ASSESSMENT OF APPLICABILITY OF PERFORMANCE-BASED CONTRACTS IN TURKEY FOR ROAD MAINTENANCE SERVICES

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

KORAY ATEŞ

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
CIVIL ENGINEERING

DECEMBER 2019

Approval of the thesis:

ASSESSMENT OF APPLICABILITY OF PERFORMANCE-BASED CONTRACTS IN TURKEY FOR ROAD MAINTENANCE SERVICES

submitted by **KORAY ATEŞ** in partial fulfillment of the requirements for the degree of **Master of Science in Civil Engineering Department, Middle East Technical University** by,

Prof. Dr. Halil Kalıpçılar
Dean, Graduate School of **Natural and Applied Sciences** _____

Prof. Dr. Ahmet Türer
Head of Department, **Civil Engineering** _____

Assist. Prof. Dr. Hande Işık Öztürk
Supervisor, **Civil Engineering, METU** _____

Assist. Prof. Dr. Güzide Atasoy Özcan
Co-Supervisor, **Civil Engineering, METU** _____

Examining Committee Members:

Prof. Dr. İrem Dikmen Toker
Civil Engineering, METU _____

Assist. Prof. Dr. Hande Işık Öztürk
Civil Engineering, METU _____

Assoc. Prof. Dr. Hediye Tüydeş Yaman
Civil Engineering, METU _____

Assist. Prof. Dr. Güzide Atasoy Özcan
Civil Engineering, METU _____

Assist. Prof. Dr. Gözde Bilgin
Civil Engineering, Başkent University _____

Date: 10.12.2019

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Surname: Koray Ateş

Signature:

ABSTRACT

ASSESSMENT OF APPLICABILITY OF PERFORMANCE-BASED CONTRACTS IN TURKEY FOR ROAD MAINTENANCE SERVICES

Ateş, Koray
Master of Science, Civil Engineering
Supervisor: Assist. Prof. Dr. Hande Işık Öztürk
Co-Supervisor: Assist. Prof. Dr. Güzide Atasoy Özcan

December 2019, 273 pages

In the last decades, many countries have been in search of new contracting types for the road maintenance sector to reduce the cost by increasing efficiency. Performance-based contracting (PBC) for road maintenance services, which is one of the most popular approaches that has been preferred by many countries all over the world, has been reviewed in detail in this study. Although many studies and cases present the affirmative results of PBC, changing the road maintenance system from the traditional contracting methods to a new system, is very challenging. Turkey, which has made huge investments to the road construction sector in recent years, is one of the developing countries. These investments will return as excessive road maintenance costs in the future. Therefore, insufficiencies and problems of the existing system for road maintenance shall be found out in Turkey and road maintenance services should be managed properly and developed according to the needs of upcoming periods. The aim of this thesis is to analyze the existing status of road maintenance works in Turkey by revealing the shortcomings and to investigate the applicability of PBC for Turkey with a strategic plan via interviews and surveys. Particularly, PBC can overcome the existing problems. Based on the literature and data from interviews and surveys, a road map for Turkey is designed for transitioning into PBC. In this way, if this system

is implemented properly and systemically according to well-defined rules and regulations, road networks would be maintained with high quality and low budget for years.

Keywords: Performance-based Contracts, Road Maintenance, New Contracting Type, Road Maintenance Works in Turkey

ÖZ

TÜRKİYE İÇİN PERFORMANS ESASLI SÖZLEŞMELERİN YOL BAKIM HİZMETLERİNDE UYGULANABİLİRLİĞİNİN DEĞERLENDİRİLMESİ

Ateş, Koray
Yüksek Lisans, İnşaat Mühendisliği
Tez Danışmanı: Dr. Öğr. Üyesi Hande Işık Öztürk
Ortak Tez Danışmanı: Dr. Öğr. Üyesi Güzide Atasoy Özcan

Aralık 2019, 273 sayfa

Son on yılda, birçok ülke yol bakım sektöründe, verimliliği artırarak maliyeti düşürmek için yeni sözleşme türleri arayışı içindedirler. Yol bakım hizmetleri için performansa dayalı sözleşmeler (PBC), dünyanın dört bir yanından birçok ülkenin tercih ettiği popüler yaklaşımlardan biri olup bu çalışmada kaspamında detaylı olarak incelenmiştir. PBC'nin olumlu sonuçlarını öne çıkaran birçok çalışma ve proje olmasına rağmen, yol bakım sisteminde geleneksel sözleşme yönteminden yeni bir sisteme geçmek oldukça zordur. Türkiye, son zamanlarda yol yapım sektörüne büyük yatırımlar yapan ve gelişmekte olan ülkelerden biridir. Bu yatırımların, gelecekte yüksek yol bakım-onarım maliyetleri şeklinde geri dönüşü olacaktır. Bu nedenle, Türkiye'deki mevcut yol bakım-onarım hizmetlerinin yetersizlikleri ve sıkıntıları ortaya çıkarılarak ve gelecek dönemlerin ihtiyaçlarına göre yol bakım-onarım hizmetlerinin iyi şekilde yönetilmesi ve geliştirilmesi gerekecektir. Bu tezin amacı, Türkiye'deki karayolu bakım çalışmalarının mevcut durumdaki eksikliklerini mülakatlar ve anketler aracılığı ile ortaya koymak, analiz etmek ve Türkiye için performansa dayalı sözleşmenin uygulanabilirliğini stratejik planla araştırmaktır. Özellikle, PBC ile mevcut sorunların üstesinden gelinebileceği belirlenmiştir. Literatür taramasından, mülakatlardan ve anketlerden elde edilen verilere dayanarak,

Türkiye’nin PBC'ye geçişi için bir yol haritası tasarlanmıştır. Böylelikle, bu sistem, iyi tanımlanmış şartnameler ve mevzuatlar ile doğru ve amaca yönelik uygulanabilirse, karayolu ağı yıllarca yüksek kalite ve düşük bütçe ile korunacaktır

Anahtar Kelimeler: Performans-bazlı Sözleşmeler, Yol Bakım Onarım, Yeni Sözleşme Tipleri, Türkiye’deki Yol Bakım Onarım İşleri,

I would like to dedicate this thesis to my family, my colleagues and two precious advisors for their support

ACKNOWLEDGEMENTS

First and foremost, I would like to express my deep and sincere gratitude to my two advisors Assist. Prof. Dr. Hande Işık Öztürk and Assist. Prof. Dr. Güzide Atasoy Özcan for guiding me and providing their valuable expertise to finalize my thesis. They have always encouraged and believed in me to continue my research. I could have never brought to an end of this research without their support.

I would like to thank my managers Mr. Mete Baykır, Mr. Onur Başkaner, Mr. Faik Tokgözoğlu and my colleagues in Yüksel Proje for their understanding and motivation during my research.

I am grateful to my parents Gülay Ateş and Kamil Ateş, my sister Hande Özmen for their love, patience, and supports not only this period but also in all my life. Special thanks to my two tiny monsters - nephews always making me laugh and happy. Finally, I am thankful to all the people who are supportive to complete my thesis directly or indirectly.

TABLE OF CONTENTS

ABSTRACT v

ÖZ… vii

ACKNOWLEDGEMENTS x

TABLE OF CONTENTS xi

LIST OF TABLES xiv

LIST OF FIGURES xv

LIST OF ABBREVIATIONS xvii

CHAPTERS

1. INTRODUCTION 1

1.1. Motivation 1

1.2. Research Objectives 1

1.3. Scope 3

1.4. Limitations and Assumptions 3

1.5. Outline of the Research 3

2. BACKGROUND AND LITERATURE REVIEW 5

2.1. Project Delivery Systems for New Road Projects 5

2.1.1. Conventional Project Delivery Systems (PDS) 5

2.1.1.1. Design-Bid-Build (Traditional method) (DBB) 5

2.1.1.2. Design-Build (DB) 6

2.1.1.3. Construction Management at Risk 6

2.1.1.4. Design-Build-Operate (DBO) & Design-Build-Operate-Maintain (DBOM) 6

2.1.1.5. Public-Private Partnership (PPP) 7
2.1.2. Contemporary Methods 8
2.1.2.1. Alliance Model 8
2.1.2.2. Tender Evaluation Methods 9
2.2. Importance of Road Maintenance 11
2.3. Project Delivery Systems for Road Maintenance 14
2.3.1. In-house Road Maintenance 14
2.3.2. Private Sector Road Maintenance 15
2.3.3. Selection of Road Maintenance Contract 16
2.4. Road Maintenance in Turkey 17
2.5. Performance Based Road Maintenance Contracts 19
2.5.1. History of Performance-Based Road Maintenance Contracts 19
2.5.2. Characteristics of PBC in Road Maintenance 21
2.5.3. Advantages of PBC in Road Maintenance 25
2.5.4. Challenges and Drawbacks of PBC in Road Maintenance 28
2.6. Road Asset Management 29
3. METHODOLOGY 31
3.1. Research Methodology 31
3.2. Research Questions 32
3.3. Data Collection 32
3.4. Interviews 33
3.5. Survey 33
3.5.1. Survey-1: Perception of Road User 33
3.5.2. Survey-2: Perception of Road Expert 35

4. FINDINGS 37
4.1. PBC for Road Maintenance Experience of Countries 37
4.2. Road Maintenance in Turkey 44
4.2.1. In – House 45
4.2.2. Outsourcing and Assessment of Road Maintenance Tenders in Turkey between 2015-2019 48
4.2.3. Public - Private Partnership (PPP) Road Projects in Turkey and Similarity with PBC 60
4.3. Comparison of PPL vs PBC and mixed PBC 62
4.4. Evaluation of Interviews 70
4.5. Evaluation of Survey 73
4.5.1. Survey-1: Perception of Road Users 73
4.5.2. Survey-2: Perception of Road Expert 82
4.6. Roadmap 99
5. DISCUSSION 105
6. CONCLUSION 113
REFERENCES 117
APPENDICES 131

LIST OF TABLES

TABLES

Table 2.1. Examples of performance indicators in Latin America [21] 22
Table 2.2. Example of Performance Indicators in Australia [21] 22
Table 2.3. Examples of performance indicators with response times in New Zealand [21] 23
Table 2.4. Cost saving rates of some countries using PBC [27] 26
Table 4.1. Countries using PBC in road maintenance 38
Table 4.2. GDH expenses of road maintenance for motorway & state highway [82] 46
Table 4.3. GDH machinery cost [82] 48
Table 4.4. Summary of road maintenance tenders in Turkey between 2015 and 2019 [83] 48
Table 4.5. List of PPP road projects under GDH [82] 61
Table 4.6. Comparison of three countries properties 64
Table 4.7. Resume summary for three experts 70
Table 4.8. Sub-analysis for snow and ice removal works 79
Table 4.9. Comparison of all participants and participants travelling frequently 82
Table 4.10. Response rate for road asset management 91

LIST OF FIGURES

FIGURES

Figure 2.1. Distribution of risks according to Contracting Type [17] 17
Figure 2.2. Timeline of PBC [75] 20
Figure 3.1. Schema of the research methodology 31
Figure 4.1. Expenses of GDH [82].....45
Figure 4.2. Financial proposal of road maintenance tenders in Turkey in 2015 [83] 55
Figure 4.3. Financial proposal of road maintenance tenders in Turkey in 2016 [83] 56
Figure 4.4. Financial proposal of road maintenance tenders in Turkey in 2017 [83] 57
Figure 4.5. Financial proposal of road maintenance tenders in Turkey in 2018 [83] 58
Figure 4.6. Financial proposal of road maintenance tenders in Turkey in 2019 [83] 59
Figure 4.7. Age distribution of participants 74
Figure 4.8. Education status of participants 74
Figure 4.9. Traveled areas by participants in the last 5 years 75
Figure 4.10. Possession of driving license 75
Figure 4.11. Presence mode of participants in road network 76
Figure 4.12. Road maintenance satisfaction in terms of regularity.....77
Figure 4.13. Road maintenance satisfaction in terms of efficiency 77
Figure 4.14. Road maintenance satisfaction in terms of snow and ice removal 78
Figure 4.15. Evaluation of road maintenance services carried out irregularly and inefficiently 80
Figure 4.16. Comparison of road maintenance services and new road construction .81
Figure 4.17. Age distribution of road experts 83
Figure 4.18. Education status of road experts 83
Figure 4.19. Total experience of road experts.....83
Figure 4.20. Type of institution of road experts.....84
Figure 4.21. Existing status of road maintenance services 85

Figure 4.22. Expected effects of implementation of performance indicators 87
Figure 4.23. Expected effects of incentives & disincentives 88
Figure 4.24. Expected effects of contract duration 89
Figure 4.25. Expectations on the institution that should be responsible for road maintenance 90
Figure 4.26. Evaluation of PBC for road maintenance 92
Figure 4.27. The need for developing the existing road maintenance services 92
Figure 4.28. Roadmap for PBC in road maintenance [79] 101
Figure 4.29. Updated roadmap for PBC in road maintenance 102
Figure 5.1. Gun's survey results for performance indicators [80] 106
Figure 5.2. Gun's survey results for incentives & disincentives [80] 107

LIST OF ABBREVIATIONS

DB	Design-Build
DB	Design-Build-Operate
DBB	Design-Bid- Build
DBO	Design-Build-Operate
DBOM	Design-Build-Operate-Maintain
ERF	European Road Federation
GDH	General Directorate of Highways
GDP	Gross Domestic Product
HSE	Health Safety Environment
I/D	Incentives and disincentives
MBC	Method-based Contracting
P&D	Passengers and Drivers
PBC	Performance-based Contracting,
PBMC	Performance-based Maintenance Contracting
PDS	Project Delivery System
PPL	Public Procurement Law
PPP	Public Private Partnership
RA	Road Authority
RAM	Road Asset Management
RFP	Requests for Proposal

RFQ	Request for Qualifications
RUC	Road User Cost
VMS	Vessel Monitoring System
VTS	Vessel Traffic Service
WB	World Bank

CHAPTER 1

INTRODUCTION

1.1. Motivation

According to the World Road Association, “Roads are key national assets which underpin economic activity and traffic volumes continue to grow and drive an increased need for maintenance. Therefore, impacts of road maintenance must be understood and investments in maintenance should be made at the right time to save significant future cost”. [63].

In addition, the importance of road maintenance is emphasized by Kjell Levik - Assistant Director-General, Norwegian Public Roads Administration, at his writing very briefly; “If money is short, and it usually is, there's only one rational course of action:

- Maintain existing roads before funding new ones.
- Make sure it is done today, and even every day.

Because tomorrow, it will be much more expensive” (Permanent International Association of Road Congresses, 1999) [60]. Although governments focus more on the construction of new roads due to political reasons, road maintenance is one of the most important aspects of the road sector.

1.2. Research Objectives

According to the World Bank, “Roads, and means of transport, make a crucial contribution to economic development and growth and bring important social benefits. Poorly maintained roads constrain mobility, significantly raise vehicle operating costs, increase accident rates and their associated human and property costs, and aggravate

isolation, poverty, poor health, and illiteracy in rural communities" [65]. It is essential to keep road quality steady through the life of the pavement. Road authorities are responsible for the maintenance of their road network with strategies and methods without compromising the quality and safety of their network. Thus, since the 2000's, road authorities are working on new contracting methods in order to increase efficiency and, as well as to decrease the cost and liability of the agency [38].

Due to expanding roadway networks, the Turkish General Directorate of Highways (GDH) has tendered road maintenance services to the private sector after 2013 in order to maintain road quality. Routine maintenance is executed under lump sum but snow and ice removal works are implemented as unit price [82].

In common practice, method based contracting/conventional contracting is implemented for machinery, equipment, materials, and methodology defined by client and payments are made based on measured quantities of works completed. However, payment types and duration generally vary. In order to eliminate the disadvantages and limitations of conventional contracting, road authorities across the world prefer Performance Based Contract (PBC). PBC is a relatively new contract type in road maintenance services in the last 20 years [44][46]. While developed countries commonly adopt their road maintenance contracts PBC, it is also observed that many developing and undeveloped countries are also using or conducting studies on PBC.

PBC is recognized and preferred across the world not only because of its cost efficiency but also because of its advantages like the quality of service, pre-defined response time, safety procedures, and level of service effectiveness [35].

One of the primary objectives of this study is to investigate the road maintenance services in Turkey and determine the shortcomings of these current contracts implementation and tender processes. Another objective is to examine whether PBC could overcome the limitations of existing services and if so, how can PBC be adapted for road maintenance services in Turkey.

1.3. Scope

The principal stages of this study are listed below;

- Determining the countries, which are using PBC in road maintenance services.
- Analyzing the road maintenance system carried out by GDH in Turkey and determining deficiencies and similarities with respect to PBC.
- Acquiring perceptions of road experts regarding current road maintenance in Turkey and their comments and suggestions for PBC.
- Acquiring perceptions and satisfaction of road users regarding current road maintenance in Turkey.
- Analyzing and comparing current contracts in road maintenance used in Turkey versus countries implementing PBC successfully.

1.4. Limitations and Assumptions

- Comparison of Public Procurement Contracts and PBC is limited with the assessment of the draft/template contracts since signed contracts between the parties are not open to the public because of confidentiality.
- A roadmap for Turkey is proposed building up on the literature and the surveys/interviews conducted with road experts. Hence, the execution and evaluation of the proposed roadmap for PBC are out of scope in this study.

1.5. Outline of the Research

This thesis consists of 6 chapters. Chapter 1 is the introduction chapter, and the content of the following chapters are summarized below;

Chapter 2 contains a literature review of contracting types for new and existing roads in the world and the importance of road maintenance. Moreover, road maintenance services executed in Turkey are summarized, and PBC is discussed in detail.

In chapter 3, the methodology of this study is explained. Indeed, the data collection methodology, interviews and surveys conducted in this study are presented in detail.

Chapter 4 presents the findings of this study, including the perspective of road users and road experts on the quality of road maintenance in Turkey in the current practice. Additionally, the perspectives of road experts on PBC and the existing road maintenance contracts in Turkey are examined. Furthermore, a road map is developed for the transition from the method-based contracting to performance-based contracting in Turkey.

In chapter 5 discussions regarding the results of the user studies presented in the findings chapter are evaluated to demonstrate the similarities and differences with parallel studies conducted previously.

Chapter 6 contains the conclusion of this study. A summary of this study with its key findings is represented. Additionally, the outline of future studies is drawn in this chapter.

CHAPTER 2

BACKGROUND AND LITERATURE REVIEW

2.1. Project Delivery Systems for New Road Projects

"Guidebook for Selecting Project Delivery Methods & Alternative Contracting" [52], International Overview of Innovative Contracting Practices for Roads" [71] and "Alternative Project Delivery, Procurement, and Contracting Methods for Highways" [15] guidelines are reviewed to identify the project delivery systems (PDS) for road projects. In the light of these reports, the delivery methods are classified based on their frequency of occurrence and discussed in the following subsections.

2.1.1. Conventional Project Delivery Systems (PDS)

Design-Bid-Build, Design-Build, Construction Management at Risk, Design-Build-Operate, and Public Private Partnership are discussed in this section.

2.1.1.1. Design-Bid-Build (Traditional method) (DBB)

The most common PDS for road construction projects is design-bid-build. Firstly, the client put forward the scope of the project and request a proposal for design services. After finalizing the engineering services and specifications for the project, the client calls the contractor for construction services. This method is one of the oldest PDSs; hence, generally, there are established procurement laws and regulations. Its benefits include awarding the project to the lowest price bid as a result of a single-stage competitive tender process. However, this method is subject to a higher potential for cost overruns, delays, and design changes because of the limited communication between the involved parties. The client should have a dominant role in the supervision of the construction (by itself or via a third party) to complete the project successfully. The payment method is generally unit price [52].

2.1.1.2. Design-Build (DB)

The other commonly used PDS in medium-sized and large-sized projects is the Design-Build method. The client awards the project to a qualified contractor to execute both design and construction services. By assigning responsibility of design services to the contractor, this method enables completion of the project faster, the use of innovative techniques at the design stage, and fast-tracking the projects by overlapping the design and the construction phases. The disadvantages include lack of clear specifications regarding the design, difficulty in comparatively assessing the tenders, and lack of know-how for the contractors causing limited competing at the tender stage. The lump-sum payment method is usually preferred [71].

2.1.1.3. Construction Management at Risk

This method is very similar to the DBB method. However, it is used rarely in a few countries (e.g., USA) thus, there are not many results regarding finalized projects to reach a general conclusion [52]. Design services are tendered separately like DBB, but the contractor who is awarded the project gets involved in the project from the beginning of design services. Thus, the contractor is responsible for managing both the design and the construction processes. All risks related to the duration and the budget of the project belong to the contractor. Project management capability and knowledge in contracting is a fundamental issue for this method. The involvement of the contractor during the design process brings advantages for the project such as constructability in complex and innovative projects and executing the design process without being subject to particular specifications. Besides, some countries including Finland did not get a positive outcome and stopped using this method [71].

2.1.1.4. Design-Build-Operate (DBO) & Design-Build-Operate-Maintain (DBOM)

These methods are not used as widely as the DB or DBB methods. In the DBO and DBOM method, design and construction services are provided by the Contractor and operation of the project (maintenance could also be included) is executed under the

contract. The main difference of these methods from the Public-Private Partnership (PPP) is that DBO and DBOM projects are funded by the public sector. Thus, the process of these systems is much easier than PPP [81].

External funding always comes with additional workload and procedure especially if the origin of the financier is a foreign country. All costs for design and construction services and operation fee are paid to the contractors and they bear no responsibility regarding funding of the project. This method is also named "Life-Cycle Models" due to long project duration. Although there are not many cases in the literature, motorway projects executed with this method in Finland resulted in cost efficiency and higher quality than DBB and DB methods [71].

2.1.1.5. Public-Private Partnership (PPP)

Another example of rarely-used PDS for road construction is the PPP method. According to Morteza Farajian, Ph.D, PPP is a partnership between the public and private sector to share the risk and rewards of constructing, financing, operating, and/or maintaining what are essentially publicly-owned assets in order for projects to be completed faster, on budget, and at an value for money to the owner (Presentation on Istanbul PPPCoE, 2016, [108]). Key features of PPP include:

- Cost efficiency during the long operation period due to innovative methods
- Flexible financing schedule
- Multi-discipline services
- Outcome-based performance
- Accurate budgeting of assets within the life of the projects
- Shorter construction period
- Competition, accountability, and transparency
- Transfer of risks to the private sector

The design and construction portions of the contract operate in a similar fashion to a DB contract. However, the uniqueness of this type of contract is that the funding of

the project is under the responsibility of the private sector fully or partially. After the finalization of the contract, the project is handed back to the public agency or governmental institution [52]. PPP system has also been used in Turkey in the last decades under special laws numbered 3996 and 6428 [78].

2.1.2. Contemporary Methods

2.1.2.1. Alliance Model

This method is firstly used in 1990 by British Petroleum (BP) to take out oil reserves in the North Sea profitably. By removing traditional and competitive methods, new and more effective one is developed for this project. In the system that is also known as Toyota Production System, efficiency and quality are of high priority [72].

It is a model executed with the employees and suppliers aimed at a common goal in the service and production stages. It became popular after its implementation in each sector [72]. Key features of the Alliance Model are [72];

- Executing the project by parties serving for a common goal with trust and teamwork
- Sharing all uninsured risks between parties, (it is not common in traditional contracting).
- Determining the profit and cost in the first stage in line with the objectives of each party, jointly.
- Governing by the Alliance committee and accepting all decisions by unanimous vote (legal remedy is restricted under disputes).
- Keeping all expenses transparently and sharing them with all parties.
- Identifying the target cost, which is one of the most important aspects, carefully. If the costs are kept low, the profit would increase. Otherwise, the profit would decrease and reflect negativity to the parties.

Another important feature is that the works are carried out according to the pre-determined performance criteria. Profit & loss are shared according to the fulfillment

conditions of the performance criteria by the parties, giving a specific percentage and weight ratio to the performance criteria.

It is used in many building projects, especially in industrial buildings (e.g., Australia National Museum) and road projects (in England) [80].

2.1.2.2. Tender Evaluation Methods

Some governments, especially the USA, use alternative practices to evaluate tenders to suggest alternative solutions for accelerated project completion, diminished traffic congestion, and increased level of quality and performance [71]. These forms of practices are used as an addition to delivery methods, including cost plus Time (A+B) + C (Quality) Bidding, lane rental, and incentives & disincentives.

2.1.2.2.1. Cost plus Time (A+B) + C (Quality) Bidding

In road projects, road closure, especially on the roads with heavy traffic flow, results in temporal and financial loss for the users and road agency. This bidding method is developed with the goal of preventing such problems.

In the scope of the cost-plus time method, contractors submit their financial proposals in 2 stages. ***A*** symbolizes the total cost needed for completion of the project. ***B*** symbolizes the cost that is calculated by the multiplication of 'the total number of days to complete the project' by 'the unit price determined by the Road Authority', named as "Road User Cost (RUC)". While calculating RUC, the authority considers various items such as travel time, travel distance, and vehicle fuel expenditures. ***A***+***B*** generates the financial proposal of the tenderer, and the contractor with the lowest price is awarded. ***A*** is the real cost that will be paid to the contractor. According to the nature of the contract, ***C*** symbolizes the quality with the use of performance indicators [15][51][54][71]. Determination of ***C,*** which is intended for high-quality works, is quite challenging. The quality measurement aspect of this method seems to be possible with the performance-based contracts [71]. Advantages of cost-plus time include [71]

- Shorter construction time,

- Less shortcomings (e.g., road closure) to the users,
- Cost efficiency.

2.1.2.2.2. Lane Rental

This method has been used by the Transportation Ministry in England since 1984, and it has been used in the USA for the first time in 1990.

Firstly, the road authority calculates the cost of lane closure based on the project schedule in terms of weekdays, weekends, hours (night, day, or rush hour). The financial proposal covers the cost and a fee for total lane closure during the project duration and the bid is awarded to the lowest-price bidder. After signing the contract, if needed, the contractor pays the fee of lane closure according to a specified time-payment schedule. Thus, the contractor avoids closing the roads by using innovative solutions to pay less fee and execute the construction works without interrupting the traffic flow [49][71] [6].

Advantages of lane rental include [71] [6];

- Cost efficiency,
- User satisfaction,
- Less traffic congestion,
- Accelerated project.

2.1.2.2.3. Incentives and Disincentives (I/D)

This project delivery method is the most known and used conventional method. It uses incentives and disincentives on many performance criteria such as cost, quality, time, safety, technology, security, staffing, and management. This method has been preferred commonly with performance-based maintenance contracting, especially for projects that have critical deadlines. Incentives are applied for early completion of projects or, on the contrary, disincentives are applied for late completion. Aim of incentives and disincentives include:

- Completion of projects on time or in advance,
- Completion of projects with higher quality,
- User satisfaction,
- Less traffic congestion.

Critical issues include [52]:

- Amount of I/D shall be a motivation for the contractor,
- Cost of the projects may increase,
- The client might need extra funding.

I/D methods are generally used in the following conditions:

- Heavy traffic conditions,
- Importance of highway completion,
- Rehabilitation or reconstruction of road projects especially in urban areas,
- Existence of overlong bypass roads,
- Unserviceable bridges,
- Existence of environmental or political issues,
- Emergency services disruption,
- Warranty contracts,
- Upset Price (used by British Columbia, Canada - state the maximum price & agreed-on quality - levels).

2.2. Importance of Road Maintenance

According to the World Bank, roads are one of the most essential public assets. Thus, road maintenance and rehabilitation should be maintained regularly with a well-planned schedule [65].

In developing countries, various research studies have been conducted about the benefit and cost assessment for proper road maintenance, however, the systematic solution could not have been presented accurately. According to a study over 85

countries carried by the World Bank (WB), the data shows that the budget of re-construction (or rehabilitation) of the road is three or four times higher than the budget of road maintenance when it is performed on time [65].

Effects on the economy

WB put forward that 45 billion USD loss is incurred due to insufficient road maintenance in 85 countries and this loss could be compensated by proper road maintenance with 12 billion USD (It comprises approximately 25% of the total loss.) [64]. In general, for political reasons, the budgets are majorly allocated to new road construction and road maintenance is implemented with a limited budget [64]. Many countries allocate only 20%-50% of the necessary maintenance budget in current practice [64][65]. For instance, due to inadequate road maintenance, Sub-Saharan Africa countries need 30 million pounds for road rehabilitation or re-construction [64]. Furthermore, the cost of urgent repair of Latin American countries' road network is approximately 1-3 % of their GDP [64].

As long as road maintenance is executed regularly and on time, the cost is reasonable; otherwise, road rehabilitation or reconstruction is significantly costly. Neglecting or delaying of road maintenance causes quite direct costs, indirect costs, and safety issues. Regarding direct cost, at least 6 months delay for road maintenance will raise road deterioration dramatically and it will lead to high rehabilitation or reconstruction costs for the maintenance services. For instance, The South African National Road Agency Ltd. (SANRAL) is an independent, statutory and government company, and executed a study regarding the comparison of this issue. If a three-years delay occurs at maintenance works, rehabilitation cost will be six times higher than maintenance costs, and if the delay is five years, the rehabilitation cost will be eighteen times higher [65]. Therefore, well-scheduled maintenance services are very essential [65]. Delayed maintenance has indirect costs as well. Neglected roads steadily become more difficult to use, resulting in increased vehicle operating costs (more frequent repairs, more fuel use) and a reluctance by transport operators to use the roads. This imposes a heavy

burden on the economy. As passenger and freight services are curtailed, there is a consequent loss of economic and social development opportunities [65]. In addition, successfully implemented PBC has an impact on the social cost of countries by decreasing the number of fatal/ severe accidents on the road network during the contract duration [9].

Effects on safety

Gulay Malkoc, HSE committee chairperson of the European Asphalt Pavement Association (EAPA) and also the technical director of the Turkish Asphalt Contractors Association (ASMUD), dwells on safety issues in her article published in World Highways June 2015 [84]. Malkoc et al. (2015) mentioned that the European road sector is aware of its responsibility by keeping the road surface in good quality to decrease the number of accidents [84].

In March 2013, a manifesto named "Keeping Europe Moving" was published by European Road Federation (ERF) in Brussels for Road Asset Management (RAM). It aimed at a safe and effective European road network in the long term [70]. The statement of "1 Euro spent on road maintenance prevents spending up to 15 Euro in rehabilitation or reconstruction" was the tag line. Main problems related to road maintenance were indicated as the real high risk of accidents, problems of congestion, increased noise and reduction of service to society. The solution will come with safe, effective and productive Road Asset Management by [70];

- Preparing a full inventory for all road items.
- Showing existing conditions of the road network by visual proofing (Pictures or photos).
- Determining the value of asset and budget of maintenance services.
- Funding for routine, periodic maintenance and increasing the road assets.
- Selecting the best program for all maintenance services.

Preventive road maintenance is also very crucial when considering the effects of climate changes and natural hazards such as landslides, earthquakes, etc. Landslides could block the road access and damage costly. In addition, if preventive road maintenance is applied in earthquake zones, the level of damage could be reduced and this causes a decrease in the effects of the accident, number of fatalities and recovery activities for road structures [63].

Strategies for road maintenance

According to Road maintenance on Pavement Preservation & Recycling Summit PARIS 2015 [61], [62], it was declared that Authorities are aware of the importance of road maintenance. Therefore, The Road World Association (PIARC) initiated a Project named as "The Importance of Road Maintenance" to present essential and strategic role of road assets and maintenance services to all road stakeholders (Governmental Agency, Private Sector, etc.) with explicit and available for all.

There are ten million kilometers of road network all over the world, and approximately 80-85% of passengers prefer highway transportation. In order to enable cost efficiency for future investment, the age of the road is a significantly important parameter. It aids in planning the maintenance on time, as well as allocating an adequate budget for maintenance activities. In addition, traffic volumes have been growing rapidly in developing countries. Thus, the maintenance management gains extreme importance.

2.3. Project Delivery Systems for Road Maintenance

2.3.1. In-house Road Maintenance

Road maintenance services can be carried out by Road Agencies with in-house staff, and equipment. However, on a global scale, road maintenance by in-house is being replaced by outsourcing day by day [65]. Research done by the World Bank in the 1980s showed that involving the private sector to road maintenance services decreases the cost of maintenance activities in the range of 30% and 50% [56].

In some counties, road maintenance services have been executed totally by PDSs other than the in-house method. These are Finland, Western Australia, Canada (Alberta, British Columbia, Ontario), Norway, Holland, England, and New Zealand. On the other hand, road authorities in some countries prefer using both in-house and contracting at certain maintenance activities. For instance, while in Estonia in-house method is used for 37% of routine maintenance services, in Florida/ USA, Maryland / USA, and Victoria/ Australia, in-house is used for 20%, 50%, and 50% of road maintenance services, respectively [71].

2.3.2. Private Sector Road Maintenance

In the last decade, contracts with the private sector for road maintenance attracted road agencies' and contractors' attention. Road agencies have used their staff to determine road maintenance services and tendered the services to the private sector [41]. In this way, road agencies could decrease their resources that are needed for the realization of projects and could enable risk-sharing with the private sector. Moreover, contractors could use innovation methods, increase the quality of construction, and decrease the life cycle costs [17].

Road authorities should consider and evaluate numerous factors before tendering to private sector including scope, plan, complexity, life-cycle cost, and economic analysis of road maintenance projects; risk sharing, asset inventories, type of contract, competitiveness of contractors, evaluating and measuring performance, cost comparison, political issues, user expectation, and staffing [40].

For example, in 1995, one of the innovative attempts was performed by the Virginia Department of Transportation (VDT). VDT made an agreement, under the act of PPP, with private companies for construction, maintenance, and improvement of road network and road structures. In 1996, a private company was authorized by a 10-year pilot PBC contract for the administration and maintenance of all assets belonging to 25% of Virginia's Interstate road network (250 miles) [5].

2.3.3. Selection of Road Maintenance Contract

Regarding PDSs, there is no "one method fits all" solution or always-the-best solution. Each project is unique; hence, the PDS should be decided according to the characteristics of the projects and the involved stakeholders. There are many criteria that shall be considered while determining which PDS to use [71];

- Estimated cost, size, and complexity of projects
- Political, financial, juridical, and environmental risks
- Existing budget
- Personnel qualification and availability
- Tendering and contractors' experience
- Sharing project risks between parties
- Target and attitude of the client
- Degree of potential conflicts
- Importance of project duration (completion)
- Status of road and construction market
- Ability of construction management
- Status of utility issues

One of the most important criteria is the risks shared between the project stakeholders. As can be seen in Figure 2.1, the share of risks owned by the agency and contractor varies in each of the PDSs [17]. In fact, while the agency assumes all of the project risks in the in-house method, the long-term performance-based contracts decreases the agency risks.

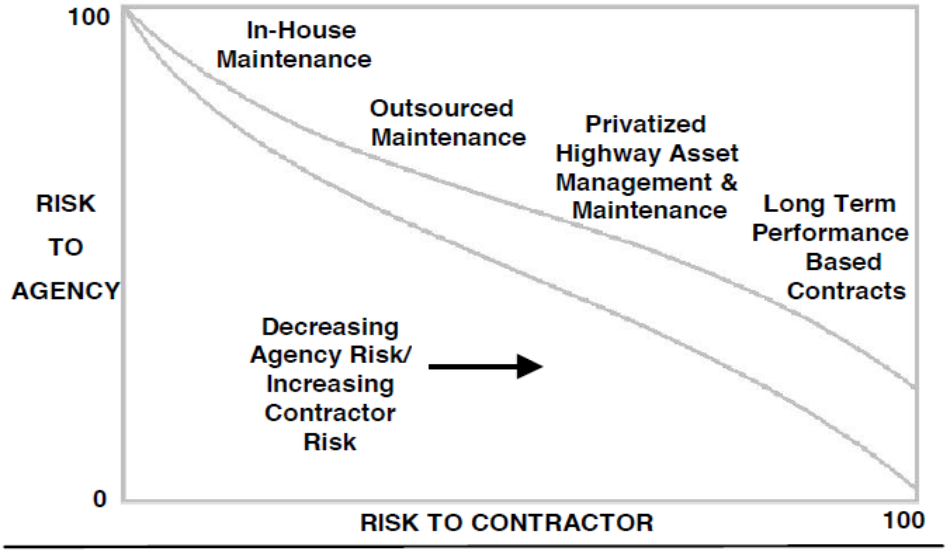


Figure 2.1. Distribution of risks according to Contracting Type [17]

2.4. Road Maintenance in Turkey

GDH, which is the only authority responsible for highways and motorways in Turkey, declares that maintenance of the road is significantly essential to increase the lifetime of the road, and to provide safer and more comfortable travel for users under all types of weather conditions with smooth traffic. The first maintenance attempt was made in 1948 and since then, the GDH has been implementing maintenance services. The key feature is that it should be done continuously and regularly within a schedule. If not, the deterioration level of the road will increase under severe weather conditions or heavy traffic, and it leads to raise the maintenance costs and indirect costs (vehicle operating cost, etc.) day by day [82].

