cox *et al*. (2003), however, have evaluated project success based on contract specification; not only technical specifications but also other quantitative measures. On the other hand, some authors identify process performance as the main criteria of project success (Freeman and Beale (1992); Toor and Ogunlana (2008)). Villalba-Romero *et al*. (2015) focus success on road from a sustainable point of view.

This research focuses Public Private Partnerships (PPPs) projects. PPPs refer to arrangements where the private sector supplies infrastructure assets and services that traditionally have been provided by the government. There are many other researchers who have identified different ways and means of measuring project success either in general or specifically with regard to Public Private Partnerships (PPPs). For examples, Aziz (2007) has discussed principles in the implementation of PPP in UK and Canada; Tabish and Jha (2012) has identified a positive interrelationship between success traits and project success. Furthermore, some researchers have developed frameworks for measuring success in PPP projects (Zhang (2005); Chan (2001)). Although attempts such as above remain, strong and independent evaluation of PPPs has been sparse. It appears that insufficient research has been undertaken to be fully informed on outcome of the PPPs to-date, thus, there is a serious need for rigorous assessment of PPPs (Hodge and Greve (2007)). Therefore, research fulfil this gap in presenting a robust assessment of success of PPPs. This assessment is presented as a Performance Measurement System (PMS); and the PMS is tested using selected cases studies from the case database of the P3T3 COST TU1001 action Public Private Partnership in Transport: Trend and Theory networking project.

2. Developing Key Performance Indicators and Performance Measures from case study approach

The case studies approach in measuring success of PPP projects using KPIs is not new in research literature. For instance, Yuan *et al.* (2009) have used a case study approach to select performance objectives and KPIs in PPP projects to achieve value for money.

For the case study methodology, a case template developed by P3T3 COST Action (TU1001) was used to collect data (COST TU1001, 2013). Development of an in-depth template was a challenge initially. This challenge includes the study questions, its propositions, its unit(s) of analysis, the logic linking the data and, finally, the criteria for interpreting the findings. This ultimately leads to developing a theory with respect to the subject under study or identifying the basic factors connecting the various actors and elements of the study. The case template included questions ranging from actors, project specifics to performance monitoring; this is to address P3T3 working group (WG) and auxiliary working group (AWG) objectives along with the aspect of transferability of results. Herein,

actors are the participants in the project, i.e. the public contracting agency and sponsors, the private participants and the users who benefit from the project. The specifications of the project are described mostly with regard to what the project is all about (what), project timelines (when), location (where), tendering procedure (which way). Finally, the template focused on identifying KPIs and CSFs to evaluate the success criteria of the project. Members of many EU country participated in the P3T3 project and were involved in the data collection process of PPP transport related cases. Both primary and secondary data were collected to fill in the case study templates. Semi-structured interviews were also conducted with few project participants to fill in the case study templates, which could contain about 10-20 pages of narratives and Likert scale based answers.

Given the complexity of different contextual factors mentioned before, the scope of the study is limited to only PPP toll road projects, to avoid introducing other elements which may distract the focus of this work. However, the analysis approaches can address other PPP projects in different transport modes, such as rail, airports and ports. Choosing a particular type of PPP project makes the cross case analysis and synthesis consistent, reliable and valid. Overall, the selected 13 road projects represent the utmost prominent developments in their respective countries, also considered as 'active' users of the PPP model (UK, Spain, Greece, Portugal, Belgium and the Netherlands) what added advantage to maintain consistency and reliability.

A summary of the main details/features of the projects is shown in Appendix A. For more information about the case studies, please refer to COST TU1001 (2013) and COST TU1001 (2014).

The case study data were analysed using qualitative comparative analysis. During this process, different categories and codes were developed to make them comparable. The categorisation and coding was done using QSR NVivo. The main categories developed for the data emerged from the different sections of the case template itself. The codes were given a Likert scale to easily quantify the results (Liyanage and Villalba-Romero, 2015).