Its own staff and equipment under Regional Directorates and its divisions within their boundaries execute maintenance services. These services are classified as routine maintenance, snow and ice removal, and emergency maintenance. Definitions and summary information published by GDH regarding road maintenance are listed below:

Road Maintenance: It includes maintaining the road, structures, and facilities on road for extending the service life and ensuring safe traffic flow after constructing or subsequently developed.

Snow & ice removal woks: It includes preventing the accumulation of snow on the road platform and removing the snow from the road surface with snow machines. The ice removal works consist of two separate parts as anti-icing and de-icing. The anti-icing work, which can also be referred to as preventive maintenance, consists of periodically applying liquid, solid or heated solid chemicals to the road surface, starting at the appropriate time and under the necessary conditions before icing. De-icing is the application of the same chemicals together with abrasives after icing.

To understand the scope of work under road maintenance, principal work items are mentioned as follows:

- Maintenance, repair, and cleaning of asphalt paved road platform
- Maintenance of hydraulic structures
- Ditch maintenance
- Cleaning and maintenance of traffic signs
- Cleaning and maintenance of roadside marker post and snow poles
- Cleaning of curbs edges
- Cleaning of landslide and soil
- Cleaning of manholes
- Cleaning of drainage channels of all kinds of bridges and superstructures
- Snow and ice removal works

After 2013, GDH has tendered road maintenance services to the private sector with method-based contracting depend on the amount of work done, and payment is given on the basis of a mutually agreed unit rate with specified methodology. Routine maintenance services in Turkey is executed under method-based contracting in lump sum but snow and ice removal works are implemented as unit price [82].

2.5. Performance Based Road Maintenance Contracts

In recent years, there is a global trend for road maintenance services to be executed by the private sector in order to improve the quality, increase the cost efficiency and provide competence between the contractors [74]. Performance-based contracting in road maintenance, which has been in use by road agencies for the last 20 years in many countries, is a procurement system that payment is made according to measured outcome instead of the specified quantity of input [43][75].

In the world, PBC has adopted within different names by many countries, even states. Following names are commonly referred to PBC; [75]

- "Performance-Based Maintenance Contract" in USA,
- "Performance Contract" in Western Australia,
- "Total Maintenance Contract" in Texas,
- "Performance-Specified Maintenance Contract" in Australia and New Zealand,
- "Contract for Rehabilitation and Maintenance" in Argentina,
- "Managing Agent Contract" in the United Kingdom,
- "Area Maintenance Contract" in Finland and Ontario, Canada.

PBC is summarized by [69] explicitly as "Procurement should structure performance work statements in contracts around the outcomes and timeline of the work to be performed, that is, what is to be performed rather than how to perform it".

2.5.1. History of Performance-Based Road Maintenance Contracts

The first PBC is used in British Columbia, State of Canada, in 1988, and two years later, Argentina has started PBC in road maintenance services for 1000 km roadway (see the timeline for PBC in Figure 2.2) [75].

In the 1990s, Latin American countries such as Uruguay, Chile, Brazil, and Peru initiated PBC pilot projects under the CREMA program (Road Rehabilitation and Maintenance Contracts) financially supported by World Bank [74]. During the same

period, United States, Australia, New Zealand, Finland, Denmark, Estonia and Finland, which are developed countries, started to develop PBC for road maintenance services.

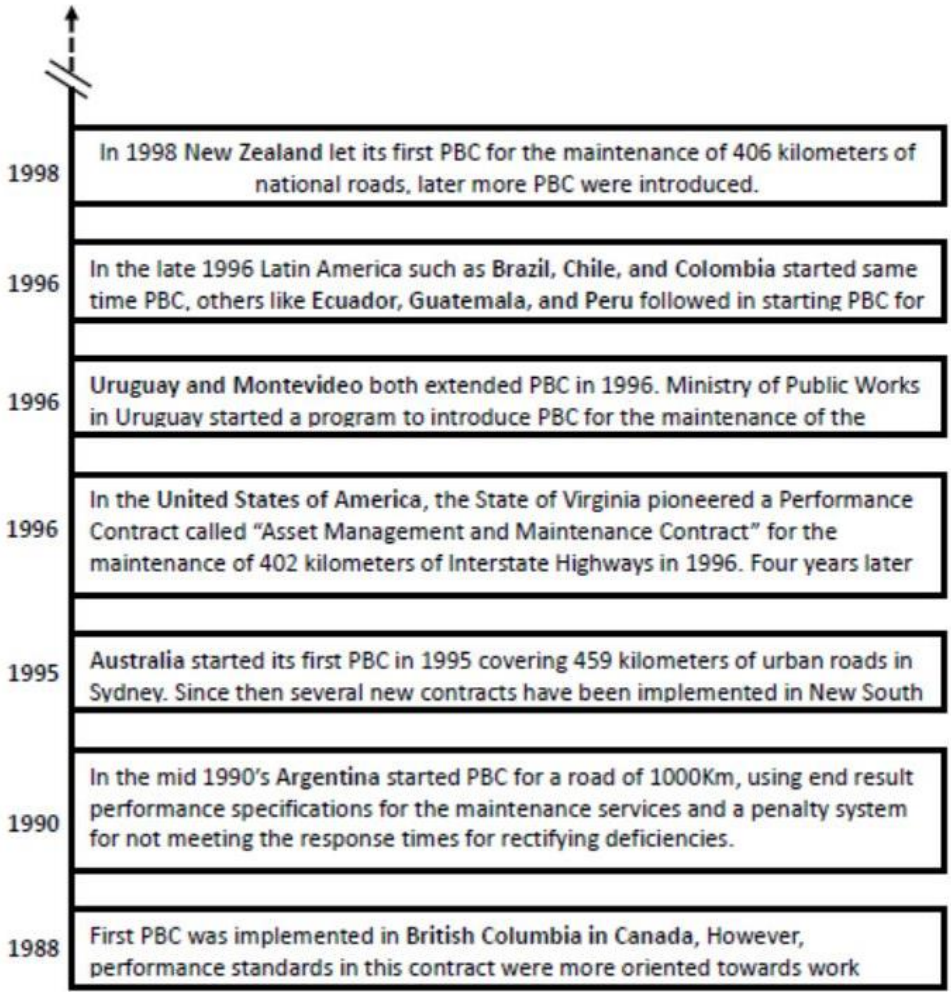


Figure 2.2. Timeline of PBC [75]

Some of the road agencies were supported by an international development finance institution, World Bank, to change their current system to the PBC. The World Bank financed its first project in terms of PBC during the years of 2002 and 2003. Since then, it has funded over 200 PBC projects from all over the world [26]. In other words, by means of international finance agencies, many countries could modify or change

their current road maintenance system to new contracting types under the financial guarantee of international finance agencies [25][79].

2.5.2. Characteristics of PBC in Road Maintenance

The key characteristic of PBC is that the system is based on performance indicators and outputs instead of required inputs, activities, or processes [22]. The payment system is made monthly with the condition of meeting performance indicators. Penalty procedure is also imposed on the Contractor who does not satisfy the criteria [65]. Other characteristics of PBC such as performance indicators, risk sharing, duration, selection process, and funding are briefly summarized in this section.

Performance indicators

The quality of maintenance works with PBC is reported to be better than the ones implemented with other contract types due to the performance indicators. Therefore, setting the performance indicators properly is one of the most crucial step of PBC [79]. "While specifying the indicators, challenges should be taken into account including deterioration caused by high speed overweight vehicles, evaluation of physical status of the road, setting monitorable indicators, existence of database for current road conditions, roadside facilities such as cables, irrigation canals (these structures or materials are out of PBC scope), and adverse geographical conditions" [79]. In addition, the needs of road users, the expectation of the client and affordability should be taken into consideration while determining performance indicators [31].

In Table 2.1 and Table 2.2, examples of performance indicators, used in Latin American countries and Australia, are summarized. These tables show that each activity and work item are defined clearly with targets that should be met by the contractor. These indicators arise from practices and experiences in road maintenance services and vary from country to country. By considering the long service duration, indicators should cover overall conditions of the roads such as pavement, IRI, skid resistance, texture, rutting, surface life, structural condition, etc. [31]. On the other hand, performance indicators are mostly common for each road project and should be

determined before the tender stage. Hence, performance indicators, in theory, provide a major advantage to the client in point of liability [14]. Thus, meeting the performance criteria is the main responsibility of the contractor.

Table 2.1. *Examples of performance indicators in Latin America [21]*

Asset Class	Component	Performance Indicator
Pavement	Potholes Roughness (asphalt) Roughness (bituminous) treatment) Rutting Cracks	No potholes IRI < 2.0 (Argentina), IRI < 2.8 (Uruguay) IRI < 2.9 (Argentina), IRI < 3.4 (Uruguay) < 12mm (Argentina), < 10mm (Uruguay, Chile) Sealed
Gravel surfaces	Potholes Roughness Thickness of gravel layer	No potholes IRI < 6 (Uruguay), IRI < 11 (Chile) 10 cm (Chile, Uruguay)
Shoulders	Potholes Cracks Joints with pavement	No potholes Sealed Vertical alignment < 1cm (Chile, Uruguay), sealed (Peru)
Drainage system	Obstructions Structures	No obstructions. Should allow for free flow of water (Chile, Uruguay) Without damages and deformations (Chile, Peru
Road signs and markings	Road signs Road markings Reflectivity of road markings .	Complete and clean (Argentina, Chile, Peru) Complete and visible (Argentina, Chile, Peru) 160 mcd/lx/sqm. (Argentina) 70 mcd/lx/sqm. (Uruguay)
Right of way	Vegetation Foreign elements	< 15cm height (Argentina, Uruguay) No foreign elements allowed

Table 2.2. *Example of Performance Indicators in Australia [21]*

Asset	Outcome	Performance Target in % of Asset	Performance Indicators
Cross Pipes < 36 ft sq)	Structurally sound Open drains Joints intact Adequate capacity No erosion	95	< 10% deteriorated barrel > 90% diameter open Joints intact End protection intact No dip in road over pipe indicating structural problems
Paved Ditches	Aligned Structurally sound Clean	95	< 1" settlement < 25% spalled no obstruction to flow of water
Sidewalks and Ramps	Smooth Safe Sound	90	No settlement > ½" No unsealed cracks > ¼" < 25% spalled

In the PBC, the payment depends on meeting the performance indicators, not on the quantity of works [31]. Therefore, indicators should be clearly defined, easily performed, and transparently measured by the client.

Response time as a component of performance indicators has a great importance, in terms of road safety [32]. Response times of indicators, could be even defined in terms of hours, weeks, months, or years, are presented in Table 2.3. Each response time is determined according to the type and feature of the activity.

Table 2.3. *Examples of performance indicators with response times in New Zealand [21]*

Feature	Contract Standard	Response Time
Potholes on highways with > 10000 vpd	Not more than 3 potholes with a diameter greater than 70mm on any 10km section	48 hours
Potholes on all highways	No potholes greater than 150mm in diameter	48 hours
Depressions and Rutting	No ponding greater than 30mm in depth at any location	6 months
Edge Break	No more than 2m of edge break within any continuous kilometer greater than 0.5m	1month
Lined Channels	No lined channels with more than 10% of the cross-sectional area obstructed, and free of vegetation	1 week

In addition, new studies for performance indicators and performance measures are carrying out for the geometric design stage of the road sector within the project development process and the relationship between project-level [45][50][53].

Risk Sharing

In traditional or method based contracting, the road authorities define the specifications, materials, and construction methods and consider the risk arising from failure in the specifications, management, designs, unexpected or additional work, etc. [59][75]. On the other hand, in PBC, the contractor is free to decide when, what and how to do all activities as long as meeting the performance indicators. In this way, the contractor takes all risks of performance failure or shortcomings of activities [29][75].

Therefore, the risk is shifted to the contractor who generally controls the project to achieve the performance standards. If PBC is selected in road maintenance services, the responsibility and risks of the contractor will increase while decreasing the road agency's [17] [75].

Unexpected increment of traffic volume, climate changes, inflation, uncertainty of political, environmental and material issues are the other risks that should be considered in such long-term contracts for increasing the amount of work and costs [31]. Some of these risks could be handled by both parties and some of them normally are covered by road agencies. For example, in Argentina, the road agency covers costs arising from natural disasters or material shortage. British Columbia and Estonia apply annual price adjustment for staff and fuel due to economical fluctuations [31]. On the other hand, in Virginia State, the contractor's financial proposal is expected to cover all costs of unpredictable events and force majeure activities. [31]

Duration

The road maintenance services should be carried out periodically to provide safe, comfortable, and dependable roads after the construction [31]. Thus, the PBC is by nature a long-term contracting system and the contractor execute maintenance services every year by taking risks and responsibilities [79]. The duration of the PBC generally varies from 3 to 10 years and even reaches up to 30 years. In other words, the duration could be extended according to user satisfaction [29].

Selection Process

The PBC in road maintenance based on best value approach or quality based cost for selecting contractors [31]. The selection of contractors in PBC must be done delicately because contractors have more responsibilities and risks as compared to the other contract types. The clients should ensure that the contractor has management capacity, potential, understanding, and ability to handle the projects and associated risks, and has potential to complete the project on time by meeting the performance indicators

[31]. Therefore, two stages, which are pre-qualification and main proposal, are generally preferred for this type of contracting.

Funding

PBC, is a long-term contracting system, and should be funded by road agencies for multiyear road maintenance services. When comparing the method based or traditional contracts in road maintenance, payment is made to contractor monthly as lump sum during the contract duration in the condition of meeting performance indicators [31][79].

2.5.3. Advantages of PBC in Road Maintenance

The PBC provides several benefits when compared to the method-based or traditional contracting. Cost saving is one of the most crucial and prominent advantages in PBC [79]. After literature review, the advantages of PBC are categorized as follows:

Cost Saving

Cost-saving rates in PBC for road maintenance from high-income countries (i.e. Canada, Sweden, England, Australia, Norway, Finland, Netherland, USA, and Estonia) are between the 10% and 40% when compared to method-based or traditional contracts (see Table 2.4) [12]. Accordingly, it is proven that cost-saving has been achieved in many countries with long-term PBCs [1][21][26][27].

The reasons of cost-saving are summarized in the following according to the evidences reported from various countries [31][75];

- Maintenance costs could be reduced by implementing efficient, effective, and innovative techniques, procedures, and new technologies.
- Private companies could increase their profit by using better machines/equipment, experienced staff and well scheduling.
- Reduction in expenses and overhead costs are achieved by decreasing road agencies' staff working in road maintenance services.

- Well-improved road conditions provide a reduction in the indirect cost of users such as vehicle maintenance, fuel consumption, and the number of traffic accidents.

The road agencies face with very few unpredictable costs because of fact that the risk for cost overruns is transferred to the private sector in PBC

Table 2.4. *Cost saving rates of some countries using PBC [27]*

Country	Cost Savings, %
Norway	About 20-40%
Sweden	About 30%
Finland	About 30-35%;About 50% less cost/km
Holland	About 30-40%
Estonia	20-40%
England	10% minimum
Australia	10-40%
New Zealand	About 20-30%
USA	10-15%
Ontario, Canada	About 10%
Alberta, Canada	About 20%
British Columbia, Canada	Some might be in order of 10%

Innovation

The contractors may prefer to use innovative and efficient methods (caused of freeness at methodology) to decrease own expenses under the condition of meeting performance criteria [65].

The PBC allows to contractor to make innovative decisions like selection of staffs or material requirements and techniques, cover the risk in the case of failure of its management and innovation and its mistakes in predicting destruction of contracted

assets; determining the suitable design, standards, materials, and specifications; and in determining quantities [31].

Staffing

Road authorities could employ fewer numbers of well-qualified in-house staff when compared to MBC [21]. In this way, the staff expenses of road agencies decrease extremely [31]. “After excessive personnel reduction, road agencies should develop a new organizational structure and train their employees for this new contracting method” [79].

User Satisfaction

Performance indicators reflect the need of user satisfaction at the same time. When the contractor meets the performance indicators as requested, the user satisfaction will be ensured via PBC [31].

Traffic and safety

Performance indicators also take into traffic safety in consideration. Continuously monitoring and meeting performance indicators provide traffic safety, which is the fundamental target of road agencies [32].

The other advantages are listed below [9][13][31][75];

- Providing disincentives or incentives system according to the desired targets. Incentives will lead to increase in road quality and penalty system will lead to a decrease in road quality,
- Providing incentives to the private sector for innovation and higher productivity,
- Increasing road user satisfaction with road service and conditions,
- Decreasing variation orders within the contract period,
- Providing transparency for road users, road agencies and contractors in point of road conditions.

- Decreasing the number of fatal / severe accidents on road network during the contract duration.

2.5.4. Challenges and Drawbacks of PBC in Road Maintenance

The most critical issue regarding the PBC is the long-term contract duration (more than three years) [11] and continuity in funding, which should be provided until the end of the contract period [4] [65]. Accordingly, there are some challenges in PBC for the subjects mentioned below [75];

- Awarding proper contractor,
- Legislation or regulations in force,
- Ability and expertise of Road Agencies' staff for specifying performance indicators and inspection of works carried out under PBC,
- Accurate evaluation of the current conditions of assets,
- Determining the penalties, warranties, and guaranty.

In addition, according to [75], there is a lack of pavement condition prediction models to understand and predict pavement conditions, as pavement deterioration follows a stochastic behavior (i.e., unpredictable and without a stable pattern or order). The deteriorations and the improvements due to maintenance and rehabilitation varies based on many factors such as the environment, traffic volume, etc. Thus, the data used for modeling the pavement performance result in higher risk to the contractor.

If the road is in poor condition and initial rehabilitation is needed under PBC in road maintenance, unit price of activates and their quantities of rehabilitation services shall be indicated in agreement for long-term contracts instead of lump sum [65]. Authorities provide a professional team for control and inspect the contractor activities regarding meeting performance criteria [65].

2.6. Road Asset Management

Road Asset Management is a permanent and systematic process of maintaining, upgrading, expanding, and operating all road network and road structures by using engineering disciplines, business practices and financial strategies [66][68]. Especially, cost efficiency is one of the most important advantages of road asset management. For example, by using road asset management, Larvik municipality revealed that they are losing 2,000 Euro per day by not providing road maintenance services to their roads [66].

Road Asset Management could achieve its goals by; [66] [70]

- Setting up a complete inventory for all road network and road structures.
- Providing current condition or status of all road network and road structures.
- Estimating the value of the asset and maintenance costs & needs.
- Providing accurate funding scenarios for developing road assets and for road maintenance services regularly and on time.
- Supporting authorities to decide the most cost-effective strategy for maintaining, developing and financing of all road network and road structures.
- Determining the future demand and needs of traffic and service.
- Prioritizing aims regarding quality, level of service, and performance of roads and objectives related to the desired quality and performance of all road network and road structures

Benefits of road asset management system are summarized below; [19][66][70]

- Providing a consistent level of service.
- Reducing life cycle and road user cost.
- Preserving financial assets with reducing risk.
- Providing inspection and following of performance.
- Ensuring transparency to all stakeholders, and considering their interests.
- Managing road network efficiently for requested objectives, strategies, and priorities.

- Providing transparency in making decisions.
- Decreasing the risk of operational and legal issues.
- Providing prediction of financial needs in the future and consequences for financial decisions.
- Decreasing the risk of operational and legal issues.

According to Dr. Gunter Zietlow [68], the most effective and efficient way to manage road asset management is through PBC in road maintenance, which maintains the road network on a permanently good level of services.

CHAPTER 3

METHODOLOGY

3.1. Research Methodology

In this study, a combination of literature review, interviews, and surveys are performed to understand the current contracting and maintenance practice in Turkey and also the implementation of PBC in developing and developed countries. Accordingly, the overview of the methodology is presented in Figure 3.1. A large-scale literature review has been conducted including academic, organizational and industrial sources. After assessing the characteristics, advantages, disadvantages, challenges, performance indicators, and legislation procedures of PBC, research queries regarding the topic have been shaped. The perspectives of road experts on PBC, and the perspectives of road users on the current status of road maintenance services in Turkey are acquired through interviews and surveys.

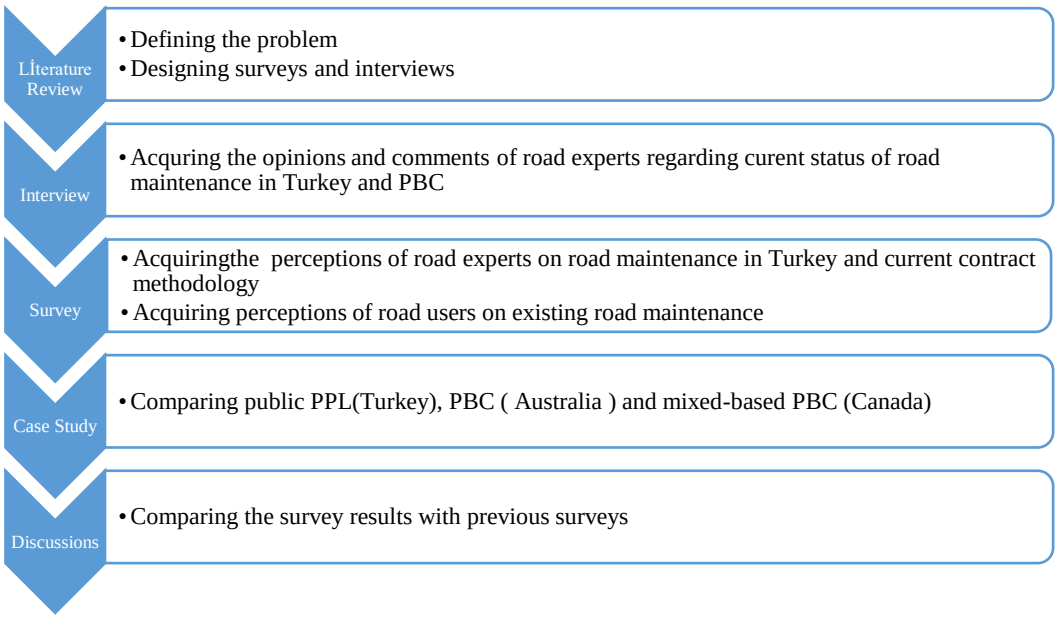


Figure 3.1. Schema of the research methodology

3.2. Research Questions

This research has been conducted to answer two questions.

1. What is the status of road maintenance services in Turkey?
   In order to address this question, road maintenance data regarding the regulations and tenders are collected; interviews and surveys with road users and road experts are performed.
2. What strategy can be used as a roadmap for the use of PBC in Turkey?
   This question also entails the question of what are the enablers and barriers for the use of PBC system for road maintenance services in Turkey. To address this question, the tender documents are compared with two separate PBC contracts and feedbacks from the surveys and interviews are synthesized.

3.3. Data Collection

To understand the structure and implementation of road maintenance services in Turkey, regulations, reports, guidebooks, manuals, and tenders are reviewed and analyzed. Official sources and governmental agencies are utilized to collect the data. The current public procurement law (PPL) for road maintenance in Turkey is examined. The tender data for the road maintenance services capturing the projects tendered after 2015 are examined to understand what kind of road maintenance projects tendered to the private sector and to find out procurement strategy. Although GDH has been tendering road maintenance services to the private sector since 2013, the years from 2015 to 2019 are selected as target periods to eliminate errors that may arise from the new system and to evaluate data that are more current.

According to the literature, the characteristics and lessons learned shared by other countries are identified and synthesized. PPL is compared to two different types of PBC that are successfully implemented in two different countries. One of them is Queensland in Australia, and the other one is British Columbia in Canada.

3.4. Interviews

To understand to structure and process of road maintenance works in Turkey, experts, having extensive experience at road maintenance works and being well-known in road projects, have been chosen for interviews within the scope of this study. Three experts were selected among different stakeholders such as the client (General Directorate of Highway (GDH)), construction firms, and consultancy firms. In this way, objectiveness could be attained while evaluating the answers form these experts. The detailed information about these experts are given in Section 4.4 Evaluation of Interviews.

3.5. Survey

Using the findings from the literature reviews and interviews, surveys were prepared to address the research questions regarding the status of road maintenance services. Two types of surveys were prepared. Survey-1 was designed to understand the perception of the road users, and Survey-2 was designed to understand that of the experts in the road maintenance sector.

The target group for the first survey was road users in Turkey. The road users were reached using social media (e.g., linkedin, facebook) and sending e-mails to companies, institutions and, the public sector.

The target group for Survey-2 was the road experts working in General Directorate of Highways, Ministry of Environment and City Planning, Ministry of Transportation and Infrastructure, Association of Turkish Consulting Engineers and Architects, Association of Turkish Asphalt Contractors, consultancy firms (e.g., Yuksel Proje, Dolsar, Su-yapı) and contractor firms (e.g., Yapı Merkezi, Mapa, Alarko). The survey was sent via e-mail.

3.5.1. Survey-1: Perception of Road User

The aim of this survey was to understand user satisfaction regarding road maintenance services in Turkey in terms of passengers and drivers. Since the focus of this study

was the intercity roads (highway and motorway), the participants were frequently reminded within the survey by using the term “intercity road” in order to differentiate intercity roads (operated by GHD) from the urban roads (operated by municipalities) and avoid possible misunderstanding and misinterpretations.

The sample size of the survey is calculated according to the target population. The existing road network in Turkey is public domain and used by everyone. Thus, the population size of this survey is 80.559.728 [86] registered citizens in Turkey. Equation (1) shows how to calculate the sample size for a large population [107].

$$Sample\ Size = \frac{z^2 x\ p\ (\ 1 - p)}{e^2} \qquad \text{(Eq 1)}$$

where,

e= margin of error (percentage in decimal form)

z= z-score

p = p is the estimated proportion of an attribute that is present in the population.

Margin of error shows how much the survey results can be expected to deflect from the opinions of the target population as a percentage. For this study, the margin of error is assumed as 5%. The confidence level shows how confident one can be in the fact that survey results are representative of the whole population. For this study, confidence level is assumed as 99%. Hence the z-score (*z*) is 2.58. Assuming the maximum variability yields a *p* score of 0.5. According to Eq (1), for large populations, the sample size is 666. In other words, the size of the sample should be larger than 666.

The survey consists of 14 questions, which took approximately 3 minutes of road users. The questions were presented in Appendix_1

3.5.2. Survey-2: Perception of Road Expert

The aim of this survey can be listed as follows;

- to examine existing structure of road maintenance sector
- to determine sections open to improvement
- to evaluate and make a comparison with performance-based contracting in road maintenance by experts' knowledge and experience
- to understand awareness and necessity of Asset Management Systems
- to evaluate effects on traffic management, safety, risks and travel comfort (indirect conditions)

The target population for this survey was selected according to the experience in the road sector. Participants were chosen according to their level of expertise, working area and their role/party in the sector (Contractor, Client, Consultant, etc.). To achieve the aforementioned aims, the selection of participant for this survey was significantly important. If the survey was conducted with more participant, more comprehensive results could be obtained.

The survey consisted of 16 questions, which took approximately 25 minutes. The questions of this survey were presented in Appendix_2.

CHAPTER 4

FINDINGS

In this section, data gathered and assessed according to the scope of this study was presented. Firstly, countries, which use PBC in road maintenance services, were determined and then, were evaluated and compared with respect to Turkey in terms of numerous factors including location, income status, road network and population. Secondly, current road maintenance services in Turkey were analyzed and compared with PBC used in two separate countries and differences and similarities of systems were revealed. Finally, results and comments obtained from the interviews and surveys were discussed in detail.

4.1. PBC for Road Maintenance Experience of Countries

PBC for road maintenance is a type of contract, which is commonly preferred and used across the world. After a detailed literature review, countries, which have been using and developing this contract type, and countries, which have taken initiatives for using this contract type, were determined and presented in Table 4.1. Information about how PBC has been/will be used in 62 countries was determined especially based on the information obtained from World Bank's database. The objective of this examination was to identify the trends in those countries and to determine the reasons why PBC should (or not) be used in Turkey. Accordingly, the characteristics of countries that use this contract type were identified, and a comparison was made with Turkey in these regards.

In the road sector, projects for both the construction of new roads and road maintenance services are carried out with high budgets. Therefore, economic status and GDP/capita of countries, which use PBC, were investigated. Data regarding 62 countries was acquired and presented in Table 4.1 including contract durations,

populations, status of their current roadway network. It was observed that there was no consensus in contract durations, even for some countries this data was not available. For the others, durations were generally presented in a range of values (e.g., 3-5 years). Sixteen countries, which have high-income status, have been using this contract type in road maintenance services for the last 25 years. The number of countries, which have an upper middle-income status like Turkey, is 18. Some of these countries have been using PBC for more than 20 years, while others have just started using this contract type. Since PBC's are long-term contracts, they require long-term financing. Despite this, 28 countries with lower-middle-income and lower-income status, for which the possibility of having financing problems is high, have preferred PBC since the beginning of the 2000s. The fact that World Bank supports this contract type and provides possibilities for grant projects, will decrease funding problems for these countries, which will prefer this contract type, at least in the start-up phase.

Table 4.1. *Countries using PBC in road maintenance*

Countries	**Status**	**Continent**	**GDP/capita 2018 (USD)**	**Contract Duration**	**Year (first applied)**	**Project Length under PBC**	**Total Highway Network**	**Population (July 2018 est.)**
Australia	High income	Ocenia	57,305	5 -10 years	1990	100 km first project	total: 873,573 km (2015) urban: 145,928 km, non-urban: 727,645 km	23,470,145
Brazil	Upper middle income	South America	8,920	5 years	1990s	375 km	total: 2,000,000 km (2018) paved: 246,000 km, unpaved: 1.754 million km	208,846,892
Canada British Columbia	High income	North America	46,210	10 years	1988	-	total: 1,042,300 km (2011) paved: 415,600 km, unpaved: 626,700 km	35,881,659
Estonia	High income	Europe	22,927	5-7 years	1995	10.288 km	total: 58,412 km (2011) paved: 10,427 km, unpaved: 47,985 km	1,244,288
Finland	High income	Europe	49,648	3-7 years	1998	-	total: 454,000 km (2012) highways: 78,000 km urban: 26,000 km	5,537,364

Countries	Status	Continent	GDP/capita 2018 (USD)	Contract Duration	Year (first applied)	Project Length under PBC	Total Highway Network	Population (July 2018 est.)
Netherlands	High income	Europe	53,024	1-3 years	-	-	total: 139,124 km (includes 3,654 km of expressways) (2016)	17,151,228
New Zealand	High income	Ocenia	41,966	10 years	1998	405 km first project	total: 94,000 km (2017) paved: 61,600 km, unpaved: 32,400 km	4,545,627
United States	High income	North America	62,641	5-10 years	1990	400 km first project	total: 6,586,610 km (2012) paved: 4,304,715 km unpaved: 2,281,895 km	329,256,465
Chile	High income	South America	15,923	-	1990s	-	total: 77,801 km (2016)	17,925,262
France	High income	Europe	41,463	-	-	-	total: 1,053,215 km (2011) urban: 654,201 km, non-urban: 399,014 km	67,364,357
Japan	High income	Asia	39,286	-	1998	-	total: 1,218,772 km (2015) paved: 992,835 km, unpaved: 225,937 km	126,168,156
Sweden	High income	Europe	54,111	3-6 years	performed	-	total: 573,134 km, paved: 140,100 km unpaved: 433,034 km	10,040,995
Norway	High income	Europe	81,807	4 years	performed	-	total: 94,902 km (includes 455 km of expressways) (2018)	5,372,191
Peru	Upper middle income	South America	6,947	-	1990s	-	total: 140,672 km (2012)	31,331,228
Uruguay	High income	South America	17,277	4 years	1996	138 km first project	total: 77,732 km (2010) paved: 7,743 km, unpaved: 69,989 km	3,369,299
Denmark	High income	Europe	60,726	-	1990s	-	total: 74,558 km (2017) paved: 74,558 km (includes 1,205 km of expressways)	5,809,502
Malaysia	Upper middle income	Asia	11,238	15 years	2000	3,075km; 4,000km; & 7,498km	total: 144,403 km (2010) paved: 116,169 km, unpaved: 28,234 km	31,809,660

Countries	Status	Continent	GDP/capita 2018 (USD)	Contract Duration	Year (first applied)	Project Length under PBC	Total Highway Network	Population (July 2018 est.)
Argentina	Upper middle income	South America	11,652	5 years	1996	100km - 300 km first projects	total: 281,290 km (2017) paved: 117,616 km, unpaved: 163,674 km	44,694,198
Indonesia	Lower middle income	Asia	3,893	4 -7 years	2011	7.68 km & 18.5 km pilot projects	total: 496,607 km (2011) paved: 283,102 km, unpaved: 213,505 km	262,787,403
Serbia	Upper middle income	Europe	7,233	2 years	2004	1.200 km under PBC	total: 44,248 km (2016) paved: 28,000 km, unpaved: 16,248 km	7,078,110
Afghanistan	Low income	Asia	520	3 years	2006	142 km pilot project	total: 34,903 km (2017) paved: 17,903 km, unpaved: 17,000 km	34,940,837
Tajikistan	Low income	Asia	826	3 years	2013	73 km & 76 km	total: 30,000 km (2018)	8,604,882
Georgia	Upper middle income	Asia*	4,344	5 years	2015	117 km first project	total: 20,295 km (2018)	4,926,087
Bangladesh	Lower middle income	Asia	1,698	2 years	2005	Pilot Project	total: 21,269 km (2010) paved: 2,021 km, unpaved: 19,248 km	159,453,001
China	Upper middle income	Asia	9,770	2 years	2008	Pilot Project	total: 4,577,300 km (2015) paved: 4,046,300 km unpaved: 531,000 km	1,384,688,986
United Kingdom	High income	Europe	42,491	5+2 years	1994	480 km for 25 years under PBC	total: 394,428 km (2009) paved: 394,428 km (includes 3,519 km of expressways)	65,105,246
Ukraine	Lower middle income	Europe	3,095	7 years	2014	-	total: 169,694 km (2012) paved: 166,095 km, unpaved: 3,599 km	43,952,299
Colombia	Upper middle income	South America	6,651	-	Performed	-	total: 206,500 km (2016)	48,168,996
Paraguay	Upper middle income	South America	5,871	-	Performed	-	total: 74,676 km (2017) paved: 6,167 km, unpaved: 68,509 km	7,025,763

Countries	Status	Continent	GDP/capita 2018 (USD)	Contract Duration	Year (first applied)	Project Length under PBC	Total Highway Network	Population (July 2018 est.)
India	Lower middle income	Asia	2,015	10 years	2012	-	total: 4,699,024 km (2015) note: includes 96,214 km paved rOAD	1,296,834,042
Philippines	Lower middle income	Asia	3,102	3 years	2003	112 km, 109 km, and 33 km roads	total: 216,387 km (2014) paved: 61,093 km, unpaved: 155,294 km	105,893,381
Chad	Low income	Africa	730	4-5 years	2001	440 km unpaved	total: 40,000km (2018)	15,833,116
South Africa	Upper middle income	Africa	6,374	-	Performed	-	total: 750,000 km (2016) paved: 158,124 km, unpaved: 591,876 km	55,380,210
Egypt	Lower middle income	Africa	2,549	-	Performed	-	total: 65,050 km (2017) paved: 48,000 km, unpaved: 17,050 km	99,413,317
Liberia	Low income	Africa	674	-	Performed	-	total: 10,600km (2018) paved: 657 km, unpaved: 9,943 km	4,809,768
Nigeria	Lower middle income	Africa	2,028	-	Performed	-	total: 195,000 km (2017) paved: 60,000 km, unpaved: 135,000 km	203,452,505
Poland	High income	Europe	15,424	-	Performed	-	total: 420,000 km (2016) paved: 291,000 km, unpaved: 129,000 km	38,420,687
Tanzania	Low income	Africa	1,050	-	Performed	-	total: 86,472 km (2010) paved: 7,092 km, unpaved: 79,380 km	55,451,343
Zambia	Lower middle income	Africa	1,539	5 years	2009	385 km	total: 67,671 km (2018) paved: 14,888 km, unpaved: 52,783 km	16,445,079
Pakistan	Lower middle income	Asia	1,472	-	2018	1,268 km	total: 263,942 km (2014) paved: 185,063 km, unpaved: 78,879 km	207,862,518
Mongolia	Lower middle income	Asia	4,103	-	Upcoming	303 km	total: 49,249 km (2013) paved: 4,800 km, unpaved: 44,449 km	3,103,428

Countries	Status	Continent	GDP/capita 2018 (USD)	Contract Duration	Year (first applied)	Project Length under PBC	Total Highway Network	Population (July 2018 est.)
Azerbaijan	Upper middle income	Asia*	4,721	-	2018	982 km	total: 24,981 km (2013)	10,046,516
Kyrgyz Republic	Lower middle income	Asia	1,281	-	Upcoming	101 km pilot project	total: 34,000 km (2018)	5,849,296
Albania	Upper middle income	Europe	5,253	3 years	2009	250 km pilot project	total: 3,945 km (2018)	3,057,220
Morocco	Lower middle income	Africa	3,237	-	In progress for outsourcing	-	total: 57,300 km (2018)	34,314,130
Moldova	Lower middle income	Europe	3,189	-	In progress	-	total: 9,352 km (2012) paved: 8,835 km, unpaved: 517 km	3,437,720
Romania	Upper middle income	Europe	12,301	-	In progress for outsourcing	-	total: 84,185 km (2012) paved: 49,873 km, unpaved: 34,312 km	21,457,116
Kazakhstan	Upper middle income	Asia	9,331	-	In progress	-	total: 95,409 km (2017) paved: 81,814 km, unpaved: 13,595 km	18,744,548
Cabo Verde	Lower middle income	Africa	3,654	-	Performed	-	total: 1,350 km (2013) paved: 932 km unpaved: 418 km	568,373
Madagascar	Low income	Africa	460	-	Performed	-	total: 31,640 km (2018)	25,683,610
Burkina Faso	Low income	Africa	731	-	Performed	-	total: 15,304 km (2014) paved: 3,642 km, unpaved: 11,662 km	19,742,715
Cambodia	Lower middle income	Asia	1,512	-	Performed	-	total: 47,263 km (2013) paved: 12,239 km, unpaved: 35,024 km	16,449,519
Thailand	Upper middle income	Asia	7,273	-	Performed	-	total: 180,053 km (includes 450 km of expressways) (2006)	68,615,858
Vietnam	Lower middle income	Asia	2,563	-	2012	273 km first project	total: 195,468 km (2013) paved: 148,338 km, unpaved: 47,130 km	97,040,334

Countries	Status	Continent	GDP/capita 2018 (USD)	Contract Duration	Year (first applied)	Project Length under PBC	Total Highway Network	Population (July 2018 est.)
Yemen	Low income	Asia	944	-	2009	365 km	total: 71,300 km (2005) paved: 6,200 km, unpaved: 65,100 km	28,667,230
Guatemala	Upper middle income	North America	4,549	-	Performed	-	total: 17,621 km (2016) paved: 7,489 km, unpaved: 10,132 km	16,581,273
Honduras	Lower middle income	North America	2,482	-	Performed	-	total: 14,742 km (2012) paved: 3,367 km, unpaved: 11,375 km	9,182,766
Nicaragua	Lower middle income	North America	2,028	-	Performed	-	total: 23,897 km (2014) paved: 3,346 km, unpaved: 20,551 km	6,085,213
Uganda	Low income	Africa	643	-	Performed	-	total: 20,544 km (2017) paved: 4,257 km, unpaved: 16,287 km	40,853,749
Nepal	Low income	Asia	1,025	2-5 years	2003	114 km	total: 27,990 km (2016) paved: 11,890 km, unpaved: 16,100 km	29,717,587
Ecuador	Upper middle income	South America	6,344	-	Performed	-	total: 43,216 km (2015) paved: 8,161 km, unpaved: 35,055 km	16,498,502
Mexico	Upper middle income	North America	9,698	-	Performed	-	total: 398,148 km (2017) paved: 174,911 km, unpaved: 223,237 km	125,959,205
Turkey	Upper middle income	Asia*	9,311	-	-	-	total: 67,333 km (2018) paved: 24,082 km, unpaved: 43,251 km	81,257,239

References: [1], [2], [3], [4], [7], [8], [9], [10], [11], [12], [13], [16], [18], [20], [21], [23] [24], [25], [26], [28], [29], [30], [33], [34], [37], [39], [41], [47], [48], [55], [57], [58], [67], [73], [76], [77], [102], [103], [104], [105], [106]

*Azerbaijan, Georgia and Turkey are classified as Asian countries by the UN. However, they are usually considered as European countries, because their territories are either partly in Europe or near Europe.

Prior to a full-scale commitment to PBC, a relatively small-scale pilot project was planned and implemented by several countries. While it varied from country to

country, 3 years appeared to be a commonly preferred contract period for pilot projects, which is incidentally the period used for current road maintenance services in Turkey. Pilot project or first project length also varies significantly from country to country. As far as data from 62 countries were evaluated, it varied between 100 km to 300 km. However, it was suggested that GDH should decide in this regard by taking into account the strategic terms and issues such as financing. A clear categorization or trend could be drawn when 62 countries were compared in terms of total road network and population. This means that the use of PBC was either independent of or did not solely depend on the total network and population.

4.2. Road Maintenance in Turkey

As the governmental institution responsible for road maintenance services in Turkey, GDH both carry out these services through its own resources, and awards contracts to the private sector for the procurement of such services. Road maintenance services were investigated based on the data obtained from the activity reports and statistics, which are published by GDH on an annual basis [82]. The services carried out within the scope of the Public-Private Partnership (PPP) were not included. For the 2015-2018 period, all the expenses of GDH incurred by GDH by the end of the year, investment costs, and road maintenance expenses are given in Figure 4.1. Detailed state highways road maintenance expenses for the year 2018 are not specified in the figure since this data has not been published officially. Distribution over the years can be expected to be approximately 5 billion Turkish Lira (TRY). Based on this data, expenses allocated to road maintenance services are less than 20% of total expenses. In addition to this, 82% of total expenses were allocated to new investments between 2016-2018. Those investments in the highways are an indicator of the fact that road maintenance expenses will increase further in future.

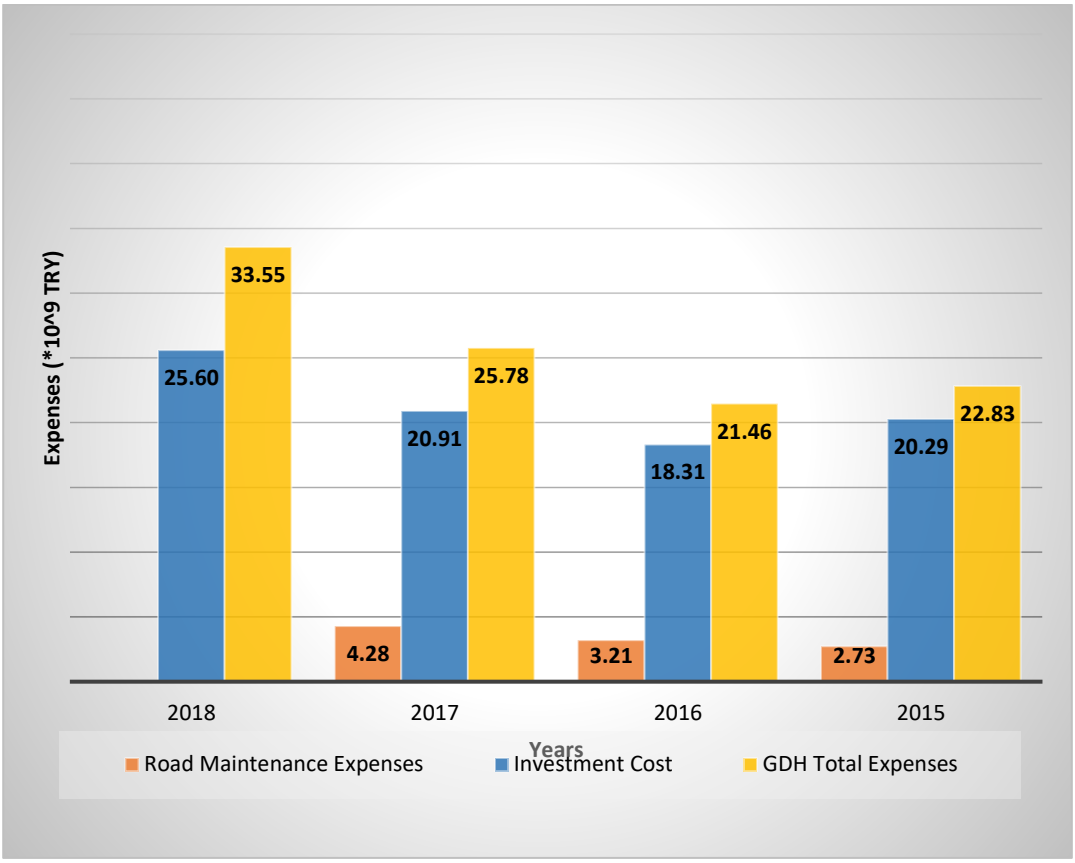


Figure 4.1. Expenses of GDH [82]

4.2.1. In – House

In the literature review section, road maintenance provided by GDH as in-house services is explained in detail. GDH carries out road maintenance with all the staff, machinery, equipment, material. In other words, GDH has procured through its own means, and in all the regions working under the authority of GDH. Since the scope and implementation of road maintenance for State Highway and Motorway services are different, their expenses for the 2015-2018 period were addressed separately and given in Table 4.2.

Table 4.2. *GDH expenses of road maintenance for motorway & state highway [82]*

Years	Motorway								
	In-house						Projects tendered (TRY)	Total (TRY)	In-house rate over total expenses
	KM	# of Staff	Expense of Staff (TRY)	Expense of Material (TRY)	General Expenses* (TRY)	Expenses of sub-divisions (TRY)			
2018	2,608	2,429	206,562,193	35,552,631	56,259,303	26,041,212	356,692,876	**681,108,215**	**47.63 %**
2017	2,604	2,420	186,468,317	35,281,523	42,621,663	29,541,601	312,738,330	**606,651,434**	**48.45 %**
2016	2,600	2,180	142,337,442	27,234,592	42,201,488	31,284,909	222,061,990	**465,120,421**	**52.26 %**
2015	2,598	1,474	96,544,452	27,198,436	42,593,095	28,046,967	213,579,361	**407,962,311**	**47.65 %**
Years	State Highway								
	In-house						Projects tendered (TRY)	Total (TRY)	In-house rate over total expenses
	KM	# of Staff	Expense of Staff (TRY)	Expense of Material (TRY)	General Expenses* (TRY)	Expenses of sub-divisions (TRY)			
2018	-	-	-	-	-	-	-	-	-
2017	62,005	9,571	819,366,708	382,917,759	32,267,049	592,104,150	1,846,661,329	**3,673,316,995**	**49.73 %**
2016	61,858	9,341	683,750,355	302,047,014	28,279,545	437,303,571	1,295,554,246	**2,746,934,731**	**52.84 %**
2015	62,192	5,971	465,273,041	287,861,466	24,194,773	346,066,694	1,200,056,405	**2,323,452,379**	**48.35 %**
***General expenses: Phone, electricity, water, natural gas, GSM, internet, lighting system and etc.**									

According to data from the year 2018, GDH is responsible for the maintenance services of a motorway network with a length of 2608 km. Since motorways are subject to use charges (toll rates), road maintenance services must be carried out in a very efficient manner and at regular intervals so that users can be encouraged to use them. A toll station income of approximately 2.2 billion TRY was obtained in 2018 [82]. If road quality deteriorates, drivers will not prefer motorways, and this will cause a significant revenue loss.

Since 2015, 50% of motorway road maintenance on average are provided by GDH as in-house services. According to data from 2018, road maintenance expenses are determined as 261,161 TRY per KM. Although total motorway length increased by 10 km between the years 2015-2018, a significant increase of 273 million TRY was observed in maintenance costs. The actual reason of this increase is 955 motorway personnel (See Table 4.2), who were employed by GDH. The increase in material costs and general expenses are reasonable and can be attributed to economic reasons and changes in currency.

Similar to motorways, since 2015, 50% of state highway in road maintenance on average are provided by GDH as in-house services. Evaluations were made based on 2017 data since data for the year 2018 has not been published on GDH's official website. It was determined that road maintenance was 59,242 TRY per KM in 2017. This value, which is quite low when compared to motorway, is due to the difference in the construction technique and quality of highways.

There were increases and decreases in the total state highway length between the years 2015-2017. It was understood that some of the road sections that were included in the maintenance scope of state highway back in 2015 were excluded from this scope in the following years. Despite this, an increase of 1.35 billion TRY was determined between the years 2015-2017. Similar to motorways, the actual reason for this increase was 3600 personnel employed by GDH for state highway services over the last three years. Employment of such a high number of personnel within such a short time caused a significant expense item for the institution. Although there was no increase in the workload, personnel recruitment of this number was for employment purposes. Similar to motorways, an increase in material costs and general expenses are reasonable and can be attributed to economic reasons and changes in currency.

The number of machinery-equipment owned by GDH between the years 2015-2018, and their replacement values are given in Table 4.3. Machinery is a significant expense item for GDH considering the fact that the machine park is growing every year, which is also increasing the maintenance-repair costs of machinery. The majority of the machines are manufactured abroad, and accordingly, currency fluctuations will cause more losses. If PBC system is preferred for road maintenance services, selling of machinery to the contractors is not a good option for GDH. Because, when the machinery park is sold off, 67% loss of value will occur according to market values presented in Table 4.3.

Table 4.3. *GDH machinery cost [82]*

Cost items for Machinery	2018	2017	2016	2015
# of Machinery	9,637	9,180	8,741	7,864
Replacement Value	USD 496,030,341	USD 479,239,715	USD 457,503,053	USD 166,290,858
Market Value	USD 216,887,201	USD 203,912,156	-	-

4.2.2. Outsourcing and Assessment of Road Maintenance Tenders in Turkey between 2015-2019

General Directorate of Highways awards a contract to private sector for road maintenance services when its equipment and/or personnel are not sufficient for such services. When contracts are awarded to the private sector for these services, the tender phase, and the contractual processes are of great significance for executing the works in a proper manner. For this reason, the projects, for which contracts have been awarded by GDH under the name of maintenance repair services in the last 5 years, were investigated in detail. All tender documents and information in Table 4.4 are open to public access and available on Electronic Public Procurement Platform (EKAP) [83]. All tender-related information was obtained from this system.

Table 4.4. *Summary of road maintenance tenders in Turkey between 2015 and 2019 [83]*

Years	2015	2016	2017	2018	2019
1-Number of the valid road maintenance tender	31	7	13	38	5
2-Number of the canceled road maintenance tender and re-tendered	23	-	2	7	5
3-Project type - Bidding method	Construction - Open Tender	Construction - Open Tender	Construction - Open Tender	Construction - Open Tender	Construction - Open Tender
4-Road maintenance in total	32,716 km	7,240 km	9,451 km	41,199 km	6.619 km
5-Snow and ice removal in total	20,484 km	6,032 km	6,640 km	42,139 km	6.538 km
6-Contract duration in average	531 days	365 days	297 days	1095 days	678 days

Years	2015	2016	2017	2018	2019
7-Commencement date after contract signing in average	10 days	10 days	11 days	13 days	8 days
8-Price of tender documents in total	24,850 TRY	5,920 TRY	8,000 TRY	70,300 TRY	8.260 TRY
9-Duration of tendering stage on average	23 days	18 days	24 days	29 days	23 days
10-Duration of evaluation stage in average	57 days	93 days	47 days	72 days	70 days
11-Total evaluation period for canceled tenders on average	30 days	-	17 days	19 days	36 days
12-Number of concerned bidders officially in total	762	277	319	1909	200
13-Number of submitted tenders in total	329	141	181	495	72
14-Number of valid tenders in total	272	101	117	251	38

Routine road maintenance and snow & ice removal services, for which contracts were awarded between the years 2015-2019, are investigated under 14 identified criteria in Table 4.4. Summary tables for each tender awarded during this period are given in Appendix_3. Emergency maintenance, superstructure based minor repair and maintenance works, and tenders of low budget within the scope of service procurement were excluded from this scope. Each following numbered clause refers to number of rows in Table 4.4.

1) Over the course of years, a regularity is not observed in the number of projects, for which contracts are awarded. The number of tenders awarded in the years 2015 and 2018 is significantly higher compared to the other years. These numbers reveal that tender processes are initiated according to periodical needs, and there is not a long-term investment system. One other possibility is that availability of GDH's own machinery, equipment and personnel vary over the years.
2) The number of projects, which were cancelled and for which tender process was re-initiated due to primary reasons explained below, is explained in the second

row. In 2015, 74% of the tenders awarded were cancelled and the tender process was re-initiated. In 2016, no tender was canceled, and the rate of tenders canceled in 2017 and 2018 is quite low compared to 2015. However, until the third quarter of 2019, all tender processes were canceled and re-initiated. This inevitably causes a significant loss of time, and deterioration increment of roads because of lack of maintenance. (Projects, which were cancelled, and for which tender were not re-initiated were excluded.) The primary reasons for the cancellation of the tender process, which are collected from EKAP [83], are as follows:

- Realization of fault in the tender notice and having no possibility to release a revised tender notice within a limited time
- Realization of missing documents in tender documentation other than tender notice, technical and administrative specification.
- The absence of a competitive environment and failure to establish the principle of using public resources in an efficient manner
- The failure of contractors in the 1st and 2nd place in the list of candidates to fulfill their tender obligations after tender results are announced.
- Realization of missing information in tender notice, technical and administrative specifications.

3) Tender notices for routine road maintenance and snow & ice removal services are issued as open tender under construction section. As per the applicable laws, the contracts for maintenance works with the lowest budget are awarded within the scope of service procurement.
4) For each road maintenance project tendered between the years 2015-2019, the number of kms within the scope of the project were determined from the site list, which shows the total length of project with locations, in tender documents. Detailed tables are given in Appendix_3. Maintenance service was performed the most in the years 2015 and 2018. It can be suggested that the increase in investment is the result of increasing need and the effect of general elections in

Turkey. The road sector has always been an important means of election investments across the world.

5) In Turkey, snow & ice removal services are also provided by GDH, or included in the scope of road maintenance tenders. As seen in the fifth row of Table 4.4, snow & ice removal service is included in the scope of the projects almost for all routes. The total km difference in the 4th row is because of the fact that this service was excluded from the scope since it was not needed in some regions due to climatic conditions.
6) In 2015, tender periods vary, namely, 2 months, 3 months, 4 months, 1 year and 3 years. Therefore, it is understood that GDH is conducting studies to award tenders as long-term contracts. In 2016, the contractual period of all the projects, for which tender process is initiated; is 1 year. The majority of projects tendered in 2017 has 1-year contract period. Starting from 2018, all projects were awarded a contract period of 3 years. In 2019, 3 projects were awarded a contractual period of 3 years. This can mean that, from now on, long term contracts are preferred by the GDH for road maintenance services.
7) The works are commenced shortly after the signing of the contract; therefore, the contractor starts providing the service as soon as possible before the road is deteriorated further. This clause is of great significance. The possibility of a significant increase in maintenance costs is high if the contractor receives notice to commence works later than it should be.
8) As per the public procurement law, even if tender documents are open to public access, they must be officially purchased on EKAP in order to submit a tender. Tender documents vary according to project scope, and as of the year 2019, the price of tender documents for projects with 3 years contractual period is 2400 TRY. The high number of invalid bids between the years 2015-2016, is an unnecessary cost item for contractors. In fact, the cost of tender documents is not repaid to the tenderer even if the tender is cancelled before the submission date.
9) The average duration of the tender stage between the years 2015-2019 is approximately 1 month. Although it is a reasonable period for local contractors

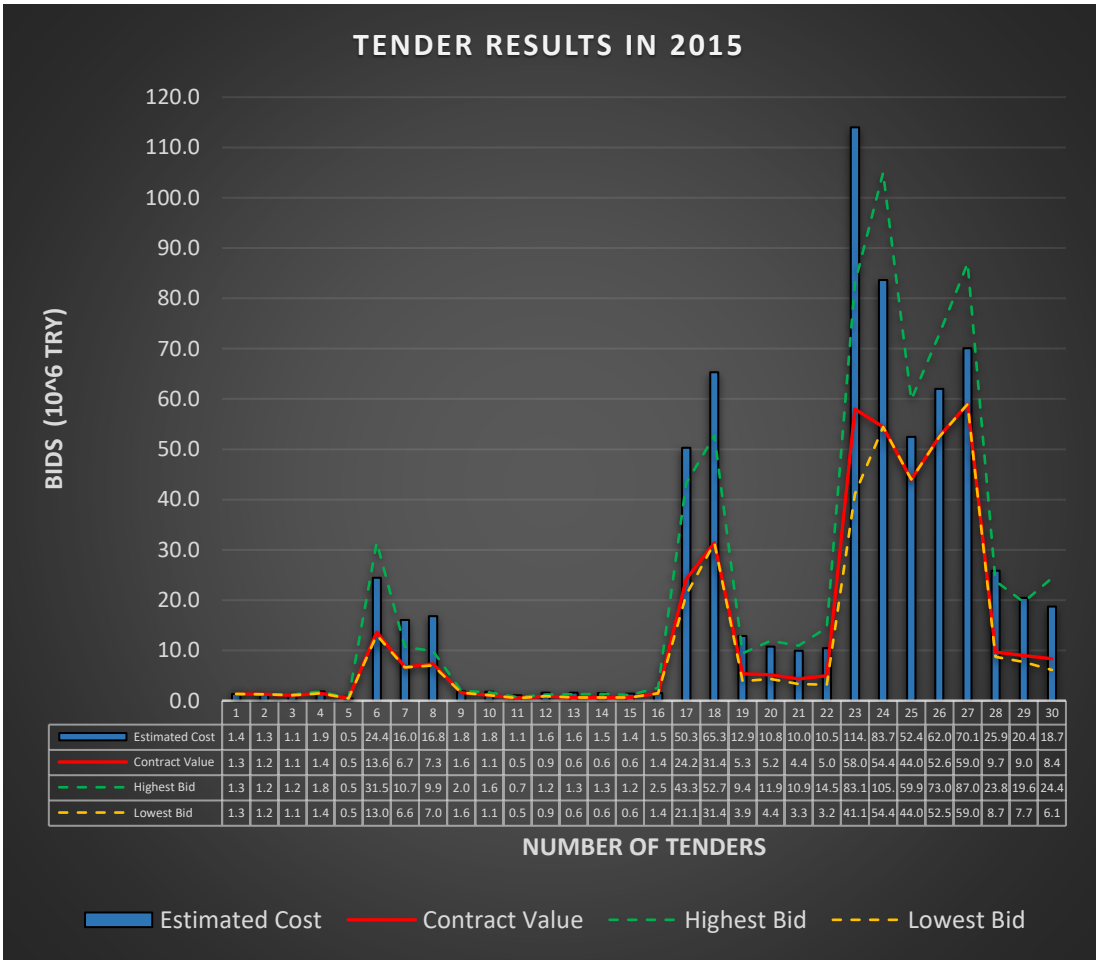
and those who are highly familiar with the region, it is a limited period for foreign contractors and those who are not familiar with the region. High number of invalid bids can be an indicator of this situation.

10) The bid evaluation period of tenders is more than 2 months. Due to the nature of method-based contract, all the technical requirements including the list of machinery and equipment, personnel criteria and methodology are known in the bidding phase. In addition, considering EKAP system, which is managed successfully in Turkey, evaluation periods should be shorter in such projects, for which time is an essential factor.
11) The periods specified in the eleventh row, indicate the process from the announcement date of tender until the date on which its cancellation is declared. Especially in the years 2015 and 2019, announcement periods of tenders, which were cancelled, is about 1 month. Rectification of the problems, which are the cause of cancellation, re-commencing the tender procedures by the contracting authority and conclusion of the tender, will be quite time-consuming for both GDH and Contractors. Since long-term road maintenance planning is not made, the condition of the road will deteriorate further as a result of this delay that continues for months.
12) In the years 2015, 2016 and 2017, about 50% of Contractors, who downloaded tender documents from EKAP, participated in the tender. This rate decreased down to 30% in 2018 and 2019. It is understood that several companies were interested in these tenders, but contractors decided not to make a bid after examining tender documents due to administrative, technical and financial reasons.
13) The number of companies, which purchased tender documents from EKAP and submitted the tender, is indicated in the thirteenth row. Considering the number of tendered projects, an increase is observed in the number of tenders, for which bids are submitted, over the course of the years. It is also observed that, within these years, contractors showed more interest in road maintenance tenders and a competitive environment was created.

14) 80% of the tenders, for which bids were submitted, were valid in 2015. This number constantly decreased until recently, and in 2019, only about 50% of the bids submitted were considered valid. This will cause a significant loss of time and money for the contractor. An invalid bid causes many negative consequences including the costs of the experts assigned by the contractor for the preparation of this tender, purchase price of tender documents, contractor's losing the opportunity to participate in other possible tenders and loss of time. There are also negative consequences for the GDH such as tender committee extending the tender processes by evaluating invalid bids, awarding the tender to high bidders since the bids of low bidding companies were deemed invalid.

To sum up, when road services for which contracts were awarded to the private sector between the years 2015-2019 were investigated, no regular patterns were observed in the number of tendered projects and their term scope. This suggests that the employer does not have a prospective road maintenance management plan, and tender processes are managed according to the funding source. Road maintenance services, which are carried out in a disorderly manner, cause a significant increase in project costs. For this reason, just like it is done in PBC contract type, road maintenance investments can be made by establishing a road management system. Over the course of the last five years, approximately 40% of the tenders were cancelled and re-tendered. This will cause delays in the provision of road maintenance services, and an increase in the cost of maintenance and deterioration of the roads. In addition, the tender processes become longer and increase the workload of employer's own personnel. Certain modifications must be made for tenders, which are cancelled for contractual reasons. Since tender document costs of cancelled tenders are not returned to the bidders, the tender phase expenses of bidders increase. Other than exceptional cases, tender preparation and qualification processes are at a reasonable level. The fact that GDH has increased the contract durations of road maintenance services over the course of the years, just like it is the case with PBC contracts, suggests that long-term contracts are adopted gradually.

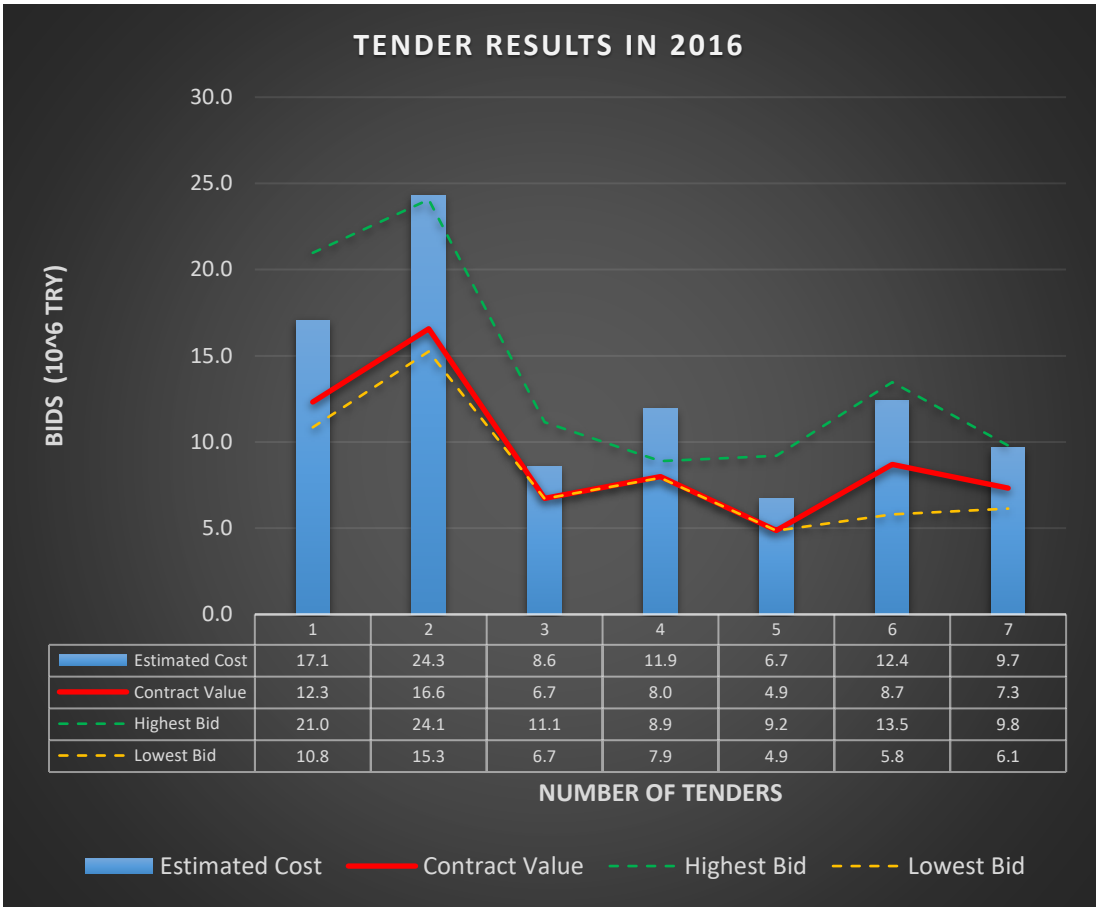
In 2015, estimated cost of 30 projects tendered for road maintenance projects was approximately 719,981,408 TRY, and total signed contract price was 413,890,265 TRY (a project was excluded from this evaluation since its tender documents were not published on EKAP). Considering the total of all contract value of projects, it was observed that there was a reduction of 43% from the estimated cost. This significant reduction raised doubts about the quality of the services to be provided by the contractor, and increased the possibility that the contractor provided services with a quite low-profit-margin, or even to the contractor's disadvantage. Therefore, such conditions increased the possible risks to be undertaken by GDH. As indicated in Figure 4.2, the estimated costs of 30 tenders and the highest bids submitted showed parallelism. In 2015, as per the procurement regulation, only companies submitting financial bids were evaluated and the contractor, which submitted the lowest price was awarded the contract. Other than exceptional cases, only local companies were permitted to submit bids for projects, contract period of which is less than 3 years, and the estimated cost of which is less than 10,000,000 TRY. The contract type is generally selected as lump sum if snow & ice removal services are not included in the scope of the projects. The mix type contracts, which is a combination of unit price and lump sum, were used in other tenders that year.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Estimated Cost	1.4	1.3	1.1	1.9	0.5	24.4	16.0	16.8	1.8	1.8	1.1	1.6	1.6	1.5	1.4	1.5	50.3	65.3	12.9	10.8	10.0	10.5	114.	83.7	52.4	62.0	70.1	25.9	20.4	18.7
Contract Value	1.3	1.2	1.1	1.4	0.5	13.6	6.7	7.3	1.6	1.1	0.5	0.9	0.6	0.6	0.6	1.4	24.2	31.4	5.3	5.2	4.4	5.0	58.0	54.4	44.0	52.6	59.0	9.7	9.0	8.4
Highest Bid	1.3	1.2	1.2	1.8	0.5	31.5	10.7	9.9	2.0	1.6	0.7	1.2	1.3	1.3	1.2	2.5	43.3	52.7	9.4	11.9	10.9	14.5	83.1	105.	59.9	73.0	87.0	23.8	19.6	24.4
Lowest Bid	1.3	1.2	1.1	1.4	0.5	13.0	6.6	7.0	1.6	1.1	0.5	0.9	0.6	0.6	0.6	1.4	21.1	31.4	3.9	4.4	3.3	3.2	41.1	54.4	44.0	52.5	59.0	8.7	7.7	6.1

Figure 4.2. Financial proposal of road maintenance tenders in Turkey in 2015 [83]

In 2016, the estimated cost of seven projects tendered for road maintenance projects was approximately 90,706,700 TRY, and the total signed contract price was 64,527,758 TRY. Considering the total contract value of all projects, a reduction of 29% from the estimated cost was observed. A reasonable reduction rate was observed compared to the year 2015. As seen in Figure 4.3, out of seven, only four tenders received a bid (the highest bid) that was significantly higher than the estimated cost. In 2016, as per the procurement regulations, only companies submitting financial bids were evaluated and the contractor, which submitted the lowest price, was awarded the contract. Snow & ice removal services were included to all projects, and mix type contracts were used.

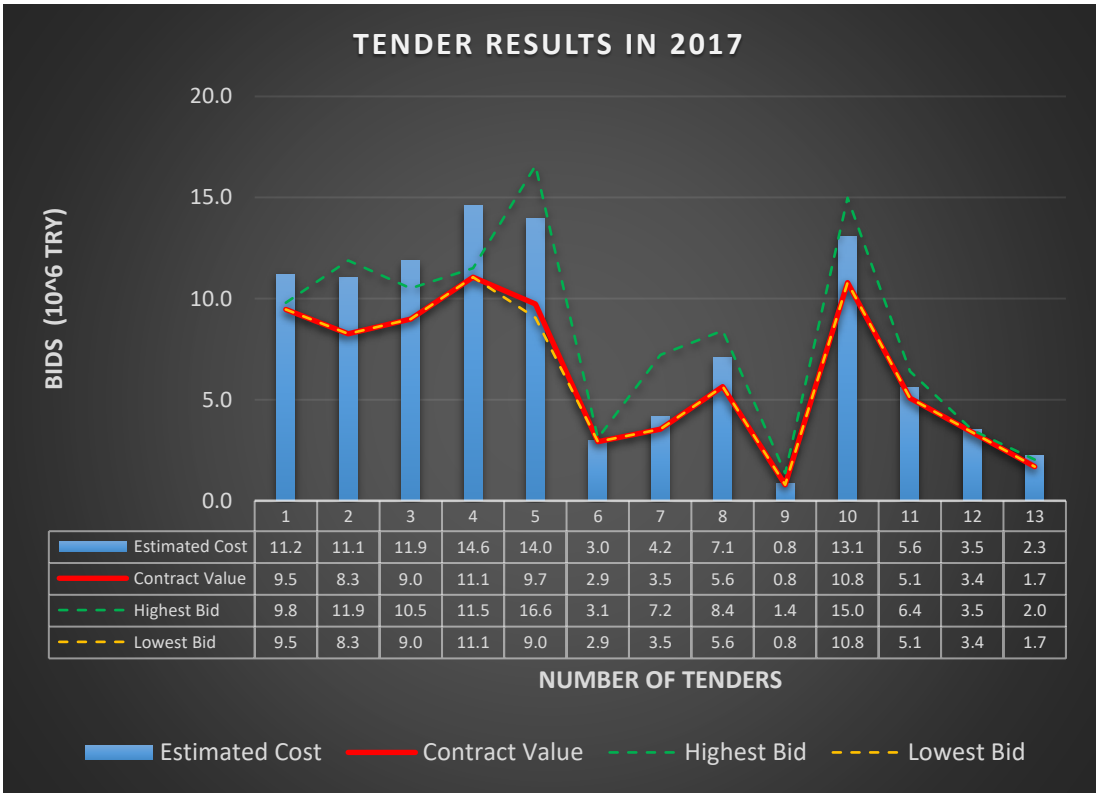


	1	2	3	4	5	6	7
Estimated Cost	17.1	24.3	8.6	11.9	6.7	12.4	9.7
Contract Value	12.3	16.6	6.7	8.0	4.9	8.7	7.3
Highest Bid	21.0	24.1	11.1	8.9	9.2	13.5	9.8
Lowest Bid	10.8	15.3	6.7	7.9	4.9	5.8	6.1

Figure 4.3. Financial proposal of road maintenance tenders in Turkey in 2016 [83]

In 2017, the estimated cost of 13 projects tendered for road maintenance projects was approximately 102,142,859 TRY, and the total signed contract price was 81,355,078 TRY. Considering the total contract value of all projects, a reduction of 20% from the estimated cost was observed. A reduction rate was acceptable compared to the years 2015 and 2016. As seen in Figure 4.4, amounts of estimated costs, contract prices, and the highest bids were observed to be closer in thirteen tenders. It was considered that, in 2017, bidders were more specialized in technical and administrative contracts or gained experience. As a distinct from the years 2015 and 2016, for the first time in 2017, a condition of 50% quality & technical value and 50% price was included in tender evaluation. By this means, it is aimed to improve the quality of services. Low level of quality in the previous years could also be one of the reasons of this change. Road maintenance tenders in 2017 were opened only for local firms. For four tenders,

lump-sum contract type was chosen since snow & ice removal services were not included. Mix type contract was used in other tenders. Snow & ice removal services may be excluded from the scope due to regional reasons and since GDH is capable of carrying out such services by its own sources.