The terms performance measure and performance indicators are used interchangeably in the literature. Distinguishing these terms provides useful clarification. Performance measures (PMs) are 'markers or signs of things you want to measure but which may not be directly, fully or easily measured' (Adair *et al.* 2003). A PM is one of the several measureable values that contribute to the understanding and quantification of an indicator. PMs are quantitative measures of capacities, processes or outcomes relevant to the assessment of a performance indicator (Liyanage, 2006). Performance indicators (or Key Performance Indicators – KPIs), on the other hand, are not 'direct measures of quality; rather, they are flags to alert users to possible opportunities for improvement'. Such types of indicators are extremely important to an organisation in achieving its strategic goals, objectives, vision and values that, if not implemented properly, would likely result in a significant decrease in performance (Benchmarking Study Report, 1997). According to KPI Working Group (2000), the purpose of the KPIs is to enable measurement of project and organisational performance. With the mentioned factors in mind, a set of KPIs and PMs, were developed to develop a 'success' methodology for this research.

The categories developed were identified as KPIs and the codes developed within them were identified as PMs to define the success criteria of a project. The different categories, codes and Likert scale developed are given in Table 1 below. Different questions needed different sets of value to gauge success, thus, three predefined Likert scales and a dichotomous choice (Yes or No) were used accordingly. As per the table, altogether, 9 KPIs and 19 performance measures were developed during the Qualitative Content Analysis (QCA) process. A focus group was then conducted (in June 2013 in University of Twente, Netherlands) to refine the selection of KPIs, PMs and Likert scale. The focus group included members of the Working Group 2 (WG2) in the COST TU1001 project. 11 members were present during the discussions and they all had in-depth knowledge and experiences on the subjects of transportation and/or construction management.

Table 1. Key Performance Indicators (KPI) and Performance Measures (PM).

Key Performance Indicators (KPI) and Performance Measures (PM)	Code
Objectives	**KPI-1**
Are the objectives specified in the contract SMART?	PM-1
To what extent has the objectives being achieved?	PM-2
Have/will user benefits been monitored?	PM-3
Have user benefits been as large as expected?	PM-4
Risk	**KPI-2**
How much risks have been transferred to the private sector?	PM-5
Was risk allocation agreed quickly?	PM-6
Specifications (contract project)	**KPI-3**
Has the deliverables specified clearly in the contract?	PM7
Are the roles and responsibilities of different parties involved in the contract clearly defined?	PM-8
Are minimum standards for condition of infrastructure and equipment specified in the contract?	PM-9
Are there any performance targets?	PM-10
Is the method of measuring performance targets clearly defined?	PM-11
Are there penalties for non-compliance?	PM-12
Does the contract have procedures for amendments, dispute resolution or termination?	PM-13
Has the contract proceeded without renegotiations?	PM-14
Are there any guarantees specified in the contract?	PM-15
Tendering Process	**KPI-4**
No. of bidders (negotiation vs. final)	PM-16
Time from tender notice to financial close	PM-17
Legal challenges to outcome	PM-18
Construction Phase	**KPI-5**
Was the project completed on time?	PM-19
Was the project completed within budget?	PM-20
Was the project completed according to the specifications and design?	PM-21
Are there any penalties for non-compliance?	PM-22
Operations	**KPI-6**
Were the services specified in the contract delivered?	PM-23
Maintenance	**KPI-7**
Are the deliverable standards for infrastructure and equipment being met?	PM-24
Monitoring and Evaluation	**KPI-8**
Is there a formal monitoring procedure in place?	PM-25
Finance	**KPI-9**
Was finance available when needed?	PM-26
Was the project cash flow sufficient to expected payments to all parties?	PM-27
Did the project result in financial benefits to users (e.g. in terms of charges)?	PM-28
Has the financial outcome been equal or better than expected for the private partner?	PM-29

3. Approaches for Assessment of Success – Towards a Performance Measurement System (PMS)

A Performance Measurement System (PMS) consists of a set of metrics which may be used to quantify efficiency and effectiveness and involves measurement of outcomes and results for the assessment of success. Two measurement approaches have been used to analyse the performance of these case studies. The first approach used

has evaluated the degree and number of successful and failure PMs in order to show different level of success in projects. In this approach, the weighting used for the performance measures are considered equal. The second approach has been then used to weight the PMs using a Delphi analysis first, and then to evaluate overall performance.