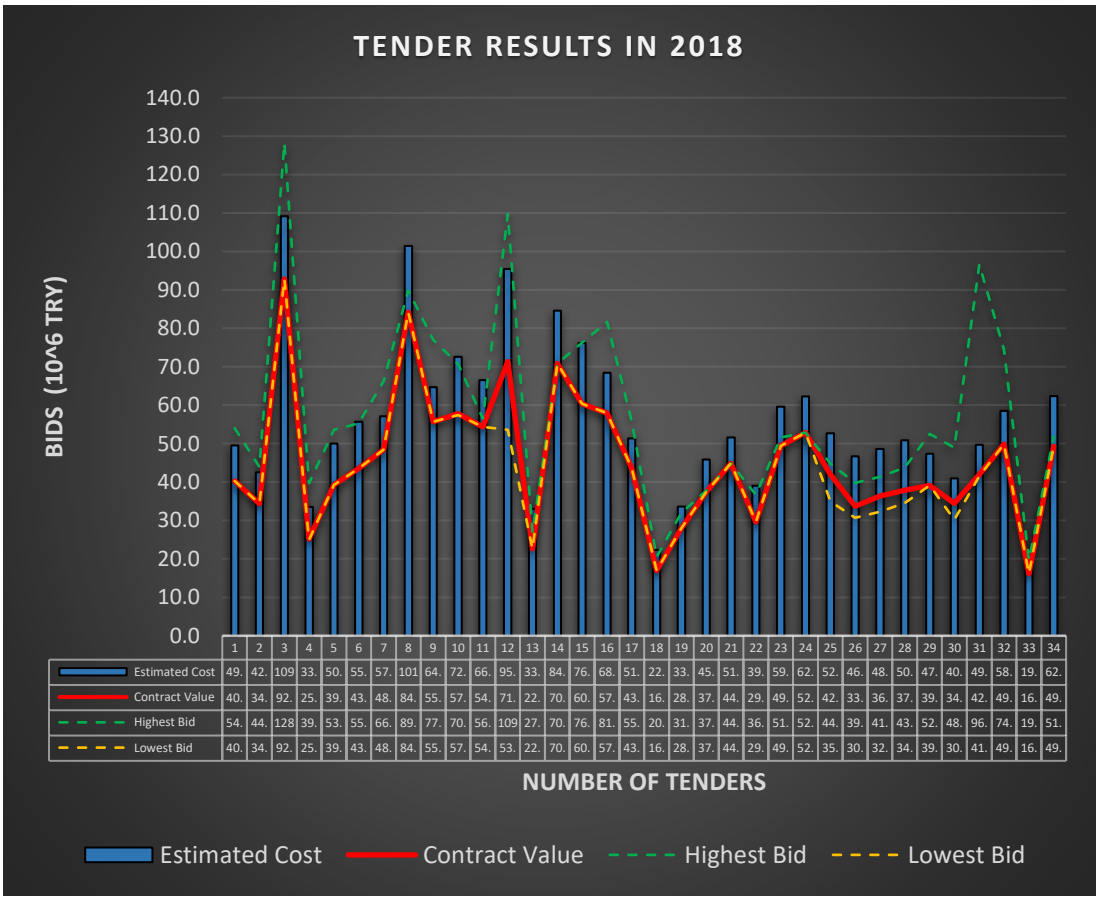


	1	2	3	4	5	6	7	8	9	10	11	12	13
Estimated Cost	11.2	11.1	11.9	14.6	14.0	3.0	4.2	7.1	0.8	13.1	5.6	3.5	2.3
Contract Value	9.5	8.3	9.0	11.1	9.7	2.9	3.5	5.6	0.8	10.8	5.1	3.4	1.7
Highest Bid	9.8	11.9	10.5	11.5	16.6	3.1	7.2	8.4	1.4	15.0	6.4	3.5	2.0
Lowest Bid	9.5	8.3	9.0	11.1	9.0	2.9	3.5	5.6	0.8	10.8	5.1	3.4	1.7

Figure 4.4. Financial proposal of road maintenance tenders in Turkey in 2017 [83]

In 2018, the estimated cost of thirty-four projects tendered for road maintenance projects was approximately 1,903,321,926 TRY, and the total signed contract price was 1,542,731,536 TRY. Financial data of four tenders were not reflected in the table since the results of these tenders are not announced yet. Considering all contract value of projects, the rate is close to that of the year 2017, and a reduction of 19% is observed. As is seen in Figure 4.5, amounts of estimated costs, contract prices and highest bids of tenders were observed to be parallel to each other. Despite this, the lowest bidding companies won the tenders. Road maintenance tenders in 2018 were opened for both local and foreign companies. As per the applicable legislation, a 15% price advantage

was provided to local companies. Snow & ice removal services were included in the scope of all projects tendered, and mix type contracts were drawn up.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Estimated Cost	49.	42.	109	33.	50.	55.	57.	101	64.	72.	66.	95.	33.	84.	76.	68.	51.	22.	33.	45.	51.	39.	59.	62.	52.	46.	48.	50.	47.	40.	49.	58.	19.	62.
Contract Value	40.	34.	92.	25.	39.	43.	48.	84.	55.	57.	54.	71.	22.	70.	60.	57.	43.	16.	28.	37.	44.	29.	49.	52.	42.	33.	36.	37.	39.	34.	42.	49.	16.	49.
Highest Bid	54.	44.	128	39.	53.	55.	66.	89.	77.	70.	56.	109	27.	70.	76.	81.	55.	20.	31.	37.	44.	36.	51.	52.	44.	39.	41.	43.	52.	48.	96.	74.	19.	51.
Lowest Bid	40.	34.	92.	25.	39.	43.	48.	84.	55.	57.	54.	53.	22.	70.	60.	57.	43.	16.	28.	37.	44.	29.	49.	52.	35.	30.	32.	34.	39.	30.	41.	49.	16.	49.

Figure 4.5. Financial proposal of road maintenance tenders in Turkey in 2018 [83]

In 2019, the estimated cost of five projects tendered for road maintenance projects was approximately 381,375,543 TRY, and the total signed contract price was 257,869,205 TRY. Two tenders are short-term and their scope does not include routine road maintenance completely. Considering the total contract value of all projects, it is observed that there is a reduction of 33% from the estimated cost. According to Figure 4.6, it is observed that, in 2019, three long-term tenders with high budgets were awarded to contractors with offers that are significantly lower than the estimated cost. These contractors might face cost and implementation challenges in terms of quality. Client risk is quite high because contract value is far below the budget even after the

escalation is applied. These three long-term projects were opened for both local and foreign companies. Snow & ice removal services were included in the scope of all projects. As far as contract types are concerned, three long-term projects were tendered as mix type, one of the other two were tendered as lump sum, and the other was tendered was unit price contract.

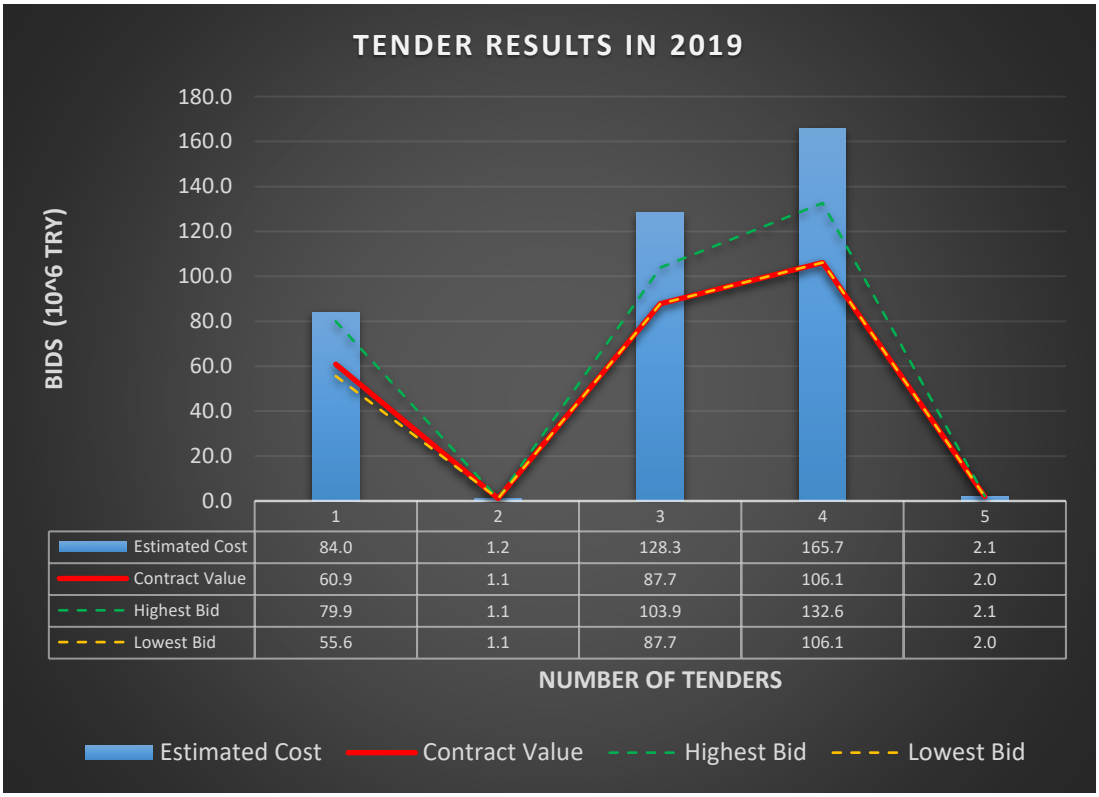


Figure 4.6. Financial proposal of road maintenance tenders in Turkey in 2019 [83]

For road maintenance services between the years of 2015-2019, contractors were not permitted to participate in the tender as consortiums. This may cause problems for the execution of road maintenance services of complex road networks by a single company especially in technical terms. In addition to this, from a technical point of view, sharing of know-how in the consortiums increases the competitive environment among the companies in future, and it will be possible to tender projects with lower costs and higher level of quality in future.

The current tender evaluation criteria has been put in implementation partially starting from 2017, and started to be implemented fully during the years 2018-2019. It has changed the 'only the lowest bid' procedure in tender processes to 50% quality & technical value and 50% price criteria. However, a condition, which evaluates the company in technical terms, was not introduced like PBC type contracts. In quality & technical value criteria, the ratio of each price quoted for each of 10 work items determined by GDH, to the total price is determined, and the score that corresponds to this ratio is given to the contract. In this system, if the price determined by Contractor for routine maintenance is higher than patching price, the Contractor's score will be higher. With this condition, GDH aimed to determine the priority order of the works, but not made any contribution to performance quality.

Briefly, financial bids of road maintenance projects tendered within the period between 2015 - 2019 were investigated, and it was observed that, other than exceptional cases, the tenders were awarded to the company with the lowest bid. It was observed that the difference between the estimated cost and the lowest bid was significantly high in most cases. This raises doubts about to what extent road maintenance projects, which are managed by method based contract type, can be executed in accordance with the methods and quality level requested by GDH. Also, significant differences are observed in the project value and km scope of each road maintenance projects, which are tendered in these years. This also suggests that budget planning is not made for road maintenance services. It is of critical for a developing country like Turkey, which is in need of constructing new roads, to establish road maintenance management plan for future, as is the case with PBC contracts.

4.2.3. Public - Private Partnership (PPP) Road Projects in Turkey and Similarity with PBC

With a total investment amount of USD 63.8 billion, 242 Public-private partnership (PPP) projects (210 of which were in operation and 32 of them were in financial closure or under construction) were executed since from 1986. The total contract value

of all PPP projects is approximately 140 billion USD. Number of road projects executed under Public-Private Partnership (PPP), which is a type of PPP, is 42 and contract value is about 21.564.268.448 USD (17.3% of all PPP projects in Turkey) [85].

The list of PPP works, which are currently carried out by GDH, are given in Table 4.5. Total length of these projects is 1,337.4 km, and total investment value is 17.47 billion USD. Road maintenance services of these largest projects of Turkey will be provided by private sector throughout the operational period under PPP. Due to the nature of PPP projects, all responsibility must be transferred to GDH by the end of operational period.

Table 4.5. *List of PPP road projects under GDH [82]*

Name of Project	Total Length	Lane	Contract date	Construction duration	Operation Duration	Investment Value
North Marmara Motorway Project (Kınalı - Odayeri Section)	80.2 km	2x4	10.06.2016	3 years	6 years 9 months	1.2 billion USD
North Marmara Motorway Project (Kurtköy – Akyazı Section)	170.2 km	2x4	01.07.2016	3 years	5 years 9 months	2 billion USD
Kınalı-Tekirdağ-Çanakkale-Balıkesir Motorway, Malkara - Çanakkale Section	101 km	2x3	21.03.2017	3 years 6 months	10 years 8 months	3 billion USD
Menemen-Aliağa-Çandarlı Motorway	82 km	2x3	04.04.2017	3 years	8 years 10 months	0.47 billion USD
Ankara-Niğde Motorway	330 km	2x3	18.08.2017	3 years	10 years 8 months	1.4 billion USD
North Marmara Motorway Project (Odayeri – Paşaköy Section and 3rd Bosphorus Bridge)	148 km	2x4	05.08.2013	3 years	10 years 2 months	2.5 billion USD
Gebze – Organgazi – İzmir Motorway (Including İzmir Bay Crossing)	426 km	2x3	27.08.2010	7 years	22 years 4 months	6.9 billion USD

Considering the fact that the operational periods of PPP projects are between 5-10 years (See Table 4.5), the contractor must make long-term road maintenance plan and

keep the road quality constant until the end of the operational period as per the contract requirements. Therefore, road maintenance manual, which was jointly prepared by GDH and the responsible consultant firm in the construction phase, for Gebze-Orhangazi-İzmir Motorway (including İzmir bay crossing), was examined within the scope of this study. This manual was designed in a way that long-term road maintenance services are also included and, as well the performance criteria was established on it. This technical specification document bears similarities with PBC in terms of its intended use and content. Especially, items related to performance criteria, performance measurement instructions, measurement method, mandatory standards to comply with, road deterioration types, determination, control periods, degrees of deteriorations etc. were included in this manual. Response times for each road deterioration, and disincentive system, which are among characteristics that distinguish PBC from others, are not included. In this manual, some response time of 7 days is given for only a few deteriorations and unclear time descriptions such as "immediately" "as soon as possible" are given for some work items. This may cause lack of motivation on the part of the contractor for repairing the deteriorations occurring on the roads. Response times must be specified for each deterioration in hours, days or weeks starting from the moment deteriorations are determined.

In addition, performance indicators in PPP projects have been using for road design construction, maintenance, and operations. Especially, under the scope of transportation network improvement for USA, benefits of performance-based systems in PPP are presented [42].

4.3. Comparison of PPL vs PBC and mixed PBC

Countries, where PBC is carried out successfully in road maintenance services, were investigated in the literature review. As a result of these comprehensive review, two cases in different countries that are successfully implementing PBC, are selected to compare the road maintenance practice with respect to Turkey. The first case is in Australia-Queensland State since the whole contract documents are open the public at

the website of client [89]. The other case is in British Colombia in Canada, which had the first PBC implementation experience in road maintenance in 1988 [74]. According to their cumulative knowledge over the years on PBC, the initial contract was enhanced and a final version, called mixed or hybrid type, is currently in practice in Canada [90]. For road maintenance in Turkey, commonly method base contracts are preferred in order to analyze the differences with respect to PBC. Tender procedures and documents, technical and administrative specifications, contracts were reviewed and presented in Appendix_4 in a detailed table.

Human and economic geography of three countries were compared with respect to their populations, surface area, number of vehicles, climate and road network as given in Table 4.6. As far as population densities are concerned, the number of persons per km² is 3 in Queensland, 5 in BC and 104 in Turkey. Since population density in Turkey is more than other countries, it is estimated that the rate of highways use will be significantly more. Although the ratio of population to total number of vehicles is lower in Turkey compared to other countries, it is observed that the use of highways is significantly more than other countries as the total number of vehicles, which is 22.865.921, more than other countries. As far as climate is concerned, it is observed that while climatic conditions in Turkey and British Colombia are similar, Queensland is warmer. Cold and snowy winters particularly affect the deterioration of the highway. Therefore, it is considered that the approach in snow & ice removal services provided in British Colombia would meet the requirements in Turkey. Total length of paved road is quite high in Turkey and the investments in the new roads increase gradually with the increasing the population and economy. Therefore, the cost of road maintenance services will increase year by year due to aging of the existing roadway network and, because of the need of the preventative maintenance of the new roads.

Table 4.6. *Comparison of three countries properties*

No	Country / State	A-Turkey	B-Queensland	C- British Colombia
1	*Location*	Located in Southeastern Europe and Southwestern Asia	It is state of Australia and located in the north-east of the continent	It is the most western province in Canada
2	*Name of the Road Agency*	General Directorate of Highway	Department of Transport and Main Roads	Ministry of Transportation and Infrastructure
3	*Area (Land)*	785.347 km²	1,730,648 km²	942.000 km²
4	*Population (2018)*	82.003.882	5,033,141	4,991,687
5	*Motor Vehicles (2018)*	22.865.921	5.273.749	3,705,906
6	*Climate (2018)*	Max.47.4°C - Min. -32.4°C Avg:15.4°C	Max.48°C - Min. -7.4°C Avg: 23.6°C	Max.41.4°C - Min. -41°C Avg: 14°C
7	*Total Road (paved)*	67,333 km	33.366 km	57.100 km
8	*Total Road (unpaved)*	179.895 km	-	662.000 km
9	*Elevation (Average)*	1.141 m	330 m - Australia 930 m - Highest point of Queensland	330 m - Australia 4.663 m - Highest point of British Colombia
References for this table: [82], [88], [89], [90], [91], [92], [93], [94], [95], [96], [97], [98], [99], [100], [101], [102]				

A comparison of tender documents for the road maintenance projects in Turkey which are currently executed with method-based contracts (MBC), and tender documents issued by the authorities in Queensland for the road maintenance project, is given in Appendix_4. While there are similarities in the contents of two contracts, there are also differences resulting from the specific legislations of each country. Particularly, administrative and technical differences in the application of MBC and PBC contracts were taken into account during the evaluations.

Requested Documents in Bidding Stage

- When requested tender documents for both contract types were investigated, it was observed that in MBC, only the bidders' administrative forms and documents required as per the applicable legislations are requested. On the other hand, requested forms in PBC, in addition to official documents of bidder, include the technical documents, plans and methodology submissions, which are all related to the project. During the execution of such procedures, necessary certification documents are also requested in the bidding phase. All forms including work schedules, quality plan, environmental management plan, safety plan etc. are prepared based on project by bidder during the bidding phase, and submitted to the approval of tender commission for the evaluation.
- In MBC, proofing documents for machinery-equipment, which are requested by GDH as the contractor's own commodity, are submitted at the bidding phase. The list of equipment, which may be rented by the employer, are specified by GDH in the tender documents. In PBC, since freedom of machinery equipment is granted, there is no such document request.

Tender Specification

- All the legal conditions, parties and definitions, which are required in both contract types, are given.
- List of machinery-equipment, which are required in MBC, their specifications and standards are defined. The years of experience and qualifications of key personnel, who will be assigned in the project, are specified. Features of the materials to be used are given, and the fact that employer is responsible for the providing of the material is specified. Methodology is provided by making a reference to the technical specifications. On the other hand, no condition is specified in PBC, since this contract grants freedom in such terms.

- In MBC, tender evaluation consists of 2 parts. 50% is financial grading, 50% is quality & technical value grading. However, 50% quality grading should not be considered as a technical evaluation as mentioned 4.2.2. In PBC, on the other hand, after the pre-qualification phase, both technical and financial bid evaluations are made.
- While pre-qualification phase is not implemented in MBC of Turkey, pre-qualification is applied in PBC and companies, which qualify for the shortlist may submit their principal bid. General information required from the bidders in pre-qualification phase are as follows: up-to-date financial data annually and company profile, company experience and technical capacity, inspection and test plan, quality control asphalt quality management/performance, auditing, surveillance.

Draft Contact

- In MBC, draft contract and special technical specification are used, and administrative and technical details are given. In PBC, on the other hand, General Conditions are given under specific titles: Contract overview and fundamentals, General Contract framework, Contractor's obligations and warranties, Principal's responsibilities, Claims and dispute resolution, Variations, Insurances, Site and execution of Work under the Contract, Quality system, Default and termination, General provisions.

Mixed or Hybrid PBC

Since 1988, British Columbia, which is the leading country for PBC in road maintenance services, has developed a new system, called as mixed or hybrid PBC. Differences from the PBC is that emergency, improvement works and major rehabilitation works are included and executed based on unit price with quantities to be conducted. Other service are still implemented based on lump sum according to performance criteria. In the following part, British Columbia's PBC system and procedures are analyzed in detail.

The client “Ministry of Transportation and Infrastructure” is tendering road maintenance services to private sector for 28 regions in British Columbia. The cost of road maintenance services for 47.500 km of road and 2.800 structures are USD 400 million yearly [93]. Main services under road maintenance are summarized below;

- ✓ Provide maintenance services for 24/7,
- ✓ Have wide range of services for winter maintenance, pavement, drainage system maintenance and bridge, roadside, traffic maintenance,
- ✓ Responsible for determining & planning the services and specifying the priority of these services,
- ✓ Ensuring that services shall be provided according to the performance specifications as specified in contract,
- ✓ Quantified Maintenance; more planned events so mostly summer activities paving, ditching, mowing things. Unit price and lump sum activities,

Road Maintenance tender procedure

Interested contractors shall prepare request for qualifications (RFQ) aims to generate qualified contractors and then, shortlisted companies have right to submit Requests for Proposal (RFPs). The new road maintenance tender procedure completed between the years 2018 and 2019. Tender documents (RFQ and RFP) are published on e-Procurement system. In 2017, RFQ stage is completed for shortlisted companies. If a company pass the RFQ, it will be eligible for all 28 regions British Columbia. In RFQ stage, following items are expected to submit; description and organizational structure of company, experience in road maintenance services, general understanding of the maintenance services required, company quality management plan, company subcontracting and local equipment hiring process, company’s financial status. Firstly, maintenance specification is published for RFQ stage. After shortlisted companies are announced, RFP is published for evaluation of companies to prepare principal tender. In evaluation stage of RFP, weights are 30% for technical proposal and 70% for financial proposal. The contract duration will be 10 years and there may be five-year

extension for continuity of services and staffing (discretion of the Ministry) and same tenderer awards maximum 5 regions. Existing inflation factors are applied.

The contract includes the service to be provided, work standards and terms of payment and after determination of regions (one of the 28 regions), the contract will enter in force. Additional schedules shall be added to main agreement as following;

- ✓ Specifications and Local Area Specifications
- ✓ Quantified Maintenance Services
- ✓ Additional Maintenance Services
- ✓ Cost Plus Rates
- ✓ Maintenance Service Fees
- ✓ Annual Adjustment Schedule
- ✓ Rates for Changes to Infrastructure
- ✓ Infrastructure Schedule
- ✓ Service Area
- ✓ Automated Weather Stations
- ✓ Equipment Requirements
- ✓ Commercial Vehicles Permit Agreement
- ✓ Gravel License
- ✓ Repeater System
- ✓ Dispute Resolution Protocol
- ✓ Prime Contractor Designation
- ✓ Bonds and Insurance Requirements
- ✓ Insurance and Securities
- ✓ Privacy and Protection
- ✓ Contractor Detail

Following topic are services specific to this contracting type;

Staffing continuity; Awarded contractor shall use the same labor agreement to decrease the uncertainty of personnel cost and this provide in the determination of

price. In addition, new labor agreement for road maintenance projects is agreed by committee, which are compose of Road Builders and Heavy Construction Association and Service Employees' Union. Herewith, consistency and permanency of project are ensured through this agreement at road maintenance in the long-term.

New work item, which are not included in performance indicators, and its reporting requirements; New maintenance services reporting manual (describe the work activities that they are looking for it will describe the frequency that they want those activities reported out and it also provides the format that they want it reported)

Automated vehicle tracking requirement for winter maintenance activities; Provide ministry with a link to an electronic map showing real-time only locations of winter maintenance vehicles. Contractor is responsible to maintain historical AVT data of winter maintenance vehicles for Ministry for auditing (no AVT records kept by Ministry).

Updated Quantified Maintenance Services Schedule; Requirement for a two-year Quantified Plan (report in detail describing what the quantified services are how they are managed and monitored)

New environmental requirements; Requirement for an environmental management plan. Requirement to submit waste management plans.

Briefly, there are many countries that have successfully implemented PBC in road maintenance services and their legislation and technical approaches could be adopted in contracts and implementations. However, even if taking as an example of other countries' PBC, countries, which want to implement PBC, should use pilot project and harmonize PBC with their regulations. Since every country is unique in terms of legislation, financial status, culture and geographical condition and it is not possible to generate common PBC criteria such as performance indicators, regulations, contract duration and funding procedures etc. for road maintenance services all over the world.

4.4. Evaluation of Interviews

Three experts were selected for interview according to their specialty, experience and party in road sector, and were requested to answer 11 questions in Appendix_5. First expert was graduated from civil engineering department, Middle East Technical University in 1981. He has an experience in road sector about 30 years in Turkey. He has worked at prestigious motorway projects "Anadolu Motorway, Gümüşova – Gerede Section Project (including Bolu Mountain Crossing)", North Marmara Motorway Project (including 3rd Bosphorus Bridge) and Gebze-Orhangazi-İzmir Motorway (İzmit Bay Crossing) as Project Coordinator. Second expert was graduated from civil engineering department, Middle East Technical University in 1992. She has an experience in road sector about 26 years in Turkey and on abroad. She worked at motorway projects as construction, control and contract chief under GDH. She also got involved in motorway project in Ireland as technical office chief. Third expert was graduated from civil engineering department, Middle East Technical University in 1969 and M.Sc. in 1971. He has wide experience in road construction and maintenance projects about 34 years in Turkey and on abroad (Iraq and Libya). Resume summary is presented in Table 4.7 to show the experience of experts clearly. The objective of these interviews was to understand and foresee what type of changes is needed in the procurement laws and contracts when and if Turkey transitions to PBC.

Table 4.7. *Resume summary for three experts*

No	Expertise	Profession	Total Experience	Experience in Road Sector	GDH	Private Sector	
						Consultancy firm	Construction firm
1	Supervision Engineer	Civil Engineer-B.Sc.	38 years	29 years	-	29 years	
2	Contract Engineer	Civil Engineer-B.Sc.	27 years	26 years	22 years	2.5 years	2.5 years
3	Quality - Control Engineer	Civil Engineer-M.Sc.	49 years	34 years	28 years	-	6 years

After interview with three experts, summary comments are mentioned below;

Current maintenance services;

- Road maintenance services are tendered for a short term with material and / or without materials, based on the work items specified in contracts. However, services in current status for each work item are indicated very general in technical specification. Therefore, like performance indicators, each work item under the scope of services should be defined clearly and in detail.
- There is no possibility for a company in road maintenance sector to develop innovative approaches under the current legislative regulations.
- In short-term tenders, the private sector does not have advantages to provide qualified personnel that is compatible in all aspects of road maintenance, and procure all the necessary machinery and materials.
- If the road maintenance services are given to private sector with convenient budget and long-term (e.g. 10 years) contract, in that case, the contractor can arrange sources in terms of budgeting, employment of personnel, and procurement of equipment and machinery in all disciplines. In addition, the contractor must have expectations for similar works in future in order to be able to maintain its machinery and personnel towards the completion of the work.

Current Snow and ice removal works:

- In any short-term tender, it is difficult for any contractor to make investment on the machinery required for this service.
- The quantity of the work to be performed is not clear. If winter conditions are adverse, the quantity level is high; otherwise, quantity level is low. Therefore, the amount of payments or budget to be allocated cannot be estimated clearly.
- The contractor company will recruit personnel and machinery according to this ambiguity, and these personnel and machinery will be kept idle in many cases. Payment method to be applied when the machines / personnel are idle, is not clear.

- If additional funding will be requested in case of excessively snowy seasons or when the quantity increases, this additional payment must be activated automatically.
- In these method-based tenders, contractor is obliged to keep the road open to traffic. How will the maximum permissible period to keep the road closed be defined? What penalties will be imposed if the road cannot be opened or due period expires. All these aspects must be defined in the contract.

PBC in road maintenance;

- Freedom of method: This term should not be interpreted as complete freedom. Contractor must define the method to be applied in the bidding phase, and be willing to receive the recommendations of the client.
- Long-term contract: It is the requested condition. However, budget and payment issues must be clarified in the beginning of long-term contract, and any potential ambiguities that might be confronted throughout contract period must be eliminated.
- Incentives and disincentives system: It is absolutely necessary.
- Performance indicators: Performance criteria must certainly be included in the road maintenance contracts. However, these criteria must not be the same for all roads, and these criteria must be set depending on the importance of the road. For instance, performance criteria accepted and implemented for Gebze – Orhangazi - İzmir Highway are clearly specified in the contracts, which is under operation. Accordingly, the performance criteria may be established also for state highways by taking such criteria as guideline.
- In order to yield positive results from PBC system, there must be competent contractors, whose "area of expertise is to carry out road maintenance works", who has sufficient personnel, equipment and machinery for this purpose. Then, it may be possible to execute long term tenders

- Snow and ice removal works should be carried out by both private sector and GDH under extreme weather conditions. This issue is very critical for road safety.
- It is considered that PBC in road maintenance is not possible to execute due to the current procurement law, budget/payment conditions and type contracts. Therefore, the transition from method based to PBC may be problematic.

4.5. Evaluation of Survey

Two different surveys are conducted using a web-based software tool, called Surveymonkey [87]. An approval from the Human Subjects Ethics Committee (Insan Arastirmalari Etik Kurulu, a.k.a. IAEK) of METU was acquired for both of the surveys with "350 ODTÜ 2019" protocol number in Appendix_6. Since the target groups reside in Turkey, surveys were conducted in Turkish and all responses (the raw data) are given in Appendix_7 and Appendix_8. It should be noted that the data was collected from the participants anonymously. The discussions regarding the findings of the survey can be found in the upcoming sections 4.5.1 and 4.5.2.

The target group for the first survey was the road users, who have traveled using the highways in Turkey. The survey was created using SurveyMonkey and the generated links were shared with target groups via social media (linkedin, facebook, etc.), sending e-mail to companies, institutions and public sector. The target group for the second survey was the selected experts experienced in road sector these groups were reached through sending an e-mail.

4.5.1. Survey-1: Perception of Road Users

1036 participants filled Survey-1 within 20 days. Average completion time is 3 minutes 18 seconds. Since the target audience of the survey was people from all strata, two of the design criteria (being easily understandable and answering fast) were met.

Profile of participants (Figure 4.7 and Figure 4.8) mostly comprises of graduated at least B.Sc. (91.5%), young, and middle-aged (87.33%) individuals. Results show a

wide range of variations in terms of the ages, educations levels, professions, and employment status.

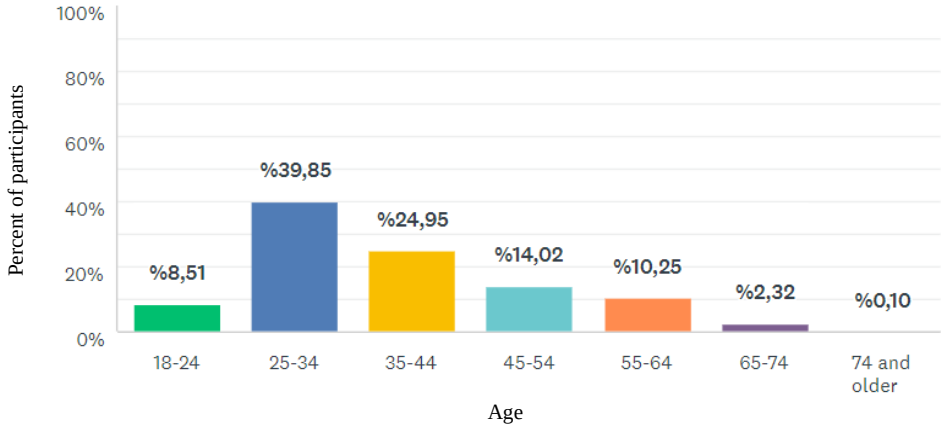


Figure 4.7. Age distribution of participants

ANSWER CHOICES	RESPONSES
1.Doctorate degree	4.44%
2.Master's degree	23.19%
3.Bachelor's degree	54.01%
4.College-Academy	9.86%
5.High school graduate	7.44%
6.Primary school graduate	1.06%

Figure 4.8. Education status of participants

Road users from all regions of Turkey has participated in the survey (Figure 4.9). Although 69 % of participants live in the Central Anatolian Region, they have been traveling to every region substantially on summer term in the last 5 years by using intercity roads as shown in Appendix_7.

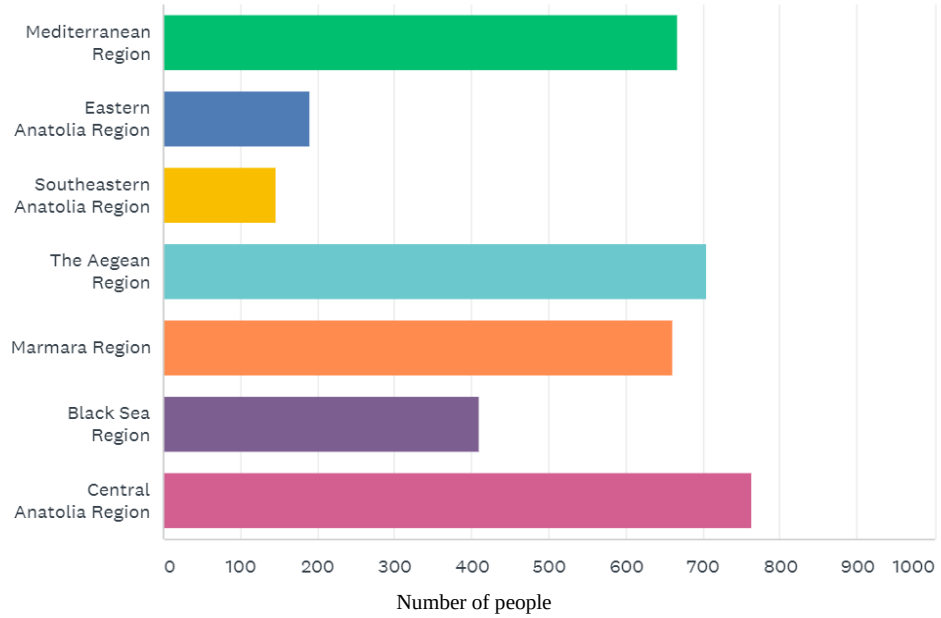


Figure 4.9. Traveled areas by participants in the last 5 years

95% of (901) participants have driving license (see Figure 4.10), and the average driving experience of these 901 participants is 14.41 years (Appendix_7).

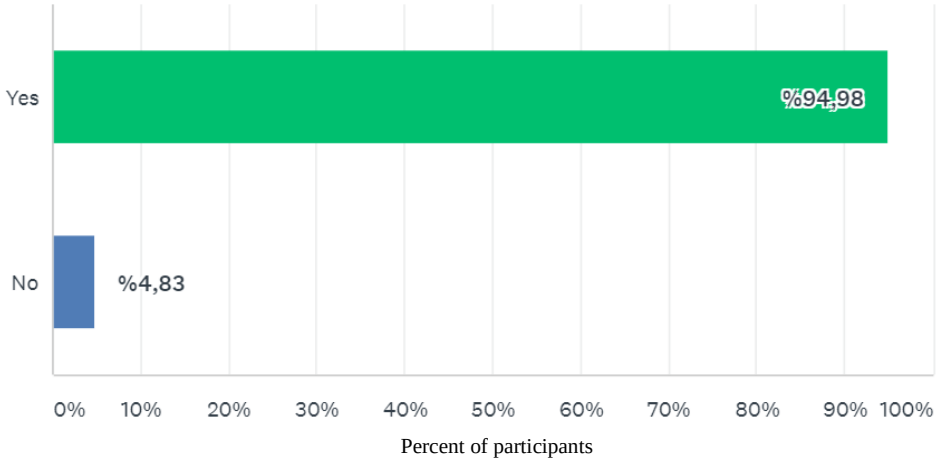


Figure 4.10. Possession of driving license

Figure 4.11 shows that the participants have use road network both as a driver and as passenger approximately with the same rate. The results obtained from participants reflect the thoughts of both drivers and passenger.

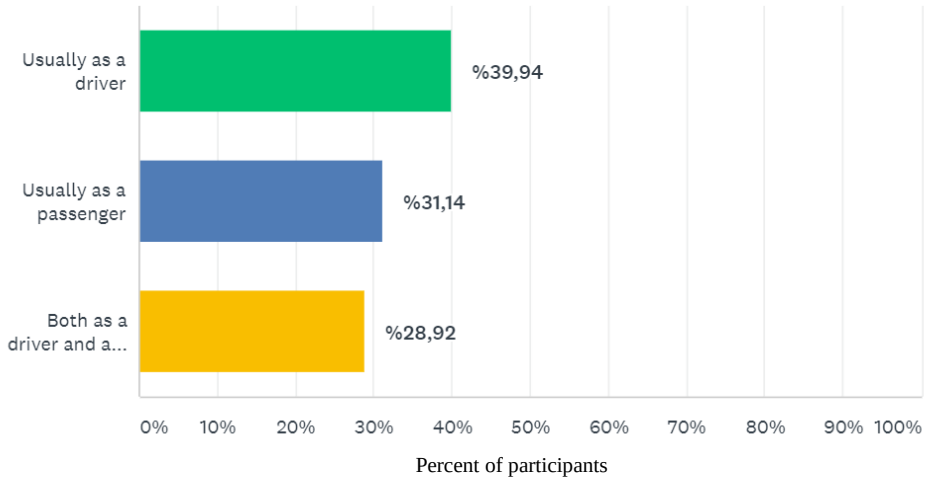


Figure 4.11. Presence mode of participants in road network

The following questions are the point of origin for this survey. User satisfaction is the most effective way to understand whether road maintenance services are performed properly or not. Therefore, assessment of road maintenance services in terms of effectiveness and regularity are asked to road users. 47.63% of participants indicated that road maintenance services are not carried out regularly in Turkey (Figure 4.12). The rate of 'no idea' selection, which was 168 out of 1036 participants, is higher than expected. When looking over the profile in Appendix_9 which shows the results answered by participants select no idea for Q_10, 135 of these 168 participants stated that they travel once every three months (31 participants), once every six-month (50 participants), and once a year (54 participants). Therefore, in spite of using the road network for traveling, they could not perceive the regularity of road maintenance services.

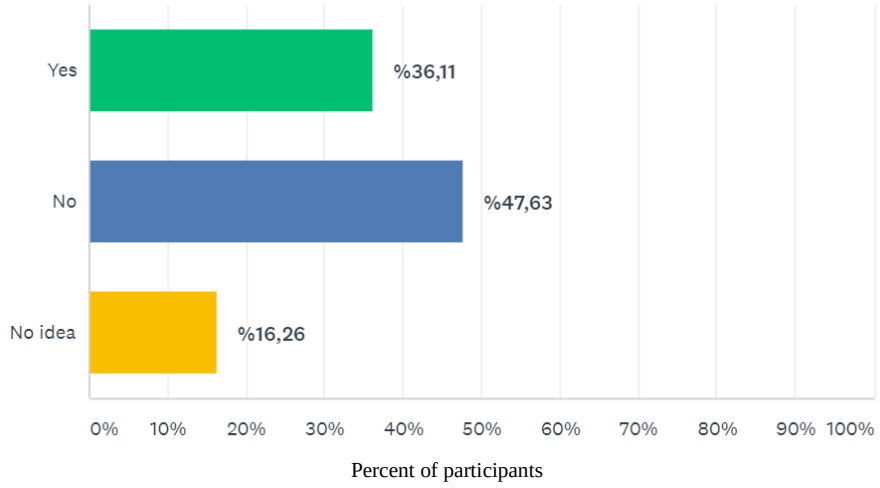


Figure 4.12. Road maintenance satisfaction in terms of regularity

The 11th question regarding the efficiency of road maintenance services is the root of matter that is studied. According to results in Figure 4.13, 58% of participants are not satisfied with the current services for road maintenance. Effectiveness of services is a critical issue to maintain the quality of roads and the quality is the only way to increase user satisfaction. Recognition of service effectiveness is easier than the recognition of service regularity from the point of road users. Therefore, it is easier question to answer by road users.

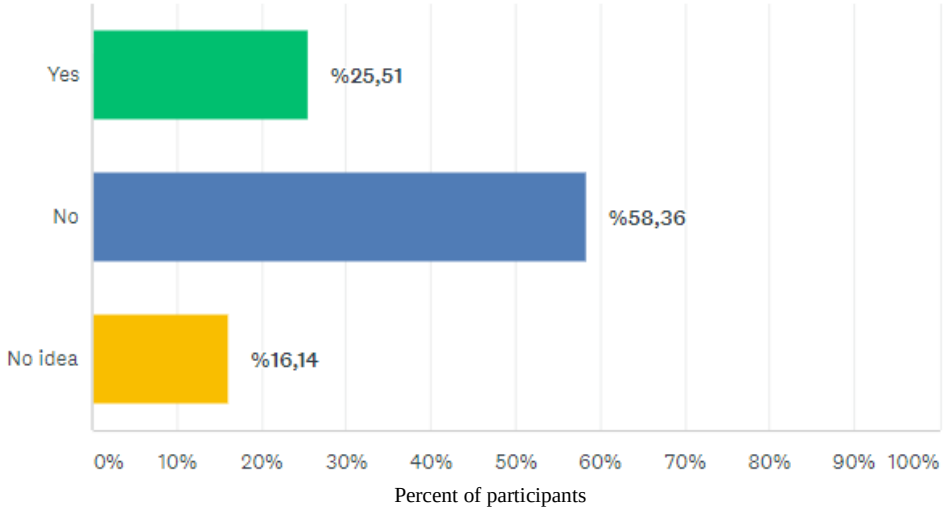


Figure 4.13. Road maintenance satisfaction in terms of efficiency

Snow and ice removal works are generally executed under road maintenance services in many countries. To understand user satisfaction, the question regarding implementation of the snow and ice removal works in Turkey are asked to participants and results are shown in Figure 4.14. Accordingly, 40% of participants think that these services are not carried out efficiently in the winter. On the other hand, 36% of participants are satisfied, and rates between "yes" and "no" answers are so close to each other. Thus, further analysis of the results in Appendix_10 and Appenidx_11, which show all results separately answered by participants select "yes" and "no" s for Q_12 are performed.

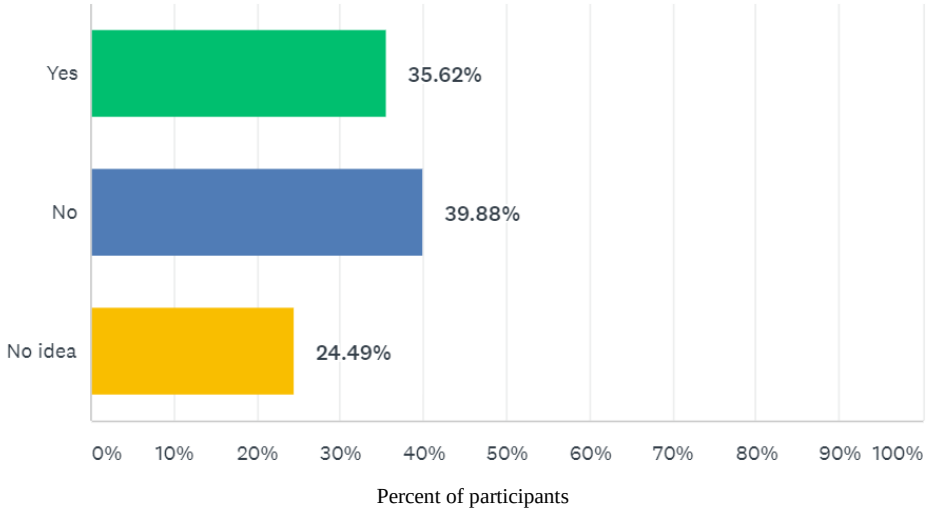


Figure 4.14. Road maintenance satisfaction in terms of snow and ice removal

Multi-comparison has been made with the number of participants who live in the Eastern Anatolia Region and The Southeastern Anatolia Region according to questions the Q5, Q6, Q7 and Q8 in Table 4.8. Participant numbers of opposite answer for each specified question is nearly the same. Therefore, specific survey should be made for only snowy regions to get the precise results regarding the satisfaction of users for snow and ice removal works.

Table 4.8. *Sub-analysis for snow and ice removal works*

	Q5- The region you live		Q6 Which regions have you traveled in the last 5 years by using highway		Q7-How often have you traveled by using highway	Q8 In which season do you make your travel between the cities by using highway
The result of "Q12- Do you think that snow and ice removal works are carried out efficiently for highway in winter season ?	Number of the particiapnt		Number of the particiapnt		Number of the particiapnt	Number of the particiapnt
	The Eastern Anatolia Region	**The Southeastern Anatolia Region**	**The Eastern Anatolia Region**	**The Southeastern Anatolia Region**	**Once a month and more frequently**	**Winter Term**
YES	**24**	**7**	**78**	**48**	**123**	**96**
NO	**27**	**18**	**74**	**69**	**147**	**101**

Participants evaluated the possibility of 7 consequences happening if road maintenance services are not carried out regularly and efficiently in question_13. Following inferences are obtained from the Figure 4.15;

- 80% of participants think that improper maintenance services decrease the road safety. When compared to rates of other consequences, quite difference is observed in safety issue. Briefly, road safety is very crucial for passengers and drivers.
- Delaying and improper road maintenance activities lead to an increase in the cost of maintenance services. However, this question shows that participants disregard the incremental cost of road maintenance.

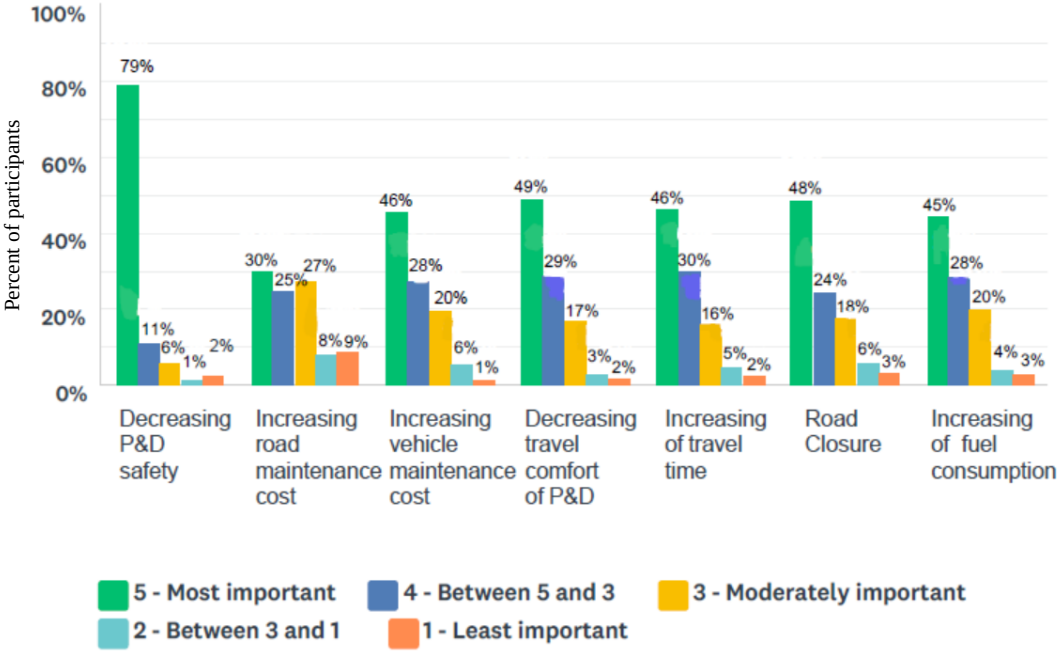


Figure 4.15. Evaluation of road maintenance services carried out irregularly and inefficiently

Governments generally give priority to the investment of new road construction due to political reasons [63]. To go over this common belief, the question regarding the "comparison of the importance given to road maintenance with the construction of new roads" is asked to participants. Figure 4.16 reveals that road users consider road maintenance services more important than the construction of new roads with a rate of 70.5 %. Besides, 26% of the participant think that both services should be implemented with equal importance. The majority of the remaining 13 participants (1.26%) choosing the less important option, 8 out of them are rarely travelling by using highway such as once every three, six months and once a year (Appendix_12). Moreover, they have been living in the Marmara Region and The Central Anatolia Region, and traveling to the same regions that are the most densely populated and having developed road network.

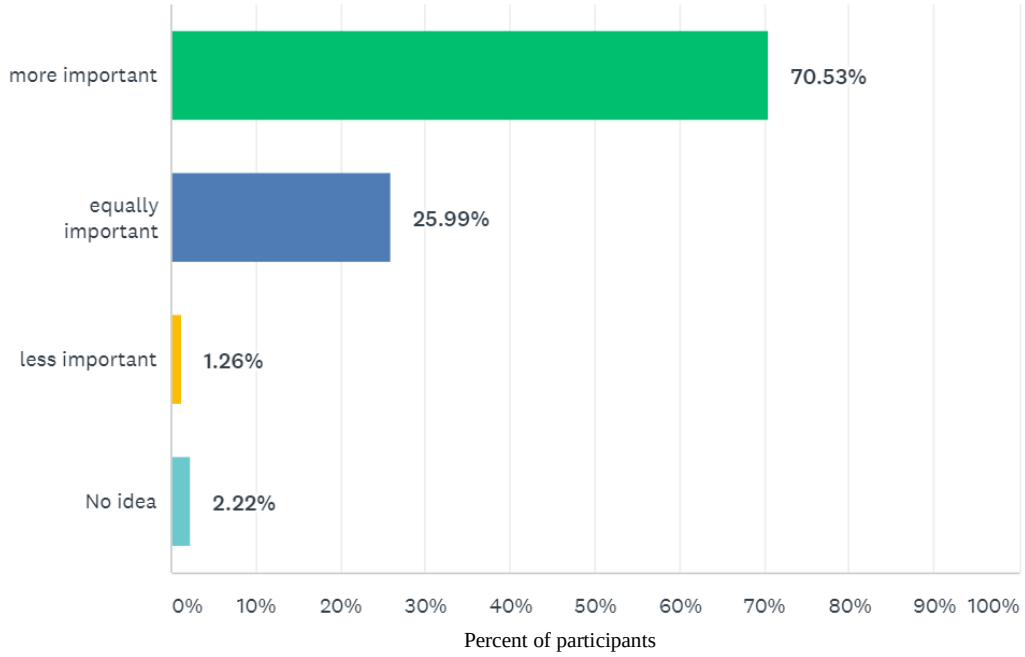


Figure 4.16. Comparison of road maintenance services and new road construction

More accurate feedback and answers regarding the status of current road conditions could be obtained from participants traveling frequently. They could observe difficulties and deficiencies in road conditions and witness road maintenance activities during the implementation. Therefore, sub-analysis is executed for 126 participants who are traveling more than once every two weeks (see Appendix_13). The results of these 126 participants are compared to the results of all participants. The trend in the responses of frequent travelers for principal questions Q_10, Q_11 and Q_12 is similar to the trend of all participants, and shown in Table 4.9.

Table 4.9. *Comparison of all participants and participants travelling frequently*

Questions	126 Participants (traveling more than once every two weeks)			All Participants (1036)			Difference (%) between 126 parts. and 1036 parts.		
	Answers (%)			Answers (%)					
	Yes	No	No idea	Yes	No	No idea	Yes	No	No idea
Q10-Do you think that road maintenance works are carried out regularly for highway?	39.68	52.38	7.94	36.11	47.63	16.26	**3.57**	**4.75**	**8.32**
Q11-Do you think that road maintenance works are carried out efficiently for highway?	25.4	63.49	11.11	25.51	58.36	16.14	**0.11**	**5.13**	**5.03**
Q12-Do you think that snow and ice removal works are carried out efficiently for highway in winter season ?	35.71	50.79	13.49	35.62	39.88	24.49	**0.09**	**10.91**	**11**

As an overview, the survey demonstrated that road users are not satisfied with current road maintenance services and think that more attention should be given to this service. Since the number of participants in our sample is well over the sample size threshold and the data acquired from these participants are consistent, we can conclude that these results reflect the current status of highways in Turkey.

4.5.2. Survey-2: Perception of Road Expert

Out of 100 target participants, 68 experts filled the survey within 30 days. Average time to complete the survey is 25 minutes 18 seconds. During the selection of the experts, attention has been paid to experts working in road projects and under different parties of the road sector. The profile of participants (Figure 4.17, Figure 4.18 and Figure 4.19) mostly comprises of individuals who graduated from at least B.Sc. (94.12%), and has an experience more than 10 years (75%). Results are obtained from

experts who are older than 25 years old in different positions mainly senior managers and chief engineers (Appendix_8). The profession distribution of the participants consists of civil engineers (73%), mechanical engineers (11%), geological engineers (3%), mining engineers (3%) and other engineers & professions (10%) (Appendix_8).

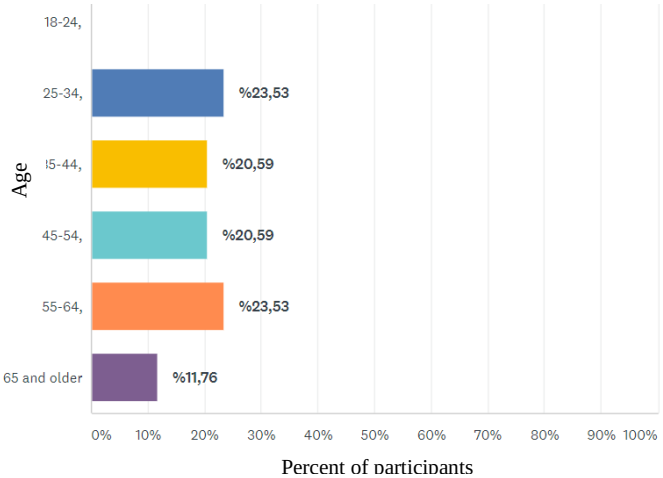


Figure 4.17. Age distribution of road experts

ANSWER CHOICES	RESPONSES
1.Doctorate degree	4.41%
2.Master's degree	20.59%
3.Bachelor's degree	69.12%
4.College-Academy	5.88%
5.High school graduate	0.00%
6.Primary school graduate	0.00%

Figure 4.18. Education status of road experts

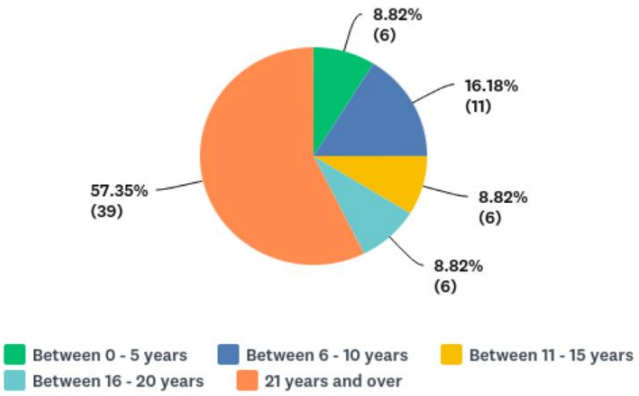


Figure 4.19. Total experience of road experts

The comments and thoughts of road experts from various parties are very crucial for this study. Any change in regulations or contracts will affect not only authority but also other parties involved in road maintenance services. Thus, particularly, the survey was sent to experts working at different organizations such as contractor companies, consultancy firms, and design firms as mentioned in Figure 4.20. It should be noted that some of the senior experts worked at different parties during their professional life. Therefore, a multiple selection option is given to participants for this question. Especially, highly experienced people prefer working as a consultant in the construction sector, so their responses are very valuable for capturing different perspectives in the sector. Considering the fact that some of the road maintenance services are still carried by GDH partially through its own sources, evaluation of survey participants, who used to or who are still working at GDH is of significant importance as well.

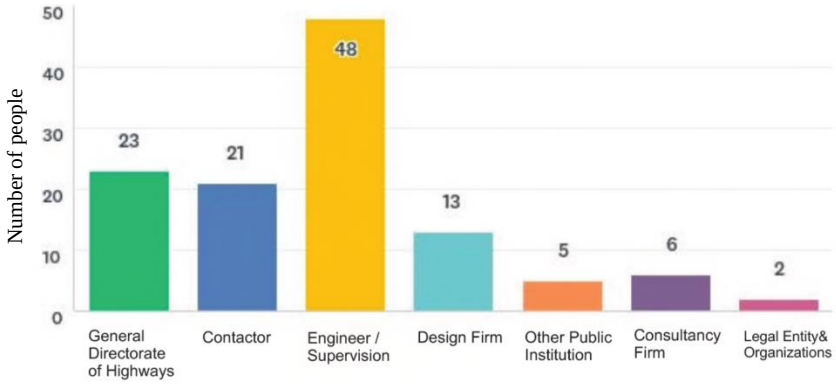


Figure 4.20. Type of institution of road experts

Evaluation of current road maintenance services, which is one of the most important questions of this survey, is given in Figure 4.21. The experts considered that current road maintenance services are not performing well in terms of risk-sharing between the parties, user satisfaction, effect on project's cost and project's duration. Especially, risk sharing between parties is observed as not fit for purpose particularly in road maintenance services provided under the current legislation. When outcomes are assessed in general, it is observed that the effect of current road maintenance services on road safety is the only positive result with 47%. For all the other items, the experts

chose 'Improvable' option. 65% of the experts think that road quality must be improved, and 69% of the experts think that more competent contractors must be selected or contractors must develop themselves further in this regard. With this evaluation, it is revealed that the current situation is not positive but there are areas for improvement, and changes and developments are required for remedying such shortcomings.

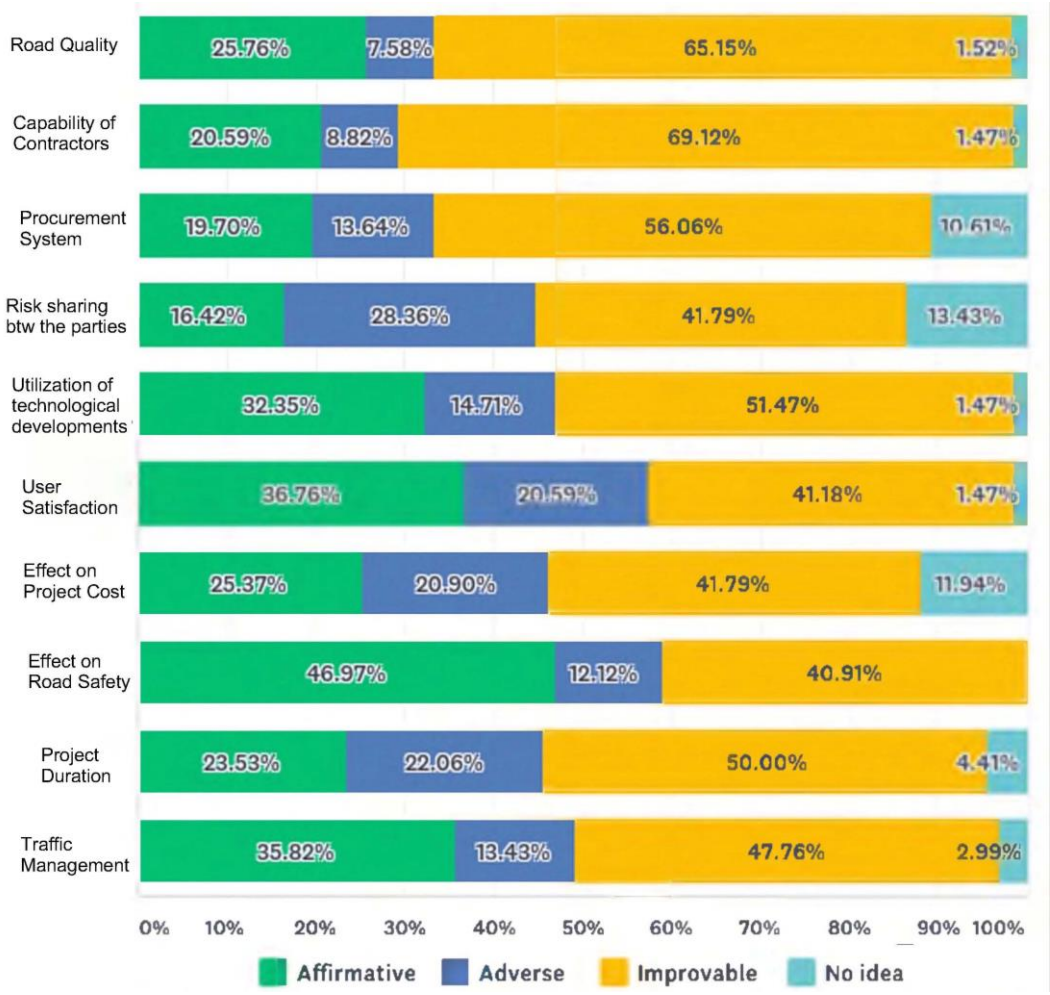


Figure 4.21. Existing status of road maintenance services

With this survey, not only the current situation of road maintenance services was determined, but also, the effect of PBC, which is a new contract type, on the specified items were identified. These items, which were selected as a result of the literature review, were determined to be affected by PBC. For experts, who do not have

sufficient knowledge about PBC, a general definition and characteristics of PBC were given as a summary in the introduction section of the survey to evaluate more properly (as shown in Appenix_2).

Three questions of the survey were about evaluating the effect of basic characteristics of PBC, which distinguish PBC from other contract types. The criteria and the results are given in Figure 4.22, Figure 4.23 and Figure 4.24.

Potential effects of performance indicators, which are among the most important aspects of PBC, if it is adopted to the current contract type, are given in Figure 4.22. More than 50% of the experts are of the opinion that performance indicators will create an effect on all listed items. More than 80% of the experts chose 'I agree' especially for items such as the increasing contractor's responsibilities, increasing technological implementation, passenger & driver satisfaction, and improving private sector technically & administratively. On the other hand, 31% of the experts stated that project costs will not decrease with this project type, which is the highest rate of negative answer.

Potential effects of incentive & disincentive system, which is the most distinctive characteristic of PBC, if it is adopted to the current contract type, are given in Figure 4.23. Also, more than 50% of the experts agree that incentive and disincentive system will have an effect on all items. More than 80% of the experts chose 'I agree' especially for the effects such as increasing technological implementation, road quality, road and traffic safety, and the private sector technically and administratively.

As far as the implementations of PBC across the world is considered, it was observed that long term contacts are signed and the required efficiency is achieved in this way. In Turkey, the current contract term for road maintenance services is 3 years. Experts were also requested to evaluate the same items for the case in which a contract term is more than 3 years in Turkey. According to results, on average 65% of the experts have the opinion that long term contracts will create the specified effects in Figure 4.24.

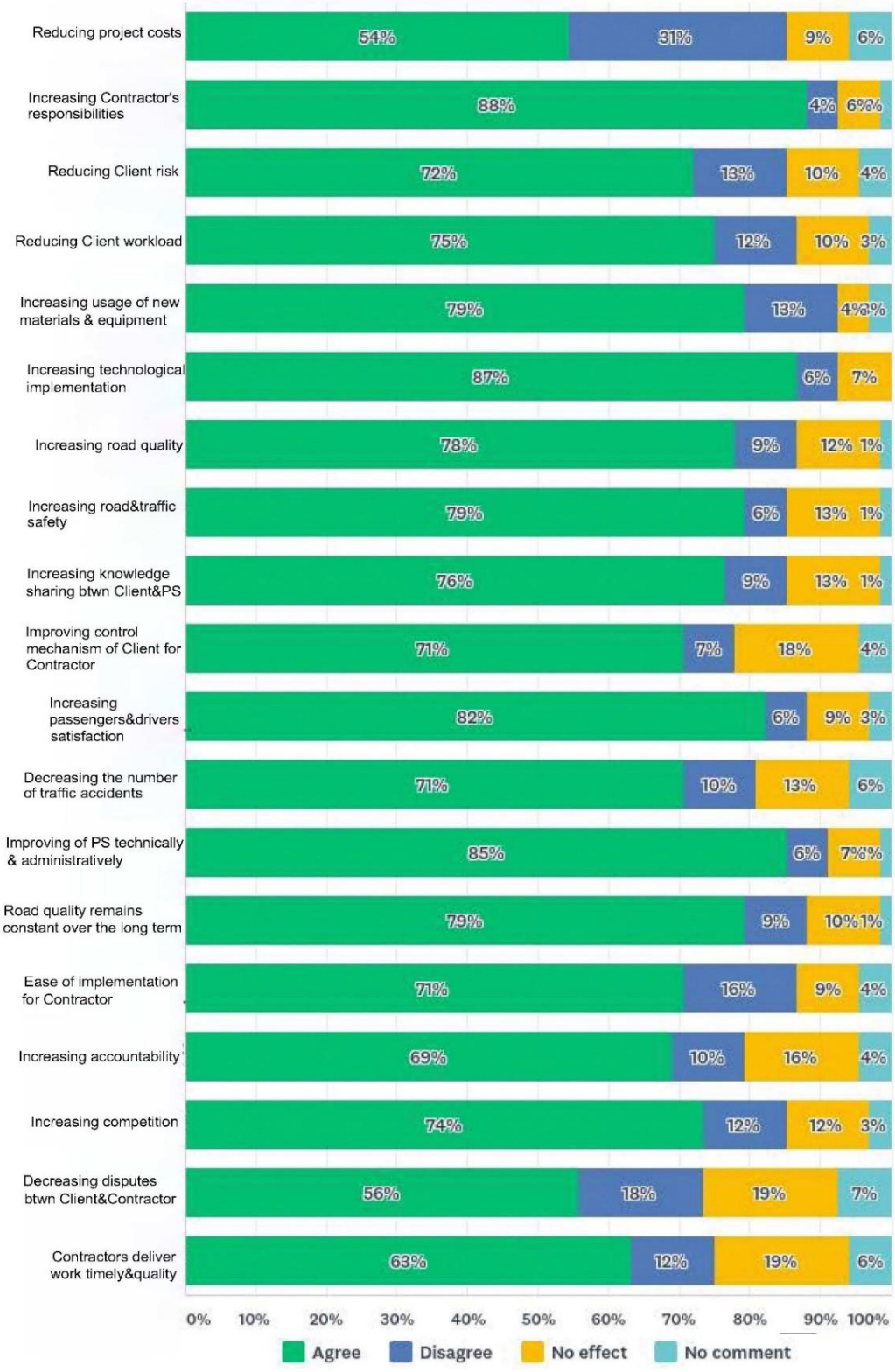


Figure 4.22. Expected effects of implementation of performance indicators

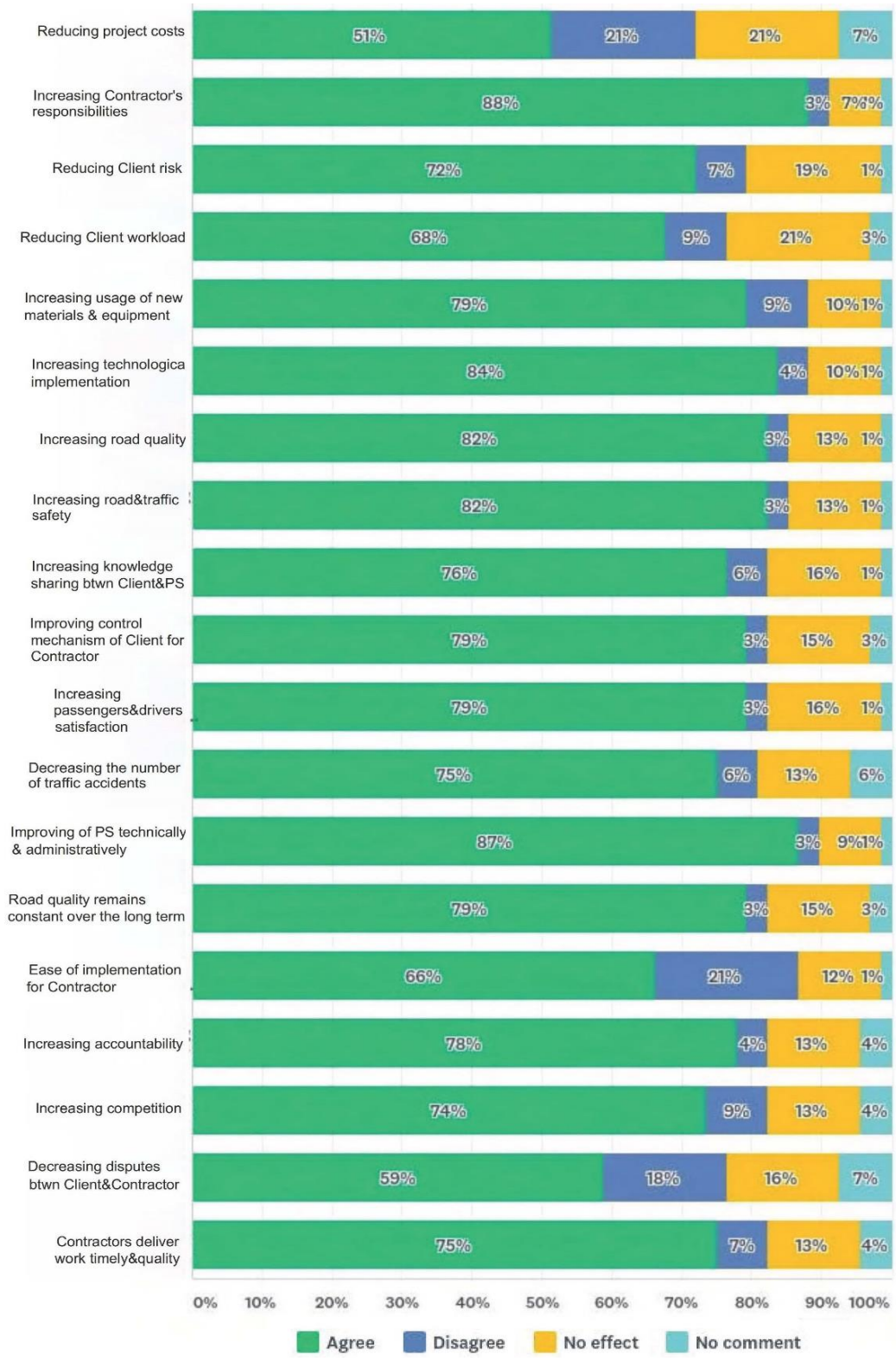


Figure 4.23. Expected effects of incentives & disincentives

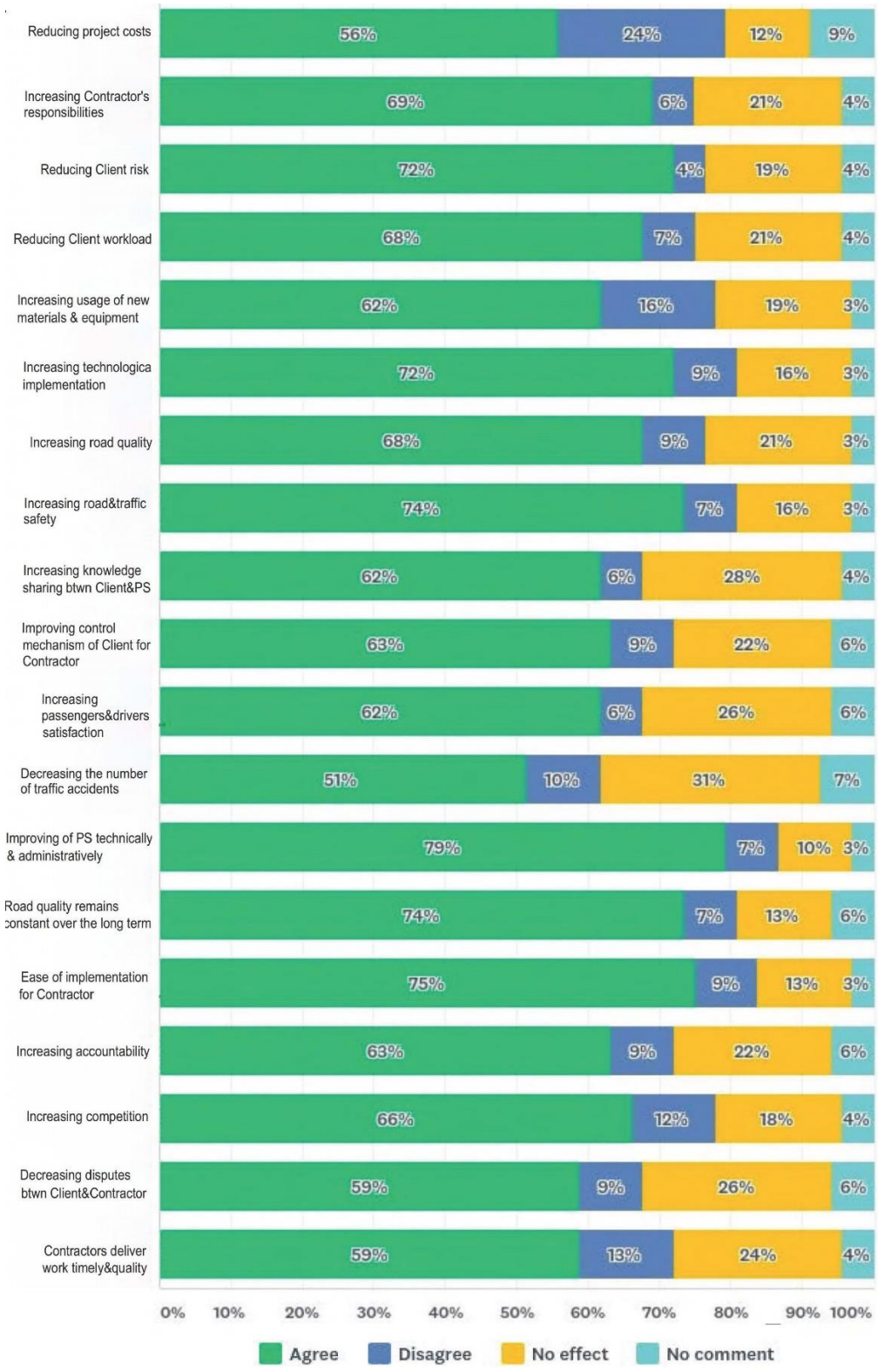


Figure 4.24. Expected effects of contract duration

Experts were asked which institution/organization must carry out road maintenance services (see Figure 4.25). A total of 53 experts are of the opinion that road maintenance services must be carried out by both the private sector and GDH, as it is the case now. However, the breakdown of work items and the responsible parties should be clearly specified.