3.1. Direct scoring approach: Introducing success assessment.

Having identified KPIs and PMs, next step was then to identify the success criteria and two approaches were used:

1) Initial evaluation calculating percentage of success for each KPI/PM based on Likert values, as shown in Figure 1:

KPIs	Performance Measures	Likert Scale	M6	A-23	Attica	…	Average score (%)
Objectives	Are the objectives specified in the contract SMART?	1 to 5	1	5	4	…	65%
	Have user benefits been as large as expected?	-2 to 2	-1	2	2	…	53%

Fig. 1. Initial evaluation of case studies – an example.

2) Enhanced evaluation deriving conclusions based on not only the percentage of success, but also by reviewing the qualitative data in case study templates. Starting from an initial evaluation based in the average score, the qualitative analysis allows to conclude on the project success. An example is given below in Figure 2, using the M-6 UK case.

Category / KPI	No. of PMs under each KPI (A)	Score (Success – Failure) (B)	No. of Success factors (C)	Percentage of Success (D)
Contract Specifications	9	6-2	6	67%
Tendering process	3	1-2	1	33%

KPIs as defined in the process

Each KPI is described by different number of PMs

Number of success answers – Number of failure answers. Neutral answers are ignored (e.g. 3 of a 5-point likert scale)

% of Success (D) = (C) / (A) x 100%

Fig. 2. Enhanced evaluation of the success criteria – an example.

The result for the Column (B) above is calculated by adding together outer values for each element, as follows:

- Failure corresponds to the lower values and is represented by 1 in a 3-point Likert scale of 1 to 3; 1 and 2 in a 5-point Likert scale of 1 to 5; -2 and -1 in a 5-point Likert scale of -2 to 2; and NO in the binary scale.
- Similarly, success corresponds to the higher positive values: 3 in a 3-point Likert scale of 1 to 3; 4 and 5 in a 5-point Likert scale of 1 to 5; 1 and 2 in a 5-point Likert scale of -2 to 2; and YES in the binary scale.
- Neutral values (2, 3 and 0, respectively for the same Likert scales mentioned above) are considered neutral, and therefore do not count in the assessment of success or failure.
- Similarly, blank values (or missing values) are also not considered.

The number of PMs in each KPI is different and accordingly, when the percentage of success is calculated, the performance measures/KPIs, intrinsically, are not treated as equal, as they gain different weightings. One limitation that could be identified here is the calculation of this weighting. The basis of this approach has been presented in Liyanage and Villalba-Romero (2015).

3.2. Weighting scoring assessment approach: Validating success assessment.

The assessment of success of PPP projects is carried out in this research using a PMS (Liyanage *et al*. 2015). The process includes the following step-by-step approach, which is presented below in a summarized way for space limitations: Three-stage Delphi approach to refine and prioritise the KPIs and PMs; Assigning mean zones (M); Filling in the KPIs table; Calculation of the weighted score (WS) and the overall level of performance.

Using the level of consensus achieved during the second and third rounds of Delphi exercises, the indicators and measures were prioritised/assigned weightings. In effect, based on the mean score results of the Delphi exercises, the PMs were ranked into varying levels of importance in PPP projects. To distinguish the PM according to levels of importance, they were categorised into four mean zones using the following scale: $\leqslant$ 4.28 to $\geqslant$ 5; $\leqslant$ 4.01 to > 4.28; $\leqslant$ 3.75 to > 4.01; and < 3.75. The mean zones were also assigned weightings on a range of 4 to 1, where 4 and 1 represent the highest and lowest mean scores respectively. The next step was to adopt the weightings to measure the level of performance of the 13 PPP projects identified by filling in the KPIs/PMs (Table 1) on the Likert scale.

Since the PMs have varying levels of importance towards the success of PPP transport projects, a weighted score for each PMs was calculated by multiplying the level of performance (L) against the weight (W), to establish the overall level of performance of the 13 PPP projects. This was achieved by adding the weighted score for all the 29 PMs that are categorised under each of the projects. The total weighted score of a PPP transport project can be calculated by adding together the scores of the 4 mean zones. Therefore, the maximum weighted score is calculated as WSA(20*4) + WSB(15*8) + WSC(10*7) + WSD(5*10) = 320. Once the overall level of performance was calculated, in order to provide a uniform measure across all the transport projects, the final score for each case was multiplied by 100 (to portray the result as a percentage). The maximum weighted score is the same for all PM in a mean zone i.e. 260 for WSA, 195 for WSB, 130 for WSC and 65 WSD. Finally the overall performance is the average. A 4-point scale was then developed to interpret the results (Very poor – $\leqslant$ 25%; Poor $\geqslant$ 25% – < 50%; Good $\geqslant$ 50% – < 75%; Excellent $\geqslant$ 75% – $\leqslant$ 100%). An example is given below in Figure 3.

Performance Level Rating (L) 1 – Very Poor, 2 – poor, 3 – Good, 4 – Excellent			Weighted Score (WS) = (L×W)					
Mean Zones	**Weight (W)**	**Performance Measures (PM)**	**M6 (UK)**	**Via Invest Zav. (Belgium)**	**Olympia Odos (Greece)**	**M – 45 (Spain)**	**Total WS for each PM**	**Overall Level of Performance per PM**
WS_A ≤ 4.28 to ≥ 5	4	PM-12	12	20	-	20	144	55%
		PM-23	20	-	-	20	204	78%
WS_B ≤4.01 to >4.28	3	PM-3	15	-	-	12	96	49%
		PM-7	12	12	12	15	159	82%
Total WS per Case (X)			219	186	96	265		
Overall Level of Performance per Case (%)			68	58	30	83		

Fig. 3. Assessment of Level of Performance of PPP Transport Projects – an example.

4. Findings and discussions

Based on the analysis described above, final overall levels of performance have been concluded for each PMs/KPIs and levels of projects success have been identified, using the introduced approaches. The results obtained from the case studies are presented in Figure 4 in terms of percentage score and ranking in order to facilitate comparisons.

Comparing the results, it may be noted how both approaches drives to similar level of performance. In terms of percentage there are some differences, especially in the middle of the PM score table and most of the Projects score table, as well as the averages. In terms of ranking, both results are similar (i.e. the bottom and top ranking are exactly the same), with some exceptions.

Obtained results show how to measure success in PPP road projects using different scoring approaches. The two scoring exercises used in this paper, i.e. direct scoring and weighting scoring, validate the findings of one another. The weighting scoring approach can be considered more advanced and detailed herein, due to the fact that the PMs are not considered having equal weightings and following comments mostly refer to this approach. The summary of results of the two approaches are given below.

PERFORMANCE MEASURES score and ranking

	Weighting approach		Direct Score Approach	
No. PM	Score (%)	Position	Score (%)	Position
PM-8	88%	1	85%	1
PM-18	88%	2	85%	2
PM-9	85%	3	83%	5
PM-15	85%	4	85%	3
PM-21	85%	5	85%	4
PM-7	82%	6	77%	6
PM-23	78%	7	77%	7
PM-24	78%	8	75%	9
PM-6	77%	9	71%	10
PM-26	77%	10	71%	11
PM-19	68%	11	62%	12
PM-1	66%	12	60%	13
PM-28	66%	13	58%	14
PM-10	63%	14	54%	17
PM-11	63%	15	56%	18
PM-13	63%	16	54%	19
PM-17	63%	17	54%	20
PM-20	63%	18	54%	21
PM-25	63%	19	56%	15
PM-27	63%	20	56%	16
PM-22	58%	21	54%	22
PM-14	57%	22	46%	24
PM-12	55%	23	52%	23
PM-29	54%	24	48%	25
PM-16	51%	25	77%	8
PM-3	49%	26	46%	26
PM-4	43%	27	37%	27
PM-2	40%	28	37%	28
PM-5	28%	29	27%	29
Average	65%		61%	