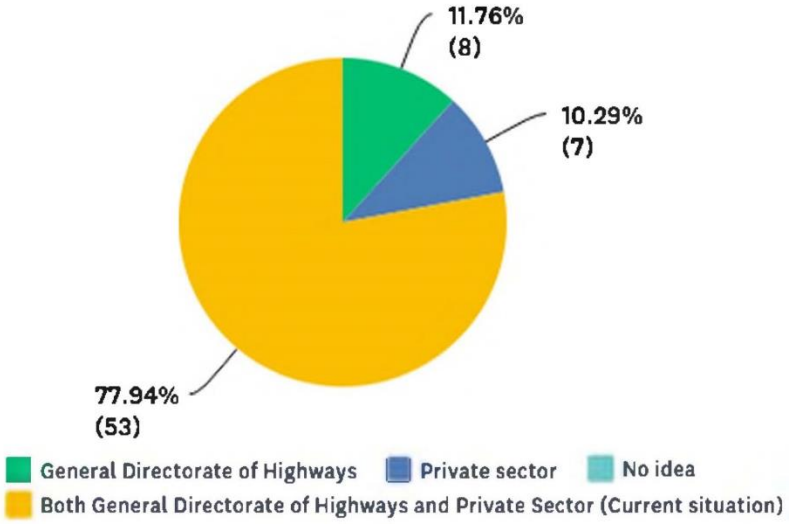


Figure 4.25. Expectations on the institution that should be responsible for road maintenance

Organizations are making efforts to implement Road Management System (also referred as road asset management) all over the world. Especially, establishment of a Road management System is particularly recommended by The European Union Road Federation (ERF) [66]. It is also argued that road management system has significant effects on road maintenance services. The experts were also asked to evaluate the effects of this system using a list of items, if it is adopted in Turkey. These items were obtained from ERF's report [70]. The majority of the experts agree with the positive effects that can be created if the system is implemented (see Table 4.10). The rate of experts, who do not agree with this, can be regarded as statistically negligible. As far as the rate of persons, who do not have an opinion regarding this aspect, is considered, it is concluded that this system must be explained to the experts in more detail.

Table 4.10. *Response rate for road asset management*

	Agree		Disagree		No effect		No idea		Total
Items	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**#**
Consistent good level of service	**85.29%**	58	**1.47%**	1	**4.41%**	3	**8.82%**	6	68
Reducing life cycle cost of the project	**80.88%**	55	**4.41%**	3	**4.41%**	3	**10.29%**	7	68
Reducing road user cost	**64.71%**	44	**5.88%**	4	**19.12%**	13	**10.29%**	7	68
Ability to monitor and follow up services	**89.71%**	61	**0.00%**	0	**4.41%**	3	**5.88%**	4	68
Improving transparency in decision making	**75.00%**	51	**2.94%**	2	**11.76%**	8	**10.29%**	7	68
Ability to predict future funding needs	**83.82%**	57	**2.94%**	2	**4.41%**	3	**8.82%**	6	68
Decreasing financial, operational and legal risk	**83.82%**	57	**2.94%**	2	**5.88%**	4	**7.35%**	5	68
Providing management plan for road maintenance services in the long term	**91.18%**	62	**0.00%**	0	**2.94%**	2	**5.88%**	4	68
Enabling management of data, info and inventory system	**89.71%**	61	**0.00%**	0	**4.41%**	3	**5.88%**	4	68
Allow to manage site operation efficiently and quickly	**85.29%**	58	**0.00%**	0	**7.35%**	5	**7.35%**	5	68

The survey also enabled the participants to share their opinions regarding whether the negative conditions could be eliminated if this PBC type is implemented in Turkey. Figure 4.26 shows that 50% of the experts answered 'Partially' agree, and 37% of the experts answered 'Disagree'. However, 7 experts, who gave a negative answer to this question, strongly agree that changes must be made in the current system according to the answers they gave to Q9 and Q16 [Appendix_14]. Considering the fact that these participants have an experience of more than 21 years in the sector, it can be inferred that they would like to further improve this system with different solutions.

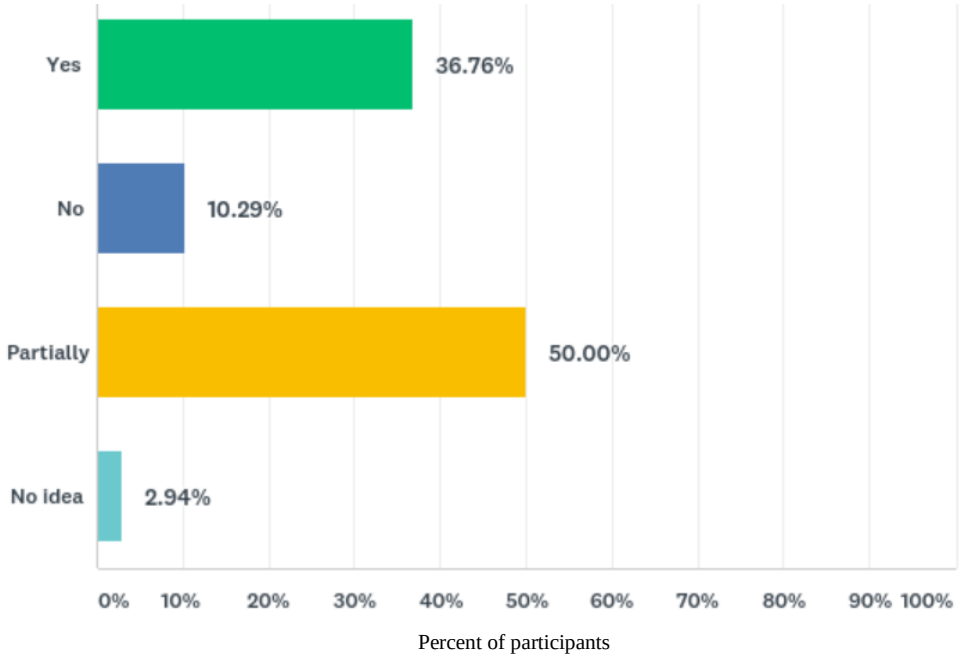


Figure 4.26. Evaluation of PBC for road maintenance

The following question is related to the evaluation of existing road maintenance services. Experts were requested to answer the question "Are the road maintenance services executed in Turkey needed to be developed", not only from the point of PBC implementation, but also other aspects in contracting of projects. 96% of experts are not satisfied with current services and they consider that the development of road maintenance is necessary as given in Figure 4.27.

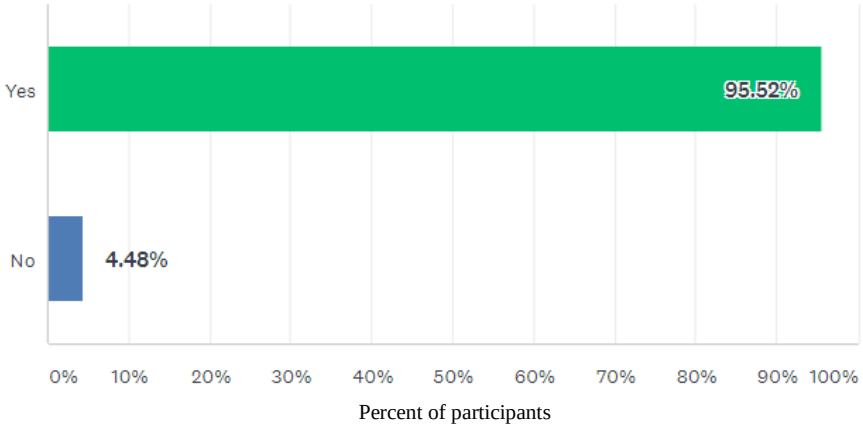


Figure 4.27. The need for developing the existing road maintenance services

In addition to multiple-choice questions, open-ended questions were also asked to experts to evaluate the existing status of road maintenance in many aspects and to find out their opinions and suggestions for developing the system. The comments of Q_10 and Q_16 are categorized under the following subjects;

- Organizational Structure and Training;
  - These services should be carried out by well-educated experts in the field of their expertise.
  - GDH should be reorganized for road maintenance and specialization in staffing will be generated.
  - The number of staffs experienced in road maintenance services is very few. To better serve, experts should be trained for road maintenance services predominantly.
- Cost;
  - If the new roads are constructed based on the performance criteria, the cost of the road maintenance services can decrease through the life of the pavement
  - Preventive and protective maintenance should be applied for more economical road maintenance services.
  - Utilities or infrastructure maintenance should be planned before the execution of road maintenance services. Otherwise, small unplanned reparation may cause an increase in road maintenance costs.
- Traffic and Road Safety
  - Control of vehicles having high axle-loads should be done carefully
  - Roads should be followed up by an electronic monitoring system and actions should be taken under emergency. Road users should be informed continuously with an instant information system.
  - New approaches should be used for traffic safety.
  - Road signs and signalization should be improved for safety reasons.
  - Traffic management shall be applied, and alternative routes shall be generated while execution of road maintenance services.

- For user safety, a more dynamic and timely response warning system should be improved.

- Snow and ice removal works
  - Snow and ice removal works should be carried by both GDH and the private sector due to inspection issues. On the other hand, there are experts with conflicting perspective about this issue. Such as, snow and ice removal works should be carried out by GDH. The private sector may delay or omit these services to gain profit.
- Contract Duration;
  - Future plans in the short and long term for infrastructure should be improved.
  - The effectiveness of services covers a short period.
  - Performance-based contracts shall be selected for road maintenance services by generating new technical specifications with longer contract duration.
- Implementation;
  - Existing road maintenance services are not sufficient.
  - New equipment and machinery should be preferred in fixing of road deterioration.
  - Performance-based contracting for road maintenance should be preferred in terms of better inspection and following up work items.
  - Existing contractors are not experienced in road maintenance services in Turkey. Therefore, their technical approaches and practices should be improved.
  - Long term solutions will be put forward for the problems.
  - Road maintenance services should be carried out properly not only for motorway or highways but also for other roads including state roads, and village roads.
  - Additional routine and periodic maintenance should be done after traffic accidents and natural disasters.
  - Routine maintenance provides early detection for various problems including deterioration, failure, and corrosion.

- Periodic maintenance of superstructures should be executed on time especially before deterioration.
- European standards should be used in road maintenance.
- The incapability of the workforce and equipment provided by contractors causes problems, especially in the winter season.
- Inspection should be done better. Penalties should be imposed on a contractor in case the work items are not performed on time or as expected.
- Lack of response mechanism and systematic observation system increases the road deterioration.
- Although the tenders are awarded to the private sector, equipment belonging to such private companies remains incapable; hence, currently, GDH's equipment is being used.
- Road distortions should be overcome immediately.
- Each contract type has pros and cons. Therefore, the execution and implementation of a contract are very essential.

- Quality and Innovative Technics;
  - Innovative solutions should be used to increase quality.
  - Quality, road safety, the timing of services should be improved.
  - Innovative and traditional technics and domestic resources should be used together in these services.
- Contractual issues and Parties' Responsibility;
  - Both the private sector and GDHs should carry out road maintenance services together.
  - Road Maintenance services should be carried out by the private sector completely.
  - PBC for road maintenance and, snow & ice removal works should be preferred in terms of penalty/disincentives system to avoid deficient work and insufficient equipment and machinery.

- The system used in PPP should be revised and adapted to road maintenance services.
- Inadequate regulations, specifications, and contracts should be revised according to the needs of the sector and services.
- Appointment of independent consultancy companies should be necessary to supervise the implementation of road maintenance services according to specifications.
- Technical specifications based on road maintenance should be improved and performance indicators should be developed.
- Incentives and disincentives in PBC will increase the efficiency of services

Some comments are very clear and emphatic as follows;

- The expert working under GDH as control chief at road maintenance services and experienced between 16-20 years; "Road maintenance services is a subject that requires more professionalism than new road construction works. Maintenance services executed regularly by well-experienced experts will both increase the life of the road and provide traffic safety. Preserving the existing structure instead of reconstruction and extending its life is very important as our economy fluctuates significantly. For this reason, it is essential to execute these systems in the most effective manner. The current situation of road maintenance services is far from professionalism in my opinion. We tender to the contractor with the lowest price and then we are tired of waiting for the work completion for years. Costly construction materials belonging to the government are provided by the client for road maintenance services and it is expected from the contractors to use them without any wastage while carrying out maintenance services. Unfortunately, very few companies can execute and complete this service successfully according to my observations. Tender costs and material costs are increasing more and more".
- The expert working under GDH as the head of the department at road maintenance services and experienced more than 21 years: "The tender period

must be minimum 3 years. Machinery and equipment belonging to a contractor are inadequate in terms of their technical features and they must be improved. The general appearance (paint, body, beacon lamp, etc.) of these machines and equipment from the contractor serving on behalf of our institution are unsatisfactory and this negative situation causes loss of prestige of our institution. The companies having the required competence have not been established yet. The contractor companies employ inexperienced staff with financial concerns, and it causes the failure of services. Especially, snow & ice removal works could not be performed efficiently. Snow & ice removal services should be executed in-house. Required machines, equipment, and personnel needs should be investigated in detail and unnecessary costs should be avoided when preparing the specifications".

- The expert working under GDH, contractor, and consultant as control chief at road maintenance services and experienced more than 21 years; "The control procedure must be executed by Clients more frequently and fairly. Technical staff, machinery parks, and equipment prescribed within the contract must be controlled regularly. Owing to the insufficient current tender system, using the performance-based contracting system shall be used".
- The expert working under contractor and design firm as a senior engineer at the road sector and experienced between 6-10 years; "I believe that advantage of the current technology and literature in the road maintenance services are not used. Temporary and over-cost solutions are implemented without thinking in detail on the factors. In my opinion, the sanction must be severe for performing the improper services in road maintenance works and it must be applied for all works carried out for public interests".
- The expert working under GDH, contractor and consultant as manager at road sector and experienced more than 21 years; "First of all; inventory of all structures within road must be taken and evaluated in four stages: 1- Essential maintenances (paving failure, guardrail and traffic sign distortion, slope failure, hydraulic structures failure, etc.), 2- Electromechanical works

maintenance (VMS, VTS, lighting, camera, fire-fighting, sensing system, etc. essential and routine maintenances), 3- Routine maintenances (Control of all structures in inventory periodically, fullness of hydraulic structures, crack & failure control for under bridge and viaduct, ditch control, etc.), 4- Contractor maintenance (to be maintenance by contractors who will be responsible 5-10 years for all structures excluded natural disasters). The systematic implementation should be carried out for traffic safety, travel comfort and time access planning. Taking advantage of the technology, work alignments, and work area durations should be controlled by GPS. Before and after of executed works should be recorded as central with video or photo as day – hour. Maintenance and repair standards should be established. In operation, scenarios should be prepared for marking, flags, necessary team equipment, necessary materials and techniques to be implemented and training should be provided for personnel. Paving platform and all the other structures should be controlled periodically, and snow and ice removal works should be considered under separate headings".

In summary, considering the answers and comments given by road experts, it is concluded that the current road maintenance services in Turkey have shortcomings in terms of both contractual and executive issues. Hence, permanent solutions should be produced in the long term and necessary precautions should be taken regarding these problems. In the current system, road experts mainly emphasized that road quality should be improved, and contractors' capability should be technically evaluated in the tender stage. In addition, pre-qualification stage should be implemented in the tendering process and contractors should be required to submit their technical approach and methodology for project alignment under the scope of the project. Financial capacity and related experience are also evaluated in the pre-qualification stage. The most prominent and common point of view of road experts is the need for generating performance indicators and implementing incentives and disincentives system to increase the road quality. Road experts indicated that aforementioned

problems could be eliminated, and necessary improvements could be provided by transitioning into PBC for road maintenance services.

4.6. Roadmap

The planning and developing of a strategy for modifying the current contracting system to the PBC are very essential. Therefore, in case of PBC system brought into use in Turkey, a roadmap has been developed and published [79] within the scope of this research (see Figure 4.28).

This roadmap is enhanced according to data, results, and comments gathering from the literature review, interviews and surveys conducted after that initial study. Modifications and additions are highlighted with red color in Figure 4.29.

The details of the modifications for each section is as follows:

Discovery Section;

Gathering information: the clause “lessons learned from the implemented PBC cases in neighboring countries with similar practices, cultures, geographic conditions” changes to “lessons learned from the implemented PBC for road maintenance in all countries”. Since; the implementation techniques and obtained results show variations for all countries. All countries’ data should be examined to find the most effective and feasible PBC system for Turkey.

Gathering information: the clause “advantages and disadvantages of current systems” changed to “determining deficiencies of the current system”. Because, whether the deficiencies in the current system for road maintenance could be overcome by using PBC should be investigated.

Review inputs: the clause “involvement of all stakeholders including the Ministry of finance, road agencies and contractors” is revised by adding “Consultant”. Consultancy firms in Turkey also carry out supervision and inspection services in the road sector for years. Hence, consultants should take part in this transition process and

GDH should benefit from their experience and knowledge while preparing technical specifications. Hence, “consultants” should also be emphasized in the roadmap.

Define strategies: the clause “public-private sector collaboration to plan the pilot study in the short term” is revised by adding “with a duration of (3-5 years)”. Since data gathering from PBC countries, it is observed that pilot project duration is mostly between 3 and 5 years. Additionally, the duration of road maintenance projects carried out by the private sector is also about 3 years in Turkey. Thus, pilot projects for PBC should be at least 3 years.

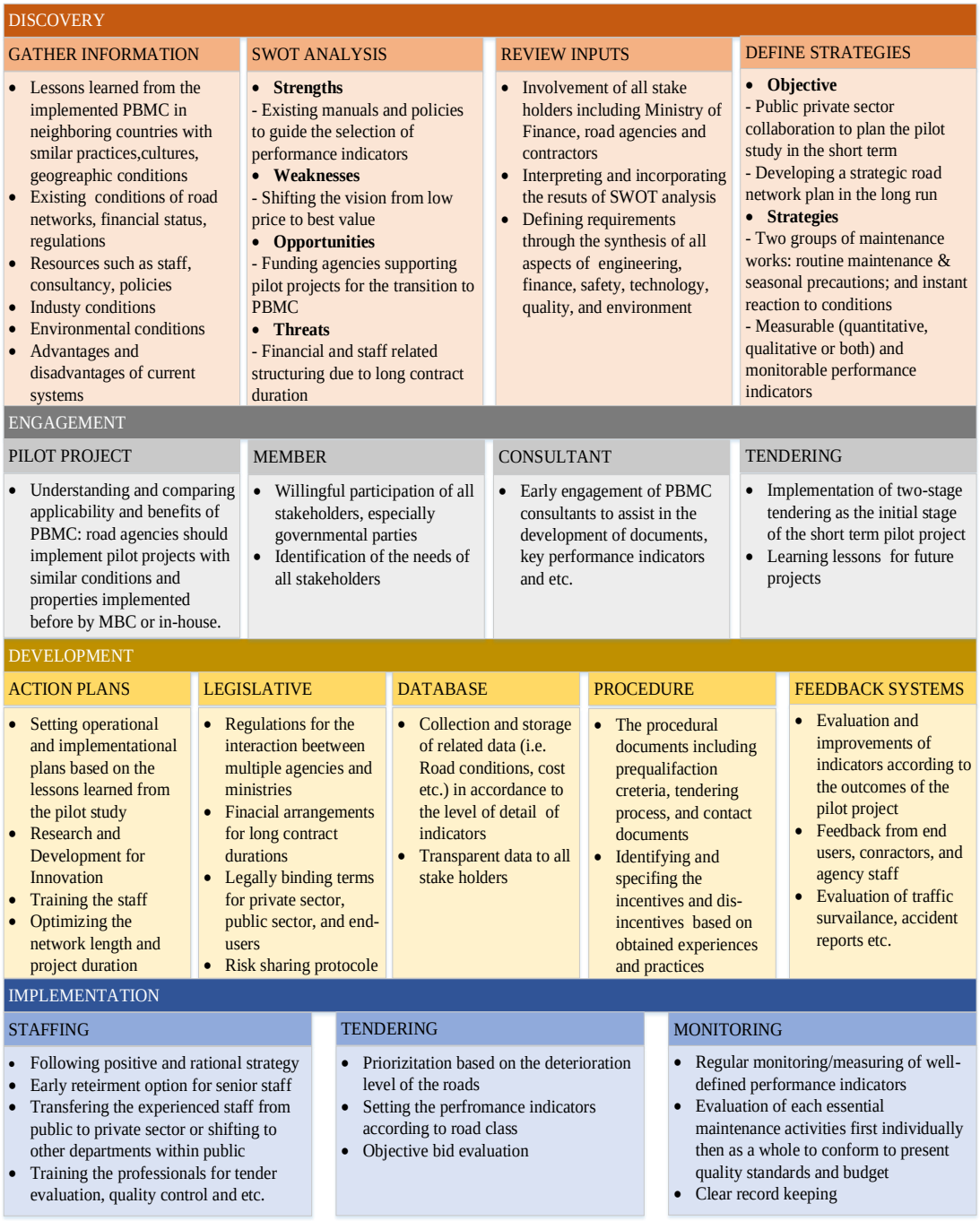


Figure 4.28. Roadmap for PBC in road maintenance [79]

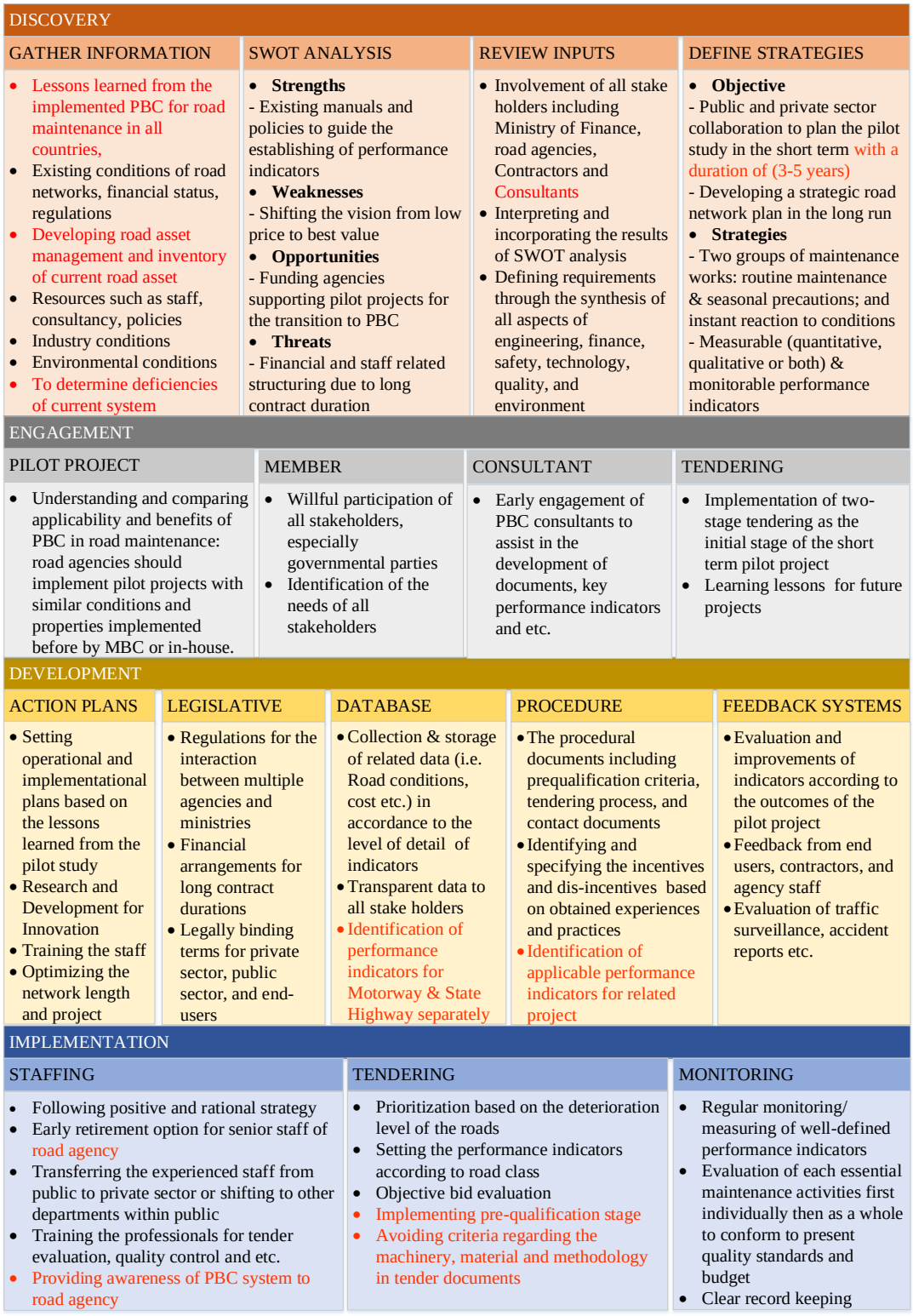


Figure 4.29. Updated roadmap for PBC in road maintenance

In addition, the following points require careful consideration while transitioning to PBC for road maintenance:

1- Principles and regulations related to the price difference to be applied in construction works, for which contracts are awarded as per the Public Procurement Law No. 4734, are specified in the current. For long-term contracts like PBC and countries where economic fluctuations take place frequently, price difference is of significant importance for the Contractor to feel secure and for the purpose of risk mitigation. Therefore, regulation allows an ease in transmission to PBC system. However, price difference principles in the current legislation are valid for only general construction works; however, specific regulation must be prepared only for road maintenance.
2- Since current contract type is method based, penalty procedures are also arranged according to this contract type. Penal procedures which are applied in road maintenance services, are only limited to lack of machinery and equipment, minimum number of personnel, road closures (within the scope of snow & ice removal works). However, these penalties cover the service of the work, but ignore the quality level, or consist only of conditions that cover machinery, equipment or personnel related aspects. In other word, penalty conditions related to efficiency or quality are not specified clearly.
3- Technical specifications, which is part of the tender documents in the current system, are prepared as specific to the project. Especially the number of personnel to be assigned in the project, machinery-equipment, materials to be used and their properties, definitions and implementation principles are specified in the technical specifications. These documents is re-prepared separately for every project. Since freedom of material, personnel and machinery is a characteristic of PBC, a general technical specification, which contains all the performance criteria related to road maintenance services, should be prepared. This generic specification need to be applied is used for all projects.

4- In the technical specifications used for the current road maintenance services, reference is made to General Conditions of Construction Works for some duties, scopes and responsibilities. However, with the adoption of PBC, a technical specification, which fully complies with this contract type must be developed as independent of the new road construction specifications.
5- Contracts are awarded for current road maintenance services for a period of maximum 3 years. In accordance with the information obtained from literature review, it was determined that PBC is executed for a period of 5-10 years, and even more, and in this way, more efficiency is yielded. For this reason, long-term payment planning must be made and issues such as payment method must be addressed in detail in the PBC for successful implementation.
6- Incentive & disincentive system, which is not available in the current system, but which is one of the aspects of PBC that yields positive results, must be processed in the legislation.

Since PBCs are long term contracts, potential risks must be defined in detail both on the part of the contractor and the client, and force majeure conditions must also be determined on a regional basis.

CHAPTER 5

DISCUSSION

In this study, the experience of various developed and developing countries on PBC is analyzed to develop a roadmap for changing the road maintenance contracting in Turkey. To analyze the current practice in Turkey, the experience of road users and the perspective of road experts on road maintenance are investigated through surveys.

In a previous attempt to analyze the applicability of PBC in road maintenance services, a study was conducted by Bulent Gun [80] in 2014. GDH had just started to tender road maintenance services to the private sector in that period. In that study, a set of questions related to current road maintenance contracts and evaluation of PBC were similarly asked to 627 people. However, the responders of that survey were limited to GDH employees. Therefore, the perspective of responders from the client-side (Agency side) were acquired, so, the results could be biased. Thus, the opinions of all parties involved in the road sector (e.g., client, contractors and users) were included in the survey study conducted within the scope of this thesis. Viewpoints of all parties must be conferred to ensure the necessary improvements for contractual terms and its application. Otherwise, approaches based on a single perspective may fail to reveal the problematic issues (e.g., payment plans), if the solutions created may work out only for the benefit of a single party.

The results of Gun's analysis on the current situation are not inconsistent with the survey results of this thesis. However, percentage rates of consequences of Gun's survey, which suggest that the existing condition is favorable, are relatively higher in Gun's survey. This difference can be due to the fact that the participants of that survey were only GDH personnel. The responses of Gun’s (2014) survey are presented in Figure 5.1 regarding the usage of performance indicators / criteria in PBC. Same consequences are also asked to road experts in the survey executed under this thesis. Similar results are obtained from both surveys as shown in Figure 4.22 and Figure 5.1.

More than 60% of 627 GDH employees and more than 75% of 68 road experts from different parties agree on these consequences if performance indicators in PBC are implemented in road maintenance services. However, there is a conflict only for the implications regarding the ease of implantation. GDH employees in Gun's survey think that implantation of PBC will not be easier than MBC. To understand the reason for that, the sub-analysis in Appendix_15 is made for 23 GDH employees in the survey executed in this thesis. 70% of this 23 GDH employees think that PBC will provide ease of implementation. The difference in the numbers can be explained with the increased awareness of employees over the six years of time difference between these studies. Alternatively, while Gun's survey (2014) addressed GDH employees at all levels, this study's target audience was mainly the senior directors and managers.

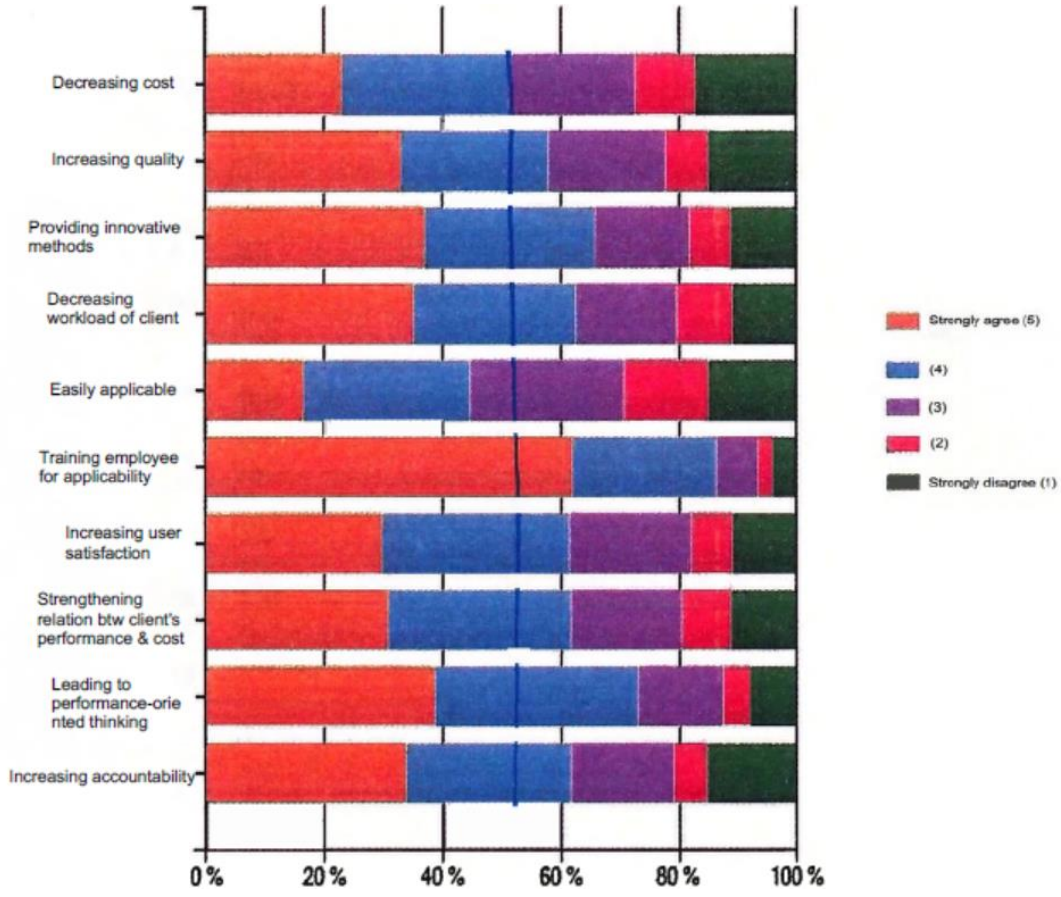


Figure 5.1. Gun's survey results for performance indicators [80]

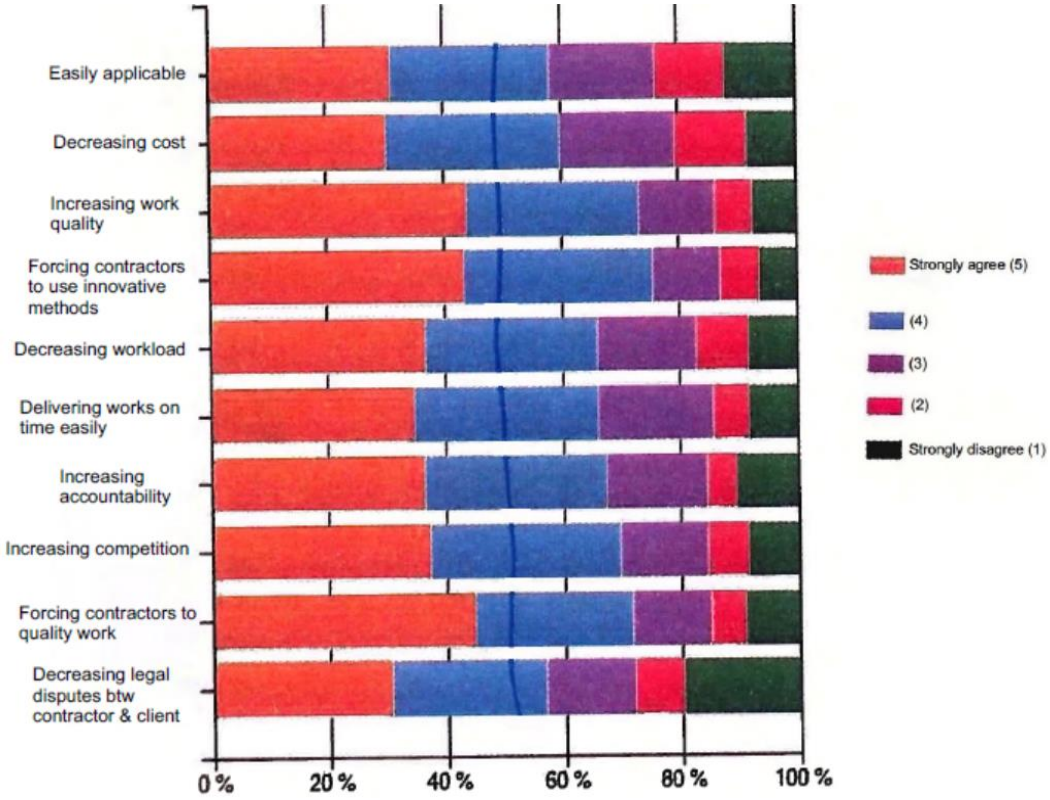


Figure 5.2. Gun's survey results for incentives & disincentives [80]

The responses of Gun's survey are presented in Figure 5.2 regarding the incentives & disincentives condition in PBC. Same consequences are also asked to road experts in the survey executed under this thesis. Similar results were obtained from both surveys as shown in Figure 4.23 and Figure 5.2. More than 65% of 627 GDH employees and more than 70% of 68 road experts from different parties agree on these consequences if incentives & disincentives condition in PBC is implemented in road maintenance services.

Performance Indicator;

- Performance indicators, which constitute the milestone of PBC system, are also used similarly in PPP projects in the road sector of Turkey. However, the current performance indicators are not comprehensive enough to be used in PBC, and they do not include items such as response time and penalty, which increase the system efficiency. Therefore, there is a need to establish

performance indicators, which will be used in PBC, by means of the studies from currently executed PPP projects, and feedback data. Especially since the private sector is involved in PPP, it will make it possible to evaluate the performance indicator to be prepared not only in terms of the client but also in terms of the contractor.

Staffing;

- One of the most significant features provided by PBC is the employer's possibility to decrease the number of its personnel and reduce general expenses. If the PBC system is adopted, employment of 10.000 personnel who are working within the scope of road maintenance services in GDH will be unemployed, and this can lead to a major problem. In PBC, only the employment of experienced personnel in GDH will be sufficient for the purpose of inspection. It is even estimated that if GDH prefers to hire third-party contractors (consultants) for inspection or supervision of the projects, then the number of employees in GDH can be lowered. In pilot projects, which are implemented across the world for preventing such cases, some solutions, which yielded positive results, were developed. One of them is to train GDH personnel about PBC and re-hire them in independent companies to be established within the body of GDH. In this way, for a period of 3 to 5 years, both GDH's own personnel can gain experience about PBC, and these people may be encouraged to establish their own companies and enter the sector. Highly experienced specialists of GDH can also work on the side of the consultant and transfer their accumulated knowledge to this new system.
- GDH can successfully use its own staff in an efficient manner while adopting the PBC system.

Pilot Project;

- Client, who decides to switch to PBC system, need to lead the orientation process of the system by executing a pilot project through its own means or

with the support of the private sector. GDH has to prepare the documents in accordance with legislative, legal, financial and technical requirements and include the solutions to potential problems faced during the pilot project. Otherwise, the system's incompatibility with our own legislation may be determined, either the option of switching to PBC is abandoned, or PBC can be adopted in accordance with the current system. This will depend completely on the nature of the problems that will be confronted during implementation, and their variety.

- Considering the similarity of PPP projects in the road sector of Turkey with PBC, it can be suggested that at least the technical specification preparation phase of pilot projects can be executed through PPP projects.

Road Asset Management;

- The road sector has always had an important place for both governments and road users due to their costly expense items and investment opportunities. Therefore, it is essential to carry out studies to determine the ways of decreasing expenses in the road sector in Turkey. Serious investments are made for the construction of new roads especially in developing countries such as Turkey. However, maintenance costs will increase significantly if maintenance services of these new roads are not provided efficiently and in due time in the near future. For this reason, long-term road maintenance plans must be developed by GDH in a way that both these newly constructed and the current roads are covered within the scope of services. This can only be achieved through road asset management.
- In the PBC system, the employer provides freedom of methodology, machinery-equipment and material. Therefore, the Contractor must be well-informed about the current conditions of the road, for which a contract will be awarded, and which materials, equipment or method will be used for this project while preparing the financial bid. Otherwise, financial bid will not be sufficient or fail to meet the requirements of the work with the estimated

budget if maintenance requirements of the road cannot be determined accurately. Since the contract is a long-term agreement, this will cause significant losses and even bankrupt on the part of the contractor company. Considering the fact that the tender preparation period of the work is about 1-2 months, it does not seem possible for the Contractor to conduct an accurate site investigation. Therefore, GDH must establish the inventory of all motorways and state highway under its responsibility, and prepare a road asset management plan according to the current conditions of the road. In this way, the Contractor can prepare an accurate bid by making use of the inventory information and the plans received from the Client. However, the Contractor must still check this data on-site through its own experts, make the necessary additions or changes, and reflect them in their prices and methodologies that they will prepare.

- Some Clients in the world, especially those who lack sufficient personnel and equipment, agree with the private sector for establishing of road asset management and receive this service as outsourcing. In recent years, GDH realized the importance of road asset management and started conducting inventory studies. In 2018, GDH completed the inventory study of all bridges in Turkey through the services of the private sector. However, an inventory of not only bridges, but also all roads and road structures, must be developed in order to achieve a complete road asset management system.

Legal Procedures;

- Since PBC projects are long-term contracts, funding arrangements must be done accurately, and the trust of the private sector must be gained.
- If PBC projects have a period of 10-15 years, the government should support GDH’s funding strategy. This, hereby, encourages the contractor to be involved in this kind of projects. Payment guarantee will be ensured in point of contractor in this way.

- Public procurement law and procurement system used in Turkey has been developed and furthered over the course of the years. However, road maintenance services are evaluated within the scope of construction works. If the PBC system is adopted, it is important for the accurate operation of the system to exclude it from the scope of construction works, and manage it through a new regulation, law or act like PPP.
- According to the results and comments gathered from the survey and interviews with experts, road maintenance services especially the part of snow and ice removal works should be carried out by both GDH and private sector. This opinion could be explained by two reasons. First one is a lack of confidence in contractors to execute the works on time. The other is that contractors may not provide required machinery and equipment under the state of emergency.

Snow & Ice Removal Works,

- Including snow & ice removal works within the scope of PBC is yet another issue that must be evaluated thoroughly. This service is highly important for traffic safety. Comments submitted through the survey also emphasize the fact that this is not a service, which must not be left solely to the initiatives of the private sector. Therefore, GDH must investigate whether the private sector is capable of providing this service especially in regions where winter conditions are harsh. This service can be developed as a system, which can be managed by both the private sector and GDH as identified in the survey. It can be included or excluded from the scope of PBC in some regions depending on the competence of the private sector.
- Turkey has a large surface area; thus, different seasonal conditions in various regions are observed. It will be a better option to include snow & ice removal works, partially within the scope of the service in some regions such as Mediterranean and Aegean Regions, where winter is rainy. In extreme cases

in these regions, GDH can provide these services through its own equipment and personnel to be assigned for this purpose.

CHAPTER 6

CONCLUSION

According to the 2023 strategy of the Turkish Ministry of Transport and Infrastructure, the roadway network of Turkey will continue expanding rapidly [82]. Thus, this growth will be accompanied by an increase in maintenance costs in the future. Therefore, a well-planned and organized strategy for road maintenance is essential for managing the limited funds, as well as for maintaining the quality of roads.

Within this study, following subjects were reviewed and presented in literature review; a) project delivery methods for road sector, b) project delivery methods for road maintenance, c) importance of road maintenance, d) implementation of road maintenance services in Turkey, e) historical development, characteristics, advantaged and challenges of PBC in road maintenance, f) road asset management system.

After reviewing the project delivery systems used in the world and emphasizing the importance of road maintenance services, PBC appears to be a prominent contracting type for road maintenance services, and it is also the mostly preferred one by countries.

The objective of this study was to understand the road maintenance services in Turkey and to determine the shortcomings of these current contracts' implementation and tender processes. In addition, the investigation of PBC to address these shortcomings and determination of a strategy to modify the current system to PBC were within the objectives of this study.

The principal findings of this study are listed below;

- The countries, which are using PBC in road maintenance services, are identified and compared to Turkey. All these countries show variations in terms of their income status, road network, population and location.

- Current road maintenance services in Turkey are analyzed and the shortcomings of existing contract implementation and tender processes are determined by means of surveys, interviews and data collection.
- A comparison of MBC in Turkey and PBC was made and similarities and differences were presented in this study.
- Perceptions and satisfaction of 1036 road users regarding current road maintenance in Turkey were acquired. According to the survey, road users are not satisfied with current road maintenance services and road safety has crucial importance.
- Perceptions, comments, and suggestions of 71 road experts regarding current road maintenance in Turkey were obtained via surveys (68) and interviews (3). It was revealed that current road maintenance services must be developed by modifying the existing contracts. It was particularly suggested that establishing performance indicators and incentives/disincentives system in road maintenance, which are the main characteristics of PBC, could partially overcome the deficiencies of the current road maintenance services. In addition, experts' perspective is significantly positive for the usage of PBC in Turkey because of its advantages.
- Road experts also suggested that road asset management should be developed to provide a sustainable and effective strategy for the road network and its maintenance for future benefits.
- An initial roadmap was developed within the scope of this research for changing the existing contracting system to the PBC for road maintenance in Turkey, using the literature review. This roadmap has been updated according to data gathered from the interviews and surveys.

Recommendation for Future Works

- An inventory study on the whole road network including road structures in Turkey, should be conducted. Such an inventory can be used towards the development of Road Asset Management.
- Both researchers and the agency (e.g., The Research and Development Department of GDH) can take the initiative to identify the performance indicators and new regulations for implantation and contractual issues for PBC with the support of the other stakeholders.
- A pilot project for PBC in road maintenance can be carried out under PPP to comprehend its technical and financial applicability. After that, GDH can execute a pilot project to evaluate the applicability of PBC especially in terms of contractual and economical issues with the feedbacks from the previous pilot project.

REFERENCES

[1] Anastasopoulos, P. C., McCullouch, B. G., Gkritza, K., Mannering, F. L., & Sinha, K. C. (2009). Cost savings analysis of performance-based contracts for highway maintenance operations. *Journal of Infrastructure Systems*, *16*(4), 251-263.

[2] Anastasopoulos, P. C., Labi, S., McCullouch, B. G., Karlaftis, M. G., & Moavenzadeh, F. (2010). Influence of highway project characteristics on contract type selection: Empirical assessment. *Journal of Infrastructure Systems*, *16*(4), 323-333.

[3] Otto, S., & Ariaratnam, S. T. (1999). Guidelines for developing performance measures in highway maintenance operations. Journal of transportation engineering, 125(1), 46-54.

[4] Madelin, K., & Parkman, C. C. (1999, October). A review of contract maintenance for roads. In Konferenzbeitrag, World Road Congress, World Road Association (PIARC), Paris.

[5] Fallah-Fini, S., Triantis, K., Jesus, M., & Seaver, W. L. (2012). Measuring the efficiency of highway maintenance contracting strategies: A bootstrapped non-parametric meta-frontier approach. European journal of operational research, 219(1), 134-145.

[6] Anastasopoulos, P. C., Florax, R. J., Labi, S., & Karlaftis, M. G. (2010). Contracting in highway maintenance and rehabilitation: Are spatial effects important?. Transportation Research Part A: Policy and Practice, 44(3), 136-146.

[7] Tamin, R. Z., Tamin, A. Z., & Marzuki, P. F. (2011). Performance based contract application opportunity and challenges in indonesian national roads management. Procedia engineering, 14, 851-858.

[8] Cabana, G., Liautaud, G., & Faiz, A. (1999). Areawide performance-based rehabilitation and maintenance contracts for low-volume roads. Transportation research record, 1652(1), 128-137.

[9] Manion, M., & Tighe, S. L. (2007). Performance-specified maintenance contracts: Adding value through improved safety performance. Transportation Research Record, 1990(1), 72-79.

[10] Molenaar, K. R., & Navarro, D. (2011). Key performance indicators in highway design and construction. Transportation Research Record, 2228(1), 51-58.

[11] Ahmed, J., Gharaibeh, N. G., & Damnjanovic, I. D. (2012). Best-value bid selection methods for performance-based roadway maintenance contracts. Transportation Research Record, 2292(1), 12-19.

[12] de la Garza, J. M., & Arcella, J. L. (2013). Current Performance-Based Maintenance Methods to Improve Virginia Highways: Comparative Analysis. Transportation Research Record, 2361(1), 35-43.

[13] Hyman, W. A. (2009). Performance-based contracting for maintenance (No. Project 20-5 (Topic 37-09)).

[14] Loulakis, M. C. (2013). Legal Aspects for Performance-Based Specifications for Highway Construction and Maintenance Contracts (No. Project 20-6).

[15] Molenaar, K. R., & Yakowenko, G. (Eds.). (2007). Alternative project delivery, procurement, and contracting methods for highways. Reston: American Society of Civil Engineers.

[16] Rouse, P., Putterill, M., & Ryan, D. (1997). Towards a general managerial framework for performance measurement: A comprehensive highway maintenance application. Journal of Productivity Analysis, 8(2), 127-149.

[17] Queiroz, C. (1999). Contractual procedures to involve the private sector in road maintenance and rehabilitation. Transport Sector Familiarization Program, World Bank, Washington, DC, 18.

[18] Panthi, K. (2009). A methodological framework for modeling pavement maintenance costs for projects with performance-based contracts.

[19] Haas, R., Felio, G., Lounis, Z., & Falls, L. C. (2009, October). Measurable performance indicators for roads: Canadian and international practice. In Annual Conference of the Transportation Association of Canada, Vancouver.

[20] Piñero, J. C. (2003). A framework for monitoring performance-based road maintenance (Doctoral dissertation, Virginia Tech).

[21] Zietlow, G. (2005). Cutting costs and improving quality through performance-based road management and maintenance contracts-the Latin American and OECD experiences. Senior Road Executives Programme, Restructuring Road Management, German Development Cooperation, Birmingham.

[22] Selviaridis, K., & Wynstra, F. (2015). Performance-based contracting: a literature review and future research directions. International Journal of Production Research, 53(12), 3505-3540.

[23] Wienrank, C. J. (2004). Demonstrating the use of performance-based warranties on highway construction projects in Illinois (No. FHWA/IL/PRR-146,).

[24] Wirahadikusumah, R., Susanti, B., Coffey, V., & Adighibe, C. (2015). Performance-based contracting for roads–experiences of Australia and Indonesia. Procedia Engineering, 125, 5-11.

[25] Sultana, M., Rahman, A., & Chowdhury, S. (2013). A review of performance based maintenance of road infrastructure by contracting. International Journal of Productivity and Performance Management, 62(3), 276-292.

[26] Sultana, M., Rahman, A., & Chowdhury, S. (2012). Performance Based maintenance of road infrastructure by contracting—A challenge for developing countries. Journal of Service Science and Management, 5(02), 118.

[27] Sultana, M. (2012). The Potential of Performance Based Maintenance Contracting for Road Infrastructure Systems of Developing Countries (Master's thesis). Griffith University, Queensland, Australia.

[28] Lancelot, E. (2010). Performance Based Contracts in the Road Sector: Towards Improved Efficiency in the Management of Maintenance and Rehabilitation-Brazil's Experience.

[29] Stankevich, N., Qureshi, N., & Queiroz, C. (2005). Performance-based contracting for preservation and improvement of road assets. Transport Note No. TN, 27.

[30] Zietlow, G. (2004). Implementing performance-based road management and maintenance contracts in developing countries-an instrument of German technical cooperation. German Development Cooperation (GTZ), Eschborn, Germany.

[31] Gajurel, A. (2014). Performance-based contracts for road projects. Comp. Anal., 1-159.

[32] De la Garza, J. M., Pinero, J. C., & Ozbek, M. E. (2009). A framework for monitoring performance-based road maintenance contracts. In Proceedings of the Associated Schools of Construction 45th Annual International Conference,, Gainesville, FL (pp. 433-441).

[33] Fuller, J., Brown, C. J., & Crowley, R. (2017). Performance-Based Maintenance Contracting in Florida: Evaluation by Surveys, Statistics, and Content Analysis. Journal of Construction Engineering and Management, 144(2), 05017021.

[34] European Bank for Reconstruction and Development. (2016). Policy Challenges in the Implementation of Performance-based Contracting for Road Maintenance. United Kingdom

[35] Gericke, B., Henning, T., & Greewood, I. (2014). Review of Performance Based Contracting in the Road Sector: Phase 1. World Bank, Washington, DC.

[36] Gericke, B., Henning, T., & Greewood, I. (2014). Review of Performance Based Contracting in the Road Sector: Phase 2. World Bank, Washington, DC.

[37] Yoshida, T. (2002). Performance-based specification as a step to performance-based management and maintenance of pavement in Japan. In IRF & ARF Asia Pacific Roads Conference and Exhibition.

[38] Hancher, D. E. (1999). Contracting methods for highway construction. TR News, 205(1), 10-15.

[39] Hancher, D. E., & Lambert, S. E. (2002). Quality-based prequalification of contractors. Transportation research record, 1813(1), 260-274.

[40] Ribreau, N. (2004). Highway maintenance outsourcing experience: Synopsis of Washington state department of transportation's review. Transportation research record, 1877(1), 3-9.

[41] Schoenmaker, R., De Bruijn, J. A., & Herder, P. M. (2014). The dynamics of outsourcing maintenance of civil infrastructures in performance-based contracts. In Engineering Asset Management 2011 (pp. 677-687). Springer, London.

[42] Garvin, M., Molenaar, K. R., Navarro, D., & Proctor, G. (2011). Key performance indicators in public-private partnerships: A state-of-the-practice report (No. FHWA-PL-10-029). United States. Federal Highway Administration. Office of International Programs.

[43] Asian Development Bank. (2012). Performance-Based Routine Maintenance of Rural Roads by Maintenance Groups. Philippines.

[44] de la Garza, J. M., Piñero, J. C., & Ozbek, M. E. (2008). Sampling procedure for performance-based road maintenance evaluations. Transportation Research Record, 2044(1), 11-18.

[45] Ray, B. L., Ferguson, E. M., Knudsen, J. K., Porter, R. J., & Mason, J. (2014). Performance-Based Analysis of Geometric Design of Highways and Streets (No. Project 15-34A).

[46] Markow, M. J. (2012). Performance-based Highway Maintenance and Operations Management (Vol. 426). Transportation Research Board.

[47] Parsons Brinckerhoff. (2013). Utah Department of Transportation - feasibility study for performance-based maintenance contracting - final report. Utah, USA.

[48] Dye, B., Kraft, E., Mills, P., & Gransberg, D. (2014). Performance-Based Contractor Prequalification as an Alternative to Performance Bonds (No. FHWA-HRT-14-035).

[49] Anderson, S. D., & Damnjanovic, I. D. (2008). Selection and evaluation of alternative contracting methods to accelerate project completion (No. Project 20-5 (Topic 38-12)).

[50] Neuman, T. R., Coakley, R. C., Panguluri, S., & Harwood, D. W. (2017). A Performance-Based Highway Geometric Design Process (No. Project 15-47).

[51] Kashiwagi, D. T., Bari, J., & Sullivan, B. (2003, April). Application of performance based system in the pavement contracting. In ASC Proceedings of the 39th Annual Conference (pp. 8-12). Clemson, SC: Associated School of construction, California Polytechnic State University.

[52] Molenaar, K., Harper, C., & Yugar-Arias, I. (2014). Guidebook for Selecting Alternative Contracting Methods for Roadway Projects: Project Delivery Methods, Procurement Procedures and Payment Provisions. Transportation Pooled Fund Program Study TPF-5 (260), 410.

[53] CTC & Associates LLC. (2015). Identifying Best Practices for Evaluation of Design Innovations. USA.

[54] Gransberg, D. D., & Riemer, C. (2009). Performance-based construction contractor prequalification (Vol. 390). Transportation Research Board.

[55] Radović, N., Mirković, K., Šešlija, M., & Peško, I. (2014). Output and performance based road maintenance contracting–case study Serbia. Technical Gazette, 21(3), 681-688.

[56] Zietlow, G. J. (2007, April). Performance-based road management and maintenance contracts-worldwide experiences. In International Seminar on Road Financing and Investment (pp. 1-76).

[57] Bull, M., Brekelmans, R., & Wilson, L. (2014). Lessons learned in output and performance-based road maintenance contracts.

[58] Smith, R. (2016). Maintenance of Road Corridors; Performance Based Contract Experience and Private Sector Involvement.

[59] Sultana, M., Rahman, A., & Chowdhury, S. (2012). An overview of issues to consider before introducing performance-based road maintenance contracting. World Academy of Science, Engineering and Technology, 62(2), 350-355.

[60] Levik, K. (2001). How to sell the message “Road maintenance is necessary” to decision makers. In First Road Transportation Technology Transfer Conference in Africa.

[61] Lepert, P. (2015). Importance of Road maintenance – Good Practices – Example. In Pavement Preservation & Recycling Summit. Paris. France.

[62] Gerwens, s. (2015). European Manifesto: Need For Road Maintenance In Pavement Preservation & Recycling Summit. Paris. France.

[63] World Road Association. (2014). The importance of road maintenance. France.

[64] Salih, J., Edum-Fotwe, F., & Price, A. (2016). Investigating the Road Maintenance Performance in Developing Countries. World Academy of Science, Engineering and Technology, International Journal of Civil, Environmental, Structural, Construction and Architectural Engineering, 10(4), 472-476.

[65] Burningham, S., & Stankevich, N. (2005). Why road maintenance is important and how to get it done The World Bank, Washington DC Transport Note No. TRN-4 June.

[66] European Union Road Federation. (2018). Road Asset Management Report. Belgium.

[67] Schliessler, A. (2007). Output- and Performance-based Road Contracts (OPRC). In WB Transport Forum 2007.

[68] Zietlow, G. (2016). Better Road Asset Management through Performance-Based Maintenance in Nepal. In department of roads of Nepal - ADB. Nepal.

[69] CIPS and NIGP. (2012). Public Procurement Practice Performance Based Contracting.

[70] European Union Road Federation. (2018). Road Asset Management: A Manifesto to keep Europe moving.

[71] Pakkala, P., Martin de Jong, W., & Aijo, J. (2007). International overview of innovative contracting practices for roads.

[72] Sakal, M. W. (2005). Project alliancing: a relational contracting mechanism for dynamic projects. Lean Construction Journal, 2(1), 67-79.

[73] Kumar, A. (2013). Performance based Maintenance Contracts for Highways. In Presentation at Asian Highways Investment Forum. Bangkok.

[74] Asian Development Bank. (2018). Guide to Performance-Based Road Maintenance Contracts.

[75] Al-Kathairi, A. (2015). Performance Based Road Asset Management System, with a case study: Abu Dhabi (Doctoral dissertation, Carleton University).

[76] World Bank. (2013). Project Appraisal Document on a Proposed Loan in the amount of USD 175 million to the Republic of India for the Second Gujarat State Highway Project (GSHP II)

[77] Anwar, M. F., Shariff, N. D. M., Chia, T., Jie, L. X., Riazi, S. M., & Nawi, M. N. M. (2017). Implementation of Performance Based Contracting in

Malaysia. International Review of Management and Marketing, 6(8S), 286-293.

[78] Boz, S. S. (2013). Kamu özel işbirliği (PPP) modeli. İnönü Üniversitesi Hukuk Fakültesi Dergisi, 4(2), 277-332.

[79] Ozturk, H., Atasoy, G., & Ates, K. (2018). A Strategic Plan for the Implementation and Monitoring of Performance-based Maintenance Contracting (PBMC) for Turkish Construction Sector, 13th International Congress on Advances in Civil Engineering 12-14 September 2018, İzmir Çeşme

[80] Gün, B. (2014). Karayolu Bakım-Onarım Hizmetlerinde Performans Esaslı Sözleşmelerin Uygulanabilirliği.

[81] Concessions, Build-Operate-Transfer (BOT) and Design-Build-Operate (DBO) Projects. (2018). Retrieved from https://ppp.worldbank.org/public-private-partnership/agreements/concessions-bots-dbos.

[82] General Directorate of Highways Statistics. (2019). Retrieved from http://www.kgm.gov.tr/Sayfalar/KGM/SiteTr/Root/default.aspx.

[83] R.o.T, Public Procurement Authority, Electronic Platform (2019). Retrieved from https://ekap.kik.gov.tr/EKAP/Ortak/IhaleArama/index.html.

[84] The importance of road maintenance. (2015). Retrieved from https://www.worldhighways.com/categories/maintenance-utility/features/the-importance-of-road-maintenance/.

[85] Kamu – Özel İşbirliği raporu (2019). Retrieved from https://www.sbb.gov.tr/wp-content/uploads/2019/05/Kamu-Ozel_Isbirligi_Raporu-2018.pdf

[86] Türkiye Cumhuriyeti İçişleri Bakanlığı (2019). Retrieved from https://www.icisleri.gov.tr/turkiyenin-nufus-haritasi

[87] Survey Monkey Enterprise (2019). Retrieved from https://www.surveymonkey.com/mp/sample-size-calculator/

[88] Republic of Turkey, General Directorate of Meteorological Services (2019). Retrieved from https://www.mgm.gov.tr/genel/firathavzasi.aspx?s=13

[89] Queensland Government, Department of Transport and Main Roads (2019). Retrieved from https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Road-maintenance-performance-contract-manual

[90] British Columbia, Ministry of Transportation and Infrastructure (2019). Retrieved from https://www2.gov.bc.ca/gov/content/transportation/transportation -infrastructure/contracting-to-transportation/highway-bridge-maintenance/highway-maintenance-contracting?keyword=presentation&keyword=for&keyword=maintenance

[91] Balkan Heritage Field School (2019). Retrieved from https://www.bhfieldschool.org/countries/turkey

[92] Queensland Government official website (2019). Retrieved from https://www.qld.gov.au/

[93] British Columbia official website (2019). Retrieved from https://www.welcomebc.ca/Choose-B-C/Explore-British-Columbia/Geography-of-B-C

[94] Institution of National Education Ministry (2019). Retrieved from http://www.eba.gov.tr/videoizle/bunlari-biliyor-musunuz/4686568c7f662939a44818e18f77ab24fc1962d09c001

[95] Queensland Government Open Data Portal (2019). Retrieved from https://data.qld.gov.au/dataset/land-tenure-statistical-information/resource/eb4ea8ab-1d4d-4f1d-9c69-72987d8ead3f

[96] British Columbia Environmental Reporting (2019). Retrieved from http://www.env.gov.bc.ca/soe/indicators/land/print_ver/envreportbc_roads_May2018.pdf

[97] Turkish Statistical Institute (2019). Retrieved from http://www.tuik.gov.tr/UstMenu.do?metod=temelist

[98] Statistics Canada (2019). Retrieved from https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2310006701&pickMembers%5B0%5D=1.11

[99] Australian Government Bureau of Meteorology (2019). Retrieved from http://www.bom.gov.au/climate/current/month/qld/archive/201804.summary.shtml

[100] Elibüyük M., & Yılmaz E. (2010). Retrieved from http://dergiler.ankara.edu.tr/dergiler/33/1339/15513.pdf

[101] Australian Government Geoscience Australia. (2019). Retrieved from https://www.ga.gov.au/scientific-topics/national-location-information/landforms/elevations

[102] World Bank Country and Lending Groups, Data. (2019). Retrieved from https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

[103] Central Intelligence Agency, The World Factbook. (2019). Retrieved from https://www.cia.gov/library/publications/the-world-factbook/

[104] Enabling Infrastructure Investment & World Bank. (2015). Federative Republic of Brazil for a natural resources management and rural poverty alleviation project.

[105] Mulmi, A., J. (2016). Assessment of Performance Based Road Maintenance Practices in Nepal

[106] Limi, A., & Gericke, B. (2017). Output- and Performance-Based Road Contracts and Agricultural Production Evidence from Zambia

[107] Israel, G. D. (2009). Determining Sample Size. University of Florida, IFAS Extension. Downloaded May 2012.

[108] İstanbul PPP Center of Excellence Congress. (2016). http://www.pppcoe.com/

APPENDICES

APPENDIX_1 Survey Questions for Road User

Karayolu Yol Bakım Onarım Hizmetleri Anketi

Giriş

Bahse konu anket, Orta Doğu Teknik Üniversitesi İnşaat Mühendisliği bölümünde Yüksek Lisans Tezi çalışmaları uhdesinde bilimsel araştırma altyapısında kullanılacak verileri toplamak üzere yapılmaktadır.

Anketin Amacı; Türkiye'de yürütülen/yürütülecek Karayolu Bakım Onarım Hizmetleri çalışmaları kapsamında, yolcu veya sürücü açısından şehirler arası karayolu bakım onarım hizmetlerinin değerlendirilmesidir.

Anketi dikkatlice okumanız ve soruları objektif bir şekilde cevaplamanız bizim için son derece önemli olup, bu araştırmaya yapacağınız katkılardan dolayı şimdiden çok teşekkür ediyoruz.

Anket 14 sorudan oluşmakta ve yaklaşık 3 dakika sürmektedir.

1. Yaşınız

- ◯ 18-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64
- ◯ 65-74
- ◯ 74 ve üstü

2. Eğitim Durumunuz

- ◯ İlkokul
- ◯ Lise
- ◯ Yüksek Okul
- ◯ Lisans
- ◯ Yüksek Lisans
- ◯ Doktora

3. Çalışma Durumunuz

- ◯ Kamu Çalışanı
- ◯ Özel sektör - tam zamanlı çalışan (Haftalık 40 saat ve üstü)
- ◯ Özel sektör yarı zamanlı çalışan
- ◯ Serbest Meslek
- ◯ İş veren
- ◯ Emekli
- ◯ İşsiz

1

4. Ehliyetniz var mı ?

- ◯ Evet
- ◯ Hayır

Eğer varsa, kaç yıldır araba kullanıyorsunuz

5. Yaşadığınız Bölge. Birden çok seçeneği işaretleyebilirsiniz.

- ☐ Akdeniz Bölgesi
- ☐ Doğu Anadolu Bölgesi
- ☐ Güneydoğu Anadolu Bölgesi
- ☐ Ege Bölgesi
- ☐ Marmara Bölgesi
- ☐ Karadeniz Bölgesi
- ☐ İç Anadolu Bölgesi

6. Son 5 yıl içinde hangi bölgelere karayolunu kullanarak seyahat ettiniz. Birden çok seçeneği işaretleyebilirsiniz.

- ☐ Akdeniz Bölgesi
- ☐ Doğu Anadolu Bölgesi
- ☐ Güneydoğu Anadolu Bölgesi
- ☐ Ege Bölgesi
- ☐ Marmara Bölgesi
- ☐ Karadeniz Bölgesi
- ☐ İç Anadolu Bölgesi

7. Hangi sıklıkla şehirler arası karayolunu kullanarak seyahat ediyorsunuz.

- ◯ Haftada bir
- ◯ 2 haftada bir
- ◯ Ayda bir
- ◯ 3 ayda bir
- ◯ 6 ayda bir
- ◯ Yılda bir

8. Ağırlıklı olarak hangi dönemde şehirler arası karayolunu kullanarak seyahat ediyorsunuz. Birden çok seçeneği işaretleyebilirsiniz.

- [ ] Kış
- [ ] Yaz
- [ ] İlkbahar
- [ ] Sonbahar

9. Şehirler arası karayolunda uzun mesafe seyahatlerinizi nasıl yapıyorsunuz?

- ◯ Çoğunlukla araç sürücüsü olarak
- ◯ Çoğunlukla yolcu olarak
- ◯ Hem araç sürücüsü hem de yolcu olarak

10. Şehirler arası yollarda yol bakım çalışmalarının düzenli yapıldığını düşünüyor musunuz?

- ◯ Evet
- ◯ Hayır
- ◯ Fikrim yok

11. Şehirler arası yollarda yol bakım çalışmalarının etkili bir şekilde yapıldığını düşünüyor musunuz?

- ◯ Evet
- ◯ Hayır
- ◯ Fikrim yok

12. Şehirler arası yollarda kış dönemi içerinde kar ve buzla mücadelenin etkili bir şekilde yapıldığını düşünüyor musunuz?

- ◯ Evet
- ◯ Hayır
- ◯ Fikrim yok

13. Yol bakım onarım çalışmalarının önemini, yeni yolların yapılmasına verilen önemle kıyaslamanızı istersek, yol bakım onarım çalışmalarına;

- ◯ Daha çok önem verilmeli
- ◯ Aynı önem verilmeli
- ◯ Daha az önem verilmeli
- ◯ Fikrim Yok

3

14. Şehirlerarası yol bakım onarım çalışmalarının düzgün ve etkili **yapılmamasından** doğacak sonuçların önem sıralamasını 1 ile 5 arasında yapabilir misiniz. (5 en önemli - 1 az önemli)

	5	4	3	2	1
Yolcu ve araç kullanıcı güvenliğinin azalması	◯	◯	◯	◯	◯
Yol bakım onarım maliyetlerinin artması	◯	◯	◯	◯	◯
Yol bozuklukları sebebiyle araç bakım giderlerinin artması	◯	◯	◯	◯	◯
Yolcunun ve araç kullanıcısının seyahat konforunun azalması	◯	◯	◯	◯	◯
Seyahat süresinin artması	◯	◯	◯	◯	◯
Yolun kapatılması	◯	◯	◯	◯	◯
Yakıt tüketiminin artması	◯	◯	◯	◯	◯

4

APPENDIX_2 Survey Questions for Road Expert

KARAYOLU BAKIM ONARIM HİZMETLERİ ANKETİ_

GİRİŞ

Bahse konu anket, Orta Doğu Teknik Üniversitesi İnşaat Mühendisliği bölümünde Yüksek Lisans Tezi çalışmaları uhdesinde bilimsel araştırma altyapısında kullanılacak verileri toplamak üzere yapılmaktadır.

Anketin Amacı; Türkiye'de yürütülen/yürütülecek Karayolu Bakım Onarım Hizmetleri çalışmaları kapsamında,
- Mevcut yapılanmaları incelemek ve iyileştirmeye açık alanları tespit etmek
- Ulusal/Uluslararası ölçekte benzer uygulamalara dair bilgi ve birikimleri bir arada değerlendirmek
- Mühendislik prensiplerine dayalı, tanımlı hizmet seviyeleri içeren, kaynakların verimli ve etkin kullanımına açık Varlık Yönetim Sistemleri kullanmak
- Yol kullanıcıları açısından bakım onarım faaliyetlerinin trafik yönetimi, güvenlik riskleri, çevresel önlemler ve seyahat konforuna etkilerini araştırmaktır.
Siz değerli katılımcıların sektörden edindiğiniz tecrübelerinize dayanarak konu hakkında görüş ve önerilerinize başvurmaktır.

Ankete başlamadan önce hazırlanmış olan kısa bilgilendirme metnini dikkatlice okumanız ve soruları objektif bir şekilde cevaplamanız bizim için son derece önemlidir.

Karayollarında düzgün trafik akışı ve seyahat konforunun sağlanması için gerekli olan en önemli hizmet bakım-onarım faaliyetleridir. Yol platformu üzerinde gerçekleştirilecek bakım-onarım hizmetlerinin trafik altında düzgün, güvenli, verimli ve iyi bir şekilde nasıl yapılması gerektiği ile birlikte özellikle sektörün gelişmesine yardımcı olmak için yürütülen bu araştırmaya yapacağınız katkılardan dolayı şimdiden çok teşekkür ediyoruz.

Anket 16 sorudan oluşmakta ve yaklaşık 5 dakika sürmektedir

1

Karayolu Bakım-Onarım Hizmetleri Mevcut Durumu

Karayolları Genel Müdürlüğü (KGM) Türkiye'de Bölge Müdürlükleri ve taşra teşkilatları vasıtası ile otoyollar, devlet yolları, il yolları, turistik yollar ve protokollü yollarda yol bakım-onarım hizmetlerinin büyük bir kısmını emaneten kendi bünyesinde yürütmekte olup; organizasyon yapısının, makine-ekipman parkının ve uzman kadrolarının yeterli olmadığı hallerde söz konusu hizmetleri zaman zaman konusunda deneyimli yükleniciler üzerinden özel sektöre ihale etmektedir. İstisnai durumlar hariç yol bakım onarım ihalelerine kar ve buzla mücadele hizmetleri de dâhil edilmektedir.

Bahse konu bu hizmetler ihtiyaca göre Genel Müdürlük ya da Bölge Müdürlükleri uhdesinde Kamu İhale Kanunu (KİK) kapsamında metot bazlı sözleşme tipiyle önceleri tek senelik yapılmaktayken, son yıllarda bu süre üç yıla kadar çıkarılarak ihale edilmektedir.

Adı geçen bu sözleşmeler (teknik ve özel şartnameler de dahil); kullanılacak tüm makine ve ekipmanların teknik özellikleri (kapasitesi, gücü, modeli, miktarı vb.), çalışacak uzman sayısı ve yetkinliği, kullanılacak teknik ve sarf malzemelerin özellikleri açık bir şekilde belirtilir ve yüklenici bu hükümlere uymak zorundadır. Bu tip sözleşmeler genellikle karma tipli (birim fiyat ve götürü bedel) sözleşme olarak yürütülmektedir.

Karayolu Bakım-Onarım Hizmetlerinde Kullanılan Performans Bazlı Sözleşmeler

Uluslararası ölçekte benzer uygulamalarda Karayolu Bakım-Onarım Hizmetleri Performans Bazlı Sözleşmelerle (PBS) yürütülmekte ve olumlu sonuçlar elde edilmektedir. Performans bazlı sözleşmelerin en belirgin özelliği, yüklenicinin ancak ölçülebilir sonuçları ve hedefleri (performans kriterleri) yerine getirmesi durumunda ödeme yapılması halidir.

Aynı zamanda, bu sözleşmenin yükleniciye yöntem, malzeme, ekipman ve işçilik serbestliği vermiş olması; sürdürülebilirliği yani daha uzun süreli (genellikle 3-10 yıl arası) bakım-onarım faaliyetleri yürütmeye imkan sağlaması, PBS'yi metot bazlı sözleşmelerden ayıran temel özelliklerindendir.