PROJECTS level of performance and ranking

		Weighting approach		Direct Score Approach	
Project	Country	Score (%)	Position	Score (%)	Position
A 23 – Beira Int.	Portugal	92%	1	97%	1
Coen Tunnel	Holland	87%	2	76%	4
M – 45	Spain	83%	3	83%	2
Attika Toll way	Greece	79%	4	72%	5
M 80 HaggStepp	UK	78%	5	83%	3
Rio Antirio	Greece	72%	6	69%	6
M 6 Toll Road	UK	68%	7	55%	7
Radial 2 Madrid	Spain	65%	8	52%	9
Eje Aeropuerto	Spain	64%	9	52%	10
Via Invest Zav.	Belgium	58%	10	52%	11
A 19 Dishforth	UK	54%	11	55%	8
Iona Odos	Greece	31%	12	24%	12
Olympia Odos	Greece	30%	13	21%	13
Average		66%		61%	

Excellent
Good
Poor
Very poor

Fig. 4. Results comparison. Weighting score approach vs. Initial Direct scoring approach.

With regards to level of success of Performance Measures, it is clear that PM-8 (assigning clear roles and responsibilities) and PM-18 (legal challenges to outcome faced during the tendering process) overall, have been successfully achieved/fulfilled in most of the projects with a success score of 88%. PM-9 (minimum standards for condition of infrastructure and equipment are specified in the contract), PM-15 (guarantees are specified in the contract), and PM-21 (project is completed according to specifications) are also not far off with a percentage score of 85%, and PM-7 (deliverables are clearly specified) with 82%, which are all excellent. In contrast, the lowest scored PM across all projects is PM-5 (transfer of risks to the private sector) with a percentage score of 28%. This

may raise questions about the lack of risk allocations in PPP projects. Although there are many studies on risks and risk allocation, the performance results highlight that the area of 'risk' need further investigation in PPP projects.

Considering the performance of the overall KPIs, KPI-3 (contract specifications) is the highest performing KPI in most of the projects, meaning that many PPP projects do have clear deliverables, specifications and roles and responsibilities specified in the contract. Within KPI-3, the only weakness is lack of specifications of performance targets and penalties for non-compliance in many PPP contracts. Perhaps the reason for this could be, since PPP projects form the basis for a long-term relationship between the private and public sector, specifying penalties may deem to jeopardise 'trust' factor and the coordination and collaboration between the two parties. KPI-1 (objectives) seems to be the lowest performing KPI in many of the projects due to lack of specification of SMART objectives (specific, measurable, achievable, relevant and time-bound) and failure to achieve project's objectives and user' benefit.

Taking all above, of the 13 projects tested, there are 05 projects with a very high percentage of success. First, it is the A-23 Beiras Interior (Portugal) project, which has gone through renegotiation, after which the grantor changed the charger toll to users. Secondly, the Coen tunnel, which is the first project procured through competitive dialogue route in the Netherlands. Third most successful project of the 13 projects is M-45 (Spain). In this project, the initial shadow toll concession contract was modified to absorb some project cost overruns. Attica Tollway (Greece) comes 4th in the success analysis followed by M-80 Haags (UK). Olympia Odos and Ionia Odos are the two projects that marginalises on very poor level of performance due to heavy cost overruns and time overruns. Both Olympia Odos and Ionia Odos should be evaluated again, once they reach project completion. The success of other 06 projects of the 13 case studies can be categorised as 'good', although some come at the lower end of the success percentage spectrum (e.g. A-19, UK) whereas some others are placed at the higher end of the spectrum (e.g. Rio Antirio, Greece and Via Invest. Zav., Belgium).

Many of the (comparatively) less successful projects have had a significant impact during financial crisis that has resulted in renegotiations. It is important to highlight how the observed level of success of the projects varies within the same country. Indeed, the most successful project is not carried out in a country with the highest PPP implementation context. This may suggests how several governments are involved in reforms to improve the PPP context in their countries.

5. Conclusions

Diverse approaches to evaluate success in PPP road projects has been introduced in this research. The methodology has been applied and tested for 13 road projects carried out in some PPP 'active' countries within the EU (i.e. UK, Spain, Portugal, Greece, Belgium and the Netherlands). Having developed 09 KPIs defined by 29 performance measures (PMs) from a Qualitative Content Analysis (QCA) and a Case Study methodology, the approach adopted, firstly, direct scores PMs' success using Likert scales. Then, these PMs have been refined, prioritised and weighted using a three-stage Delphi technique to evaluate expert consensus on the importance of KPIs and performance measures. The final weighted performance measures have then been used to evaluate the level of performance of the projects. The success of the road projects has been measured and a ranked in this research. Comparing the results, it can be concluded that the two approaches validate the answers of one another.

Other than highlighting results as above, the main purpose of the research was to present different performance measurement approaches to evaluate the success of selected projects and comparing its results, validate the approaches. The basis of the methodology can be presented as a performance measurement system (PMS) that has been tested on the 13 road projects in the EU. The PMS can be used on a variety of PPP case studies to identify overall successes (or failure) of projects. It can also be used to analyse how success could be evaluated from a set of KPIs and PMs. The results obtained can be used for both benchmarking purposes and for ex-post evaluation of PPP projects. The availability of a large number of cases of different transport modes from different EU countries offers a unique chance to validate both approaches using a larger number of PPP projects. Furthermore, the assessment can present results in terms of performance of dominant KPIs and PM, which could be useful when prioritising project tasks. These approaches are valid and may be used globally for other PPP road projects and also may be extended to other modes of transport within the PPP context.

Appendix A: Summary of the case studies

PROJECT NAME	Geographical region	Cost	Contract Duration	Tender call	Contract approval	Operational start	PPP model	Payment Methods	Financial details
Coen Tunnel	Randstad, Netherland	€ 500 mill.	30 yrs.	2005	2008	2013	DBFO	Availability fees	EIB+>5 banks
M6	Midlands UK	£ 485 mill.	53 yrs.	2007	2009	08/12/2003	BOT	Usage payment: Direct toll	Holding/banks
M80 Hagg	Scotland, UK	£ 320 mill.	33 yrs.	1992	2000	01/11/2011	DBFO	Availability/Usage paym. (Shadow)	Holding/banks
A19 Dishforth	North East of England, UK	£ 29,4 mill.	30 yrs.	1995	1996	02/09/1998	DBFO	Usage payment: Shadow toll	2 banks
Via-Invest Zaventem Airport	Brussels, Belgium	€ 220 mill.	30 yrs.	2006	2007	01/02/2012	DBFM	Usage payment: Shadow toll	1 Bank
A23-Beira Interior	Beiras, Portugal	€ 628 mill.	30 yrs.	Oct. 1997	13/09/1999	27/07/2003 (Completion date)	BOT	Usage paym. Shadow (*) /Availability.	EIB+>5 banks
Olympia Odos	Northern Peloponeso, Greece	€ 2,200 mill.	30 yrs.	2001	20/12/2007	Partial start, project not finished	DBFO	Usage payment: Direct toll	EIB+>5 banks
Attica Tollway	Athens, Greece	€ 1,300 mill.	25 yrs. (or before)	18/02/1995	23/05/1996	18/03/2001	BOT	Usage payment: Direct toll	EIB+>5 banks
Ionia Odos	Western, Greece	€ 1,200 mill.	30 yrs.	2001	19/12/2006	Partial start, project not finished	DBFO	Usage payment: Direct toll	EIB+>5 banks
Rio-Antirio Bridge	Patras Gulf, Greece	€ 815 mill.	42 yrs. (or before)	1991	03/01/1996	12/08/2004	DBFO	Usage payment: Direct toll	EIB+>5 banks
Radial 2	Madrid, Spain	€ 500 mill.	25 yrs. (Ext. to 39)	04/02/2000	02/01/2001	06/10/2003	BOT	Usage payment: Direct toll	EIB+>5 banks
M-12 Airport Axis	Madrid, Spain	€ 382 mill.	25-26 yrs.	05/03/2002	08/11/2002	June 2005	BOT	Usage payment: Direct toll	Holding/Banks
M-45	Madrid, Spain	€ 500 mill.	25 yrs. (Ext. 4-15)	03/03/1998	28/10/1998	2000	DBFO	Usage payment: Shadow toll	EIB+>5 banks

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