Ayrıca PBS içinde yer alan teşvik ve ceza hükümleri ile ilgili sözleşmelerde;

- Yüklenicinin öngörülen hedef ya da sonuçlara dair daha iyi performans göstermesi halinde hakediş istikakı artışı yada süre uzatımı,
- Yüklenicinin öngörülen hedef ya da sonuçların altında kalan bir performans göstermesi halinde hakediş istikakı eksiltmesi,

Gibi benzeri durumlarda sözleşme hükümleri gereği ödemelere yansıtılmaktadır.

Teşvik yöntemi içinde; "ilave ödeme" veya "sözleşme süresinin uzatılması" gibi unsurlar işin sahibi İdare tarafından karara bağlanmaktadır. Genellikle götürü bedel olup, İdare tarafından işe ait ihale öncesi sözleşme ve ekli teknik dokümanlar ile belirlenen performans kriterlerinin, sözleşme süresi boyunca yüklenici tarafından karşılanması ve bu durumun görevlendirilmiş İdare/Müşavir teknik elemanlarınca kontrol edilmesi koşuluyla aylık ödemeler yapılmaktadır.

1. Yaşınız.

- ◯ 18-24,
- ◯ 25-34,
- ◯ 35-44,
- ◯ 45-54,
- ◯ 55-64,
- ◯ 65 ve üstü

2

2. Eğitim durumunuz.

- ◯ İlkokul
- ◯ Lise
- ◯ Yüksek Okul
- ◯ Lisans
- ◯ Yüksek Lisans
- ◯ Doktora

3. Çalıştığınız kurum (Birden fazla seçeneği işaretleyebilirsiniz).

- ☐ Karayolları Genel Müdürlüğü
- ☐ Müteahhit Firmalar
- ☐ Müşavir Firmalar
- ☐ Tasarım Firmaları
- ☐ Diğer Kamu Kurumları
- ☐ Danışmanlık Firmaları
- ☐ Tüzel Kişilik vb Kuruluşlar

Diğer (lütfen belirtin)

4. Çalıştığınız kurumdaki pozisyonunuz.

- ◯ Şirket Sahibi / Hissedar
- ◯ Yönetici (Genel Müdür, Müdür, Daire Başkanı vb.)
- ◯ Başmühendis/Kontrol Şefi/Bakım Şefi
- ◯ Mühendis
- ◯ Teknik Uzman

Diğer (lütfen belirtin)

5. Uzmanlığınız. (Birden fazla seçeneği işaretleyebilirsiniz.)

- [ ] İnşaat Mühendisi
- [ ] Makina Mühendisi
- [ ] Elektrik ve Elektronik Mühendisi
- [ ] Elektrik Mühendisi
- [ ] Jeoloji Mühendisi
- [ ] Jeofizik Mühendisi
- [ ] Çevre Mühendisi
- [ ] Harita Mühendisi
- [ ] Maden Mühendisi
- [ ] Diğer Mühendislikler
- [ ] Mimar
- [ ] Şehir ve Bölge Planlamacısı
- [ ] Avukat
- [ ] İktisadi ve İdari Bilimler Fakültesi Mezunu
- [ ] Beşeri Bilimler Fakültesi Mezunu

Diğer (lütfen belirtin)

6. Toplam deneyiminiz

- ◯ 0 - 5 yılları arası
- ◯ 6 – 10 yılları arası
- ◯ 11- 15 yılları arası
- ◯ 16-20 yılları arası
- ◯ 21 yıl ve üzeri

Yol Bakım Onarım Hizmetlerinde Mevcut Durum

4

7. Türkiye'de yürütülen yol bakım-onarım hizmetleri için mevcut projelerin yürütülmesi, ihale sözleşmeleri ve şartnamelerinin durumunu aşağıda sıralanan unsurlarla değerlendiriniz.

	Olumlu	Olumsuz	Geliştirilebilir	Fikrim yok
Yol kalitesi	◯	◯	◯	◯
Müteahhit firmalarının yeterliliği	◯	◯	◯	◯
İhale sistemi	◯	◯	◯	◯
Taraflar arası risk dağılımı	◯	◯	◯	◯
Teknolojik gelişmelerden yararlanma	◯	◯	◯	◯
Kullanıcı memnuniyeti (yolcu ve araç sürücüleri açısından)	◯	◯	◯	◯
Proje Maliyetlerine etkisi	◯	◯	◯	◯
Yol Güvenliğine etkisi	◯	◯	◯	◯
Proje Süresi	◯	◯	◯	◯
Trafik Yönetimi	◯	◯	◯	◯

8. Yol bakım onarım hizmetleri hangi kurum tarafından yürütülmelidir?

- ◯ Karayolları Genel Müdürlüğü
- ◯ Özel Sektör
- ◯ Karayolları Genel Müdürlüğü ve Özel Sektör birlikte (Mevcut durum)
- ◯ Fikrim yok

9. Yol bakım onarım hizmetlerinin mevcut durumu göz önünde bulundurulduğunda farklı bir sözleşme tipine geçmek gerektiğini düşünüyor musunuz?

- ◯ Evet
- ◯ Hayır
- ◯ Fikrim yok

10. Yol bakım onarım hizmetlerinin mevcut durumu ile ilgili olumlu veya olumsuz görüşleriniz var ise aşağıda belirtebilir misiniz?

* 11. Yol bakım onarım hizmetlerinin (PBS ile uygulanması durumunda) ihale öncesi belirlenen performans kriterlerinin (IRI, kayma direnci, tekerlek izi, pasif koruma tertibatları, kar-buz mücadelesi, Aydınlatma sistemleri, AUS, olay/kaza müdahale, çevre-peyzaj vb) yüklenici tarafından proje süresince karşılanması hususunda ne düşünüyorsunuz? (Bu sistem yükleniciye, performans kriterlerini karşılaması koşuluyla yöntem, malzeme, ekipman ve işçilik serbestliği sunmaktadır.)

	Katılıyorum	Katılmıyorum	Etkilemez	Fikrim Yok
Proje bedeli azalır	◯	◯	◯	◯
Yüklenicinin sorumluluğu artar	◯	◯	◯	◯
İdare'nin riski azalır	◯	◯	◯	◯
İdare'nin iş yükü azalır	◯	◯	◯	◯
Yenilikçi sarf malzeme ve ekipman kullanımı artar	◯	◯	◯	◯
Teknolojik gelişmelerin projelere uygulanması artar	◯	◯	◯	◯
Yol kalite seviyesi artar	◯	◯	◯	◯
Yol ve trafik güvenliği seviyesi artar	◯	◯	◯	◯
İdare ve özel sektörün arasındaki bilgi paylaşımı artar	◯	◯	◯	◯
İdare'nin yükleniciyi kontrol etme mekanizması güçlenir	◯	◯	◯	◯
Yolcuların ve araç kullanıcılarının memnuniyeti artar	◯	◯	◯	◯
Trafik kazaları azalır	◯	◯	◯	◯
Özel sektörün teknik ve idari açıdan gelişmesini sağlar	◯	◯	◯	◯
Yol kalitesi uzun vadede istenen seviyede tutulur	◯	◯	◯	◯
Yüklenici açısından uygulamada kolaylık sağlar	◯	◯	◯	◯
Hesap verebilirlik artar	◯	◯	◯	◯
Rekabet artar	◯	◯	◯	◯

6

	Katılıyorum	Katılmıyorum	Etkilemez	Fikrim Yok
İdare ve yüklenici arasında anlaşmazlıklar azalır	◯	◯	◯	◯
Müteahhitler zamanında ve kaliteli iş teslim eder	◯	◯	◯	◯

* 12. Yol bakım onarım hizmetlerinde (PBS ile uygulanması durumunda) ceza ve teşvik sisteminin olması hususunda ne düşüyorsunuz?

	Katılıyorum	Katılmıyorum	Etkilemez	Fikrim Yok
Proje bedeli azalır	◯	◯	◯	◯
Yüklenicinin sorumluluğu artar	◯	◯	◯	◯
İdare'nin riski azalır	◯	◯	◯	◯
İdare'nin iş yükü azalır	◯	◯	◯	◯
Yenilikçi sarf malzeme ve ekipman kullanımı artar	◯	◯	◯	◯
Teknolojik gelişmelerin projelere uygulanması artar	◯	◯	◯	◯
Yol kalite seviyesi artar	◯	◯	◯	◯
Yol ve trafik güvenliği seviyesi artar	◯	◯	◯	◯
İdare ve özel sektörün arasındaki bilgi paylaşımı artar	◯	◯	◯	◯
İdare'nin yükleniciyi kontrol etme mekanizması güçlenir	◯	◯	◯	◯
Yolcuların ve araç kullanıcılarının memnuniyeti artar	◯	◯	◯	◯
Trafik kazaları azalır	◯	◯	◯	◯
Özel sektörün teknik ve idari açıdan gelişmesini sağlar	◯	◯	◯	◯
Yol kalitesi uzun vadede istenen seviyede tutulur	◯	◯	◯	◯
Yüklenici açısından uygulamada kolaylık sağlar	◯	◯	◯	◯
Hesap verebilirlik artar	◯	◯	◯	◯

7

	Katılıyorum	Katılmıyorum	Etkilemez	Fikrim Yok
Rekabet artar	◯	◯	◯	◯
İdare ve yüklenici arasında anlaşmazlıklar azalır	◯	◯	◯	◯
Müteahhitler zamanında ve kaliteli iş teslim eder	◯	◯	◯	◯

* 13. Yol bakım onarım hizmetlerinin (PBS ile uygulanması durumunda) proje süresinin 3 yıldan daha uzun olması hususunda ne düşünüyorsunuz?

	Katılıyorum	Katılmıyorum	Etkilemez	Fikrim Yok
Proje bedeli azalır	◯	◯	◯	◯
Yüklenicinin sorumluluğu artar	◯	◯	◯	◯
İdare'nin riski azalır	◯	◯	◯	◯
İdare'nin iş yükü azalır	◯	◯	◯	◯
Yenilikçi sarf malzeme ve ekipman kullanımı artar	◯	◯	◯	◯
Teknolojik gelişmelerin projelere uygulanması artar	◯	◯	◯	◯
Yol kalite seviyesi artar	◯	◯	◯	◯
Yol ve trafik güvenliği seviyesi artar	◯	◯	◯	◯
İdare ve özel sektörün arasındaki bilgi paylaşımı artar	◯	◯	◯	◯
İdare'nin yükleniciyi kontrol etme mekanizması güçlenir	◯	◯	◯	◯
Yolcuların ve araç kullanıcılarının memnuniyeti artar	◯	◯	◯	◯
Trafik kazaları azalır	◯	◯	◯	◯
Özel sektörün teknik ve idari açıdan gelişmesini sağlar	◯	◯	◯	◯
Yol kalitesi uzun vadede istenen seviyede tutulur	◯	◯	◯	◯
Yüklenici açısından uygulamada kolaylık sağlar	◯	◯	◯	◯

8

	Katılıyorum	Katılmıyorum	Etkilemez	Fikrim Yok
Hesap verebilirlik artar	◯	◯	◯	◯
Rekabet artar	◯	◯	◯	◯
İdare ve yüklenici arasında anlaşmazlıklar azalır	◯	◯	◯	◯
Müteahhitler zamanında ve kaliteli iş teslim eder	◯	◯	◯	◯

* 14. Karayolu Varlık Yönetimi (Road Asset Management), mühendislik prensipleriyle kaynakların etkin ve verimli bir şekilde kullanılmasını amaçlayan iyi tanımlanmış hizmet seviyelerinin sağlanmasına yönelik tüm karayolu, köprü ve yol varlıklarının korunması, iyileştirilmesi, genişletilmesi ve işletilmesini kapsayan sistematik bir süreçtir. Avrupa Birliği Yol Federasyonu (ERF) son yıllarda yol varlık yönetim sisteminin ülkelerde oluşturulmasına dikkat çekmektedir. Bu sistemin Türkiye'de uygulanması durumunda aşağıda belirtilen unsurları değerlendirebilir misiniz?

	Katılıyorum	Katılmıyorum	Etkilemez	Fikrim Yok
Tutarlı ve iyi hizmet seviyesi sağlar	◯	◯	◯	◯
Projenin yaşam döngü maliyetlerini düşürür	◯	◯	◯	◯
Yol kullanıcılarının maliyetlerini azaltır	◯	◯	◯	◯
Hizmetleri takip ve gözlemleme olanağı sağlar	◯	◯	◯	◯
Karar verme sürecinde şeffaflığı arttırır	◯	◯	◯	◯
Gelecekteki yatırım ihtiyacını tahmin etmeyi sağlar	◯	◯	◯	◯
Finansal, operasyonel ve yasal riskleri azaltır	◯	◯	◯	◯
Yol bakım onarım hizmetlerinin uzun vadede planlı şekilde yapılmasını sağlar	◯	◯	◯	◯
Veri, bilgi ve envanter sistemleri yönetiminde kolaylık sağlar	◯	◯	◯	◯
Saha operasyonlarının etkin ve hızlı yönetilmesine yardımcı olur	◯	◯	◯	◯

15. Performans Bazlı Sözleşmelerin yol bakım onarım hizmetlerinde kullanılmasının mevcut durumdaki olumsuzlukları gidereceğini düşünüyor musunuz?

- ◯ Evet
- ◯ Hayır
- ◯ Kısmen
- ◯ Fikrim Yok

16. Türkiye'deki mevcut yol bakım onarım hizmetlerinin geliştirilmesi gerektiğini düşünüyor musunuz?

- ◯ Evet
- ◯ Hayır

Evet ise hangi açıdan ve görüşleriniz belirtir misiniz ?

10

APPENDIX_3 Road Maintenance Tenders No 1-12 in 2015

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
1	2015/115427	General Directorate of Highways 151 (Kastamonu) and 152 (İnebolu) Divisions State and City Road Routine Maintenance	Construction - Negotiated Tender	Tender Documents are not published	Tender Documents are not published	60	N.A	N.A	N.A
2	2015/105901	General Directorate of Highways 6 Regional Directorate 62 Pınarbaşı, 63 Kayseri and 66 Develi Divisions Routine Road Maintenance	Construction - Open Tender	1176	-	90	10	%100 Financial Proposal	N firms - No consorsium
3	2015/101410	General Directorate of Highways 10 Directorate, 105 Divisions (TRABZON) Directorate State and Provincial Roads, Routine Road Maintenance	Construction - Open Tender	787	-	60	10	%100 Financial Proposal	N firms - No consorsium
4	2015/70080	General Directorate of Highways 11 Regional Directorate 114(Hakkari) and 117(Yüksekova) Divisions Routine Road Maintenance	Construction - Open Tender	N.A.	-	120	10	%100 Financial Proposal	N firms - No consorsium
5	2015/87626	General Directorate of Highways 151 (Kastamonu) Divisions State and Provincial Roads Routine Maintenance	Construction - Negotiated Tender	Tender Documents are not published	Tender Documents are not published	60	N.A	N.A	N.A
6	2015/65090	General Directorate of Highways 8 Regional Directorate 81 (Malatya), 82 (Elazığ), 84 (Bingöl), 85 (Arapgir), 86 (Tunceli), 87 (Adıyaman) Divisions Snow Removal & Routine Road Maintenance (Except Patching)	Construction - Open Tender	3717	-	1096	10	%100 Financial Proposal	N firms - No consorsium
7	2015/55828	General Directorate of Highways 154 (Cide), 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Maintenance, Snow and Ice Removal Yapılması	Construction - Open Tender	1244	1244	336	10	%100 Financial Proposal	N firms - No consorsium
8	2015/55813	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roadsnda Routine Maintenance, Snow and Ice Removal	Construction - Open Tender	1547	1547	336	10	%100 Financial Proposal	N firms - No consorsium
9	2015/53178	General Directorate of Highways 11 Regional Directorate 111(Van) and 115(Erciş) Divisions Routine Road Maintenance	Construction - Open Tender	N.A.	-	120	10	%100 Financial Proposal	N firms - No consorsium
10	2015/53112	General Directorate of Highways 11 Regional Directorate 112(Tatvan) and 118(Bitlis) Divisions Routine Road Maintenance	Construction - Open Tender	N.A.	-	120	10	%100 Financial Proposal	N firms - No consorsium
11	2015/52592	General Directorate of Highways 10 Regional Directorate, 106 Division (BAYBURT) Directorate State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	318	-	90	10	%100 Financial Proposal	N firms - No consorsium
12	2015/52575	General Directorate of Highways 10 Regional Directorate, 104 Division (GİRESUN) Directorate State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	588	-	90	10	%100 Financial Proposal	N firms - No consorsium

Continuing: Road Maintenance Tenders No 1-12 in 2015

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
1	2015/115427	General Directorate of Highways 151 (Kastamonu) and 152 (İnebolu) Divisions State and City Road Routine Maintenance	N.A	N.A	N.A	The winner was announced	01/09/2015	04/09/2015	3	11/09/2015	7
2	2015/105901	General Directorate of Highways 6 Regional Directorate 62 Pınarbaşı, 63 Kayseri and 66 Develi Divisions Routine Road Maintenance	Lump sum	₺ 350.00	90	The winner was announced	01/09/2015	03/09/2015	2	28/09/2015	25
3	2015/101410	General Directorate of Highways 10 Directorate, 105 Divisions (TRABZON) Directorate State and Provincial Roads, Routine Road Maintenance	Lump sum	₺ 350.00	120	The winner was announced	06/08/2015	27/08/2015	21	10/09/2015	14
4	2015/70080	General Directorate of Highways 11 Regional Directorate 114(Hakkari) and 117(Yüksekova) Divisions Routine Road Maintenance	Unit Price	₺ 350.00	120	The winner was announced	16/06/2015	13/07/2015	27	20/08/2015	38
5	2015/87626	General Directorate of Highways 151 (Kastamonu) Divisions State and Provincial Roads Routine Maintenance	N.A	N.A	N.A	The winner was announced	07/07/2015	10/07/2015	3	13/07/2015	3
6	2015/65090	General Directorate of Highways 8 Regional Directorate 81 (Malatya), 82 (Elazığ), 84 (Bingöl), 85 (Arapgir), 86 (Tunceli), 87 (Adıyaman) Divisions Snow Removal & Routine Road Maintenance (Except Patching)	Mix Unit Price and Lump sum	₺ 1,400.00	90	The winner was announced	29/05/2015	29/06/2015	31	13/08/2015	45
7	2015/55828	General Directorate of Highways 154 (Cide), 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Maintenance, Snow and Ice Removal Yapılması	Mix Unit Price and Lump sum	₺ 700.00	120	The winner was announced	07/05/2015	03/06/2015	27	08/07/2015	35
8	2015/55813	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roadsnda Routine Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 700.00	120	The winner was announced	14/05/2015	02/06/2015	19	24/07/2015	52
9	2015/53178	General Directorate of Highways 11 Regional Directorate 111(Van) and 115(Erciş) Divisions Routine Road Maintenance	Unit Price	₺ 350.00	120	The winner was announced	30/04/2015	27/05/2015	27	22/07/2015	56
10	2015/53112	General Directorate of Highways 11 Regional Directorate 112(Tatvan) and 118(Bitlis) Divisions Routine Road Maintenance	Unit Price	₺ 350.00	120	The winner was announced	29/04/2015	27/05/2015	28	01/07/2015	35
11	2015/52592	General Directorate of Highways 10 Regional Directorate, 106 Division (BAYBURT) Directorate State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 350.00	120	The winner was announced	30/04/2015	25/05/2015	25	24/06/2015	30
12	2015/52575	General Directorate of Highways 10 Regional Directorate, 104 Division (GİRESUN) Directorate State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 350.00	120	The winner was announced	30/04/2015	25/05/2015	25	24/06/2015	30

Continuing: Road Maintenance Tenders No 1-12 in 2015

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
1	2015/115427	General Directorate of Highways 151 (Kastamonu) and 152 (İnebolu) Divisions State and City Road Routine Maintenance	₺ 1,352,567	₺ 1,333,000	1345000	₺ 1,333,000	2	2	2	Not Applied
2	2015/105901	General Directorate of Highways 6 Regional Directorate 62 Pınarbaşı, 63 Kayseri and 66 Develi Divisions Routine Road Maintenance	₺ 1,284,904	₺ 1,248,500	₺ 1,248,500	₺ 1,248,500	4	3	1	Not Applied
3	2015/101410	General Directorate of Highways 10 Directorate, 105 Divisions (TRABZON) Directorate State and Provincial Roads, Routine Road Maintenance	₺ 1,116,451	₺ 1,080,000	₺ 1,220,000	₺ 1,080,000	4	3	2	Not Applied
4	2015/70080	General Directorate of Highways 11 Regional Directorate 114(Hakkari) and 117(Yüksekova) Divisions Routine Road Maintenance	₺ 1,854,251	₺ 1,446,640	₺ 1,820,000	₺ 1,446,640	15	4	3	Not Applied
5	2015/87626	General Directorate of Highways 151 (Kastamonu) Divisions State and Provincial Roads Routine Maintenance	₺ 453,749	₺ 451,500	₺ 451,500	₺ 451,500	1	1	1	Not Applied
6	2015/65090	General Directorate of Highways 8 Regional Directorate 81 (Malatya), 82 (Elazığ), 84 (Bingöl), 85 (Arapgir), 86 (Tunceli), 87 (Adıyaman) Divisions Snow Removal & Routine Road Maintenance (Except Patching)	₺ 24,428,778	₺ 13,641,000	₺ 31,530,000	₺ 13,030,056	31	8	8	Not Applied
7	2015/55828	General Directorate of Highways 154 (Cide), 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Maintenance, Snow and Ice Removal Yapılması	₺ 16,036,937	₺ 6,690,091	₺ 10,685,556	₺ 6,646,447	32	20	18	Not Applied
8	2015/55813	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roadsnda Routine Maintenance, Snow and Ice Removal	₺ 16,778,557	₺ 7,335,000	₺ 9,893,039	₺ 7,032,130	30	19	18	Not Applied
9	2015/53178	General Directorate of Highways 11 Regional Directorate 111(Van) and 115(Erciş) Divisions Routine Road Maintenance	₺ 1,838,052	₺ 1,598,400	₺ 1,984,000	₺ 1,598,400	23	9	9	Not Applied
10	2015/53112	General Directorate of Highways 11 Regional Directorate 112(Tatvan) and 118(Bitlis) Divisions Routine Road Maintenance	₺ 1,808,023	₺ 1,076,000	₺ 1,643,961	₺ 1,076,000	22	13	11	Not Applied
11	2015/52592	General Directorate of Highways 10 Regional Directorate, 106 Division (BAYBURT) Directorate State and Provincial Roads Routine Road Maintenance	₺ 1,116,914	₺ 490,000	₺ 729,000	₺ 490,000	20	7	7	Not Applied
12	2015/52575	General Directorate of Highways 10 Regional Directorate, 104 Division (GİRESUN) Directorate State and Provincial Roads Routine Road Maintenance	₺ 1,619,979	₺ 888,000	₺ 1,235,000	₺ 888,000	19	6	6	Not Applied

Continuing: Road Maintenance Tenders No 13-24 in 2015

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
13	2015/52566	General Directorate of Highways 10 Regional Directorate, 103 Division (RİZE) Directorate State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	437	-	90	10	%100 Financial Proposal	N firms - No consorsium
14	2015/52562	General Directorate of Highways 10 Regional Directorate, 102 Division (ARTVİN) Directorate State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	550	-	90	10	%100 Financial Proposal	N firms - No consorsium
15	2015/52558	General Directorate of Highways 10 Regional Directorate, 101 Division (GÜMÜŞHANE) Directorate State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	445	-	90	10	%100 Financial Proposal	N firms - No consorsium
16	2015/52684	General Directorate of Highways 11 Regional Directorate 113(Muş) and 116(Malazgirt) Division Routine Road Maintenance	Construction - Open Tender	N.A.	-	120	10	%100 Financial Proposal	N firms - No consorsium
17	2015/46328	General Directorate of Highways 6.Regional Directorate 65.Yozgat and 68.Boğazlıyan Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1169	1169	1095	10	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms
18	2015/46752	6 Regional Directorate 61 Kırşehir, 64 Niğde and 67 Nevşehir Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1472	1461	1095	10	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms
19	2015/43936	General Directorate of Highways 5 Regional Directorate 53 (Antakya) and 54 (Gaziantep) Divisions Directorate State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1556	750	365	15	%100 Financial Proposal	N or IN Firrms - No consorsium
20	2015/43720	General Directorate of Highways 5 Regional Directorate 51 (Silifke) and 52 (Mersin) Divisions State and Provincial Roads Routine Road Maintenance ile Snow and Ice Removal	Construction - Open Tender	1329	490	365	15	%100 Financial Proposal	N or IN Firrms - No consorsium
21	2015/43646	General Directorate of Highways 5Regional Directorate 56 (Kozan) and 57 (Adana) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1186	421	365	15	%100 Financial Proposal	N or IN Firrms - No consorsium
22	2015/43572	General Directorate of Highways 5 Regional Directorate 55 (Kahramanmaraş) and 58 (Elbistan) Divisions State and Provincial Roads and Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1062	621	365	15	%100 Financial Proposal	N or IN Firrms - No consorsium
23	2015/11213	General Directorate of Highways 7(Samsun) Regional Directorate 71(Osmancık) , 73(Çorum) , 75(Samsun) , 78(Sinop) and 79(Boyabat) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	3166	3166	1127	5	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms
24	2015/11143	General Directorate of Highways 7(Samsun) Regional Directorate 72(Amasya) ,74(Tokat), 76(Niksar) and 77(Ordu) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	2594	2594	1127	5	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms

Continuing: Road Maintenance Tenders No 13-24 in 2015

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
13	2015/52566	General Directorate of Highways 10 Regional Directorate, 103 Division (RİZE) Directorate State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 350.00	120	The winner was announced	30/04/2015	25/05/2015	25	12/06/2015	18
14	2015/52562	General Directorate of Highways 10 Regional Directorate, 102 Division (ARTVİN) Directorate State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 350.00	120	The winner was announced	29/04/2015	25/05/2015	26	12/06/2015	18
15	2015/52558	General Directorate of Highways 10 Regional Directorate, 101 Division (GÜMÜŞHANE) Directorate State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 350.00	120	The winner was announced	29/04/2015	25/05/2015	26	26/06/2015	32
16	2015/52684	General Directorate of Highways 11 Regional Directorate 113(Muş) and 116(Malazgirt) Division Routine Road Maintenance	Unit Price	₺ 350.00	120	The winner was announced	29/04/2015	22/05/2015	23	16/06/2015	25
17	2015/46328	General Directorate of Highways 6.Regional Directorate 65.Yozgat and 68.Boğazlıyan Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	150	The winner was announced	16/04/2015	20/05/2015	34	23/07/2015	64
18	2015/46752	6 Regional Directorate 61 Kırşehir, 64 Niğde and 67 Nevşehir Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	150	The winner was announced	15/04/2015	20/05/2015	35	30/06/2015	41
19	2015/43936	General Directorate of Highways 5 Regional Directorate 53 (Antakya) and 54 (Gaziantep) Divisions Directorate State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 700.00	120	The winner was announced	13/04/2015	12/05/2015	29	17/06/2015	36
20	2015/43720	General Directorate of Highways 5 Regional Directorate 51 (Silifke) and 52 (Mersin) Divisions State and Provincial Roads Routine Road Maintenance ile Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 700.00	120	The winner was announced	10/04/2015	12/05/2015	32	17/06/2015	36
21	2015/43646	General Directorate of Highways 5Regional Directorate 56 (Kozan) and 57 (Adana) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 700.00	120	The winner was announced	10/04/2015	12/05/2015	32	18/06/2015	37
22	2015/43572	General Directorate of Highways 5 Regional Directorate 55 (Kahramanmaraş) and 58 (Elbistan) Divisions State and Provincial Roads and Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 700.00	120	The winner was announced	10/04/2015	12/05/2015	32	17/06/2015	36
23	2015/11213	General Directorate of Highways 7(Samsun) Regional Directorate 71(Osmancık) , 73(Çorum) , 75(Samsun) , 78(Sinop) and 79(Boyabat) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	150	The winner was announced	18/03/2015	23/03/2015	5	29/05/2015	67
24	2015/11143	General Directorate of Highways 7(Samsun) Regional Directorate 72(Amasya) ,74(Tokat), 76(Niksar) and 77(Ordu) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	150	The winner was announced	18/03/2015	23/03/2015	5	27/10/2016	584

Continuing: Road Maintenance Tenders No 13-24 in 2015

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
13	2015/52566	General Directorate of Highways 10 Regional Directorate, 103 Division (RİZE) Directorate State and Provincial Roads Routine Road Maintenance	₺ 1,613,349	₺ 627,000	₺ 1,280,000	₺ 627,000	22	9	8	Not Applied
14	2015/52562	General Directorate of Highways 10 Regional Directorate, 102 Division (ARTVİN) Directorate State and Provincial Roads Routine Road Maintenance	₺ 1,524,475	₺ 640,000	₺ 1,320,000	₺ 640,000	20	7	6	Not Applied
15	2015/52558	General Directorate of Highways 10 Regional Directorate, 101 Division (GÜMÜŞHANE) Directorate State and Provincial Roads Routine Road Maintenance	₺ 1,390,773	₺ 643,000	₺ 1,177,000	₺ 643,000	20	8	6	Not Applied
16	2015/52684	General Directorate of Highways 11 Regional Directorate 113(Muş) and 116(Malazgirt) Division Routine Road Maintenance	₺ 1,525,379	₺ 1,449,600	₺ 2,520,000	₺ 1,449,600	16	7	6	Not Applied
17	2015/46328	General Directorate of Highways 6.Regional Directorate 65.Yozgat and 68.Boğazlıyan Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 50,320,276	₺ 24,162,960	₺ 43,270,520	₺ 21,051,390	32	20	18	Applied
18	2015/46752	6 Regional Directorate 61 Kırşehir, 64 Niğde and 67 Nevşehir Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 65,285,402	₺ 31,377,000	₺ 52,678,000	₺ 31,377,000	45	18	10	Applied
19	2015/43936	General Directorate of Highways 5 Regional Directorate 53 (Antakya) and 54 (Gaziantep) Divisions Directorate State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 12,866,343	₺ 5,342,960	₺ 9,397,760	₺ 3,912,844	44	19	18	Not Applied
20	2015/43720	General Directorate of Highways 5 Regional Directorate 51 (Silifke) and 52 (Mersin) Divisions State and Provincial Roads Routine Road Maintenance ile Snow and Ice Removal	₺ 10,762,682	₺ 5,150,000	₺ 11,924,120	₺ 4,360,519	46	24	18	Not Applied
21	2015/43646	General Directorate of Highways 5Regional Directorate 56 (Kozan) and 57 (Adana) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 9,950,648	₺ 4,350,000	₺ 10,941,040	₺ 3,307,404	43	21	20	Not Applied
22	2015/43572	General Directorate of Highways 5 Regional Directorate 55 (Kahramanmaraş) and 58 (Elbistan) Divisions State and Provincial Roads and Routine Road Maintenance, Snow and Ice Removal	₺ 10,473,857	₺ 4,979,000	₺ 14,500,900	₺ 3,208,826	41	24	19	Not Applied
23	2015/11213	General Directorate of Highways 7(Samsun) Regional Directorate 71(Osmancık) , 73(Çorum) , 75(Samsun) , 78(Sinop) and 79(Boyabat) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 114,033,461	₺ 58,000,000	₺ 83,085,000	₺ 41,114,482	14	8	5	Applied
24	2015/11143	General Directorate of Highways 7(Samsun) Regional Directorate 72(Amasya) ,74(Tokat), 76(Niksar) and 77(Ordu) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 83,663,361	₺ 54,432,120	₺ 104,999,999	₺ 54,432,120	17	12	7	Applied

Continuing: Road Maintenance Tenders No 25-31 in 2015

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
25	2015/2430	131 (Fethiye) and 136 (Finike) Divisions Routine Maintenance, Snow and Ice Removal	Construction - Open Tender	1171	664	1066	5	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms
26	2015/2448	133 (Alanya) and 135 (Isparta) Divisions Routine Maintenance, Snow and Ice Removal	Construction - Open Tender	1350	1074	1066	5	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms
27	2015/2441	132 (Antalya) and 134 (Burdur) Divisions Routine Maintenance, Snow and Ice Removal	Construction - Open Tender	1761	1192	1066	5	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms
28	2015/60621	General Directorate of Highways 161 and 165 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1133	1133	1096	5	%100 Financial Proposal	N firms - No consorsium
29	2015/60625	General Directorate of Highways 162and 163 Divisions Routine Road Maintenance İle Snow and Ice Removal	Construction - Open Tender	915	915	1096	10	%100 Financial Proposal	N firms - No consorsium
30	2015/60627	General Directorate of Highways 164 and 166 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1037	1037	1096	10	%100 Financial Proposal	N firms - No consorsium
31	2015/71494	General Directorate of Highways 18 Regional Directorate 181 (Kars) and 183 (Ardahan) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1006	1006	1095	10	%100 Financial Proposal	N or IN Firrms - No consorsium - %15 Price Advanteges for N firms
			Summation	32,716	20,484	16,453	280	-	-
			Average	1,309	1,205	531	10	-	-
	*	**23 tenders are cancelled and then retendered.**							

Continuing: Road Maintenance Tenders No 25-31 in 2015

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
25	2015/2430	131 (Fethiye) and 136 (Finike) Divisions Routine Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	90	The winner was announced	10/02/2015	04/03/2015	22	20/04/2015	47
26	2015/2448	133 (Alanya) and 135 (Isparta) Divisions Routine Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	90	The winner was announced	10/02/2015	03/03/2015	21	20/04/2015	48
27	2015/2441	132 (Antalya) and 134 (Burdur) Divisions Routine Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	90	The winner was announced	10/02/2015	02/03/2015	20	20/04/2015	49
28	2015/60621	General Directorate of Highways 161 and 165 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	180	The winner was announced	20/05/2015	15/06/2015	26	11/08/2015	57
29	2015/60625	General Directorate of Highways 162and 163 Divisions Routine Road Maintenance İle Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	180	The winner was announced	20/05/2015	15/06/2015	26	11/08/2015	57
30	2015/60627	General Directorate of Highways 164 and 166 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	180	The winner was announced	20/05/2015	15/06/2015	26	11/08/2015	57
31	2015/71494	General Directorate of Highways 18 Regional Directorate 181 (Kars) and 183 (Ardahan) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,400.00	150	The winner was announced	12/06/2015	14/07/2015	32	19/10/2015	97
			-	₺ 24,850.00	3,660	-	-	-	715	-	1,776
			-	₺ 856.90	126	-	-	-	23	-	57
	*	**23 tenders are cancelled and then retendered.**									

Continuing: Road Maintenance Tenders No 25-31 in 2015

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
25	2015/2430	131 (Fethiye) and 136 (Finike) Divisions Routine Maintenance, Snow and Ice Removal	₺ 52,438,183	₺ 43,969,664	₺ 59,850,000	₺ 43,969,664	18	7	5	Applied
26	2015/2448	133 (Alanya) and 135 (Isparta) Divisions Routine Maintenance, Snow and Ice Removal	₺ 61,987,735	₺ 52,596,768	₺ 72,974,400	₺ 52,542,624	20	7	4	Applied
27	2015/2441	132 (Antalya) and 134 (Burdur) Divisions Routine Maintenance, Snow and Ice Removal	₺ 70,096,236	₺ 59,000,000	₺ 87,024,000	₺ 58,974,800	16	6	5	Applied
28	2015/60621	General Directorate of Highways 161 and 165 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 25,854,887	₺ 9,687,000	₺ 23,781,345	₺ 8,735,443	30	7	8	Not Applied
29	2015/60625	General Directorate of Highways 162and 163 Divisions Routine Road Maintenance İle Snow and Ice Removal	₺ 20,437,509	₺ 8,977,000	₺ 19,641,880	₺ 7,717,412	29	6	5	Not Applied
30	2015/60627	General Directorate of Highways 164 and 166 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 18,703,876	₺ 8,367,000	₺ 24,360,352	₺ 6,147,648	28	10	9	Not Applied
31	2015/71494	General Directorate of Highways 18 Regional Directorate 181 (Kars) and 183 (Ardahan) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 38,716,379	₺ 19,000,000	₺ 40,755,408	₺ 15,795,408	58	14	9	Applied
			₺ 721,333,975	₺ 430,029,203	₺ 729,267,280	₺ 396,327,857	762	329	272	-
			₺ 23,268,838	₺ 13,871,910	₺ 23,524,751	₺ 12,784,770	25	11	9	-
		* **23 tenders are cancelled and then retendered.**								

APPENDIX_3 Road Maintenance Tenders No 1-7 in 2016

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
1	2016/138053	General Directorate of Highways 5.Regional Directorate 51 (Sliifke) , 52 (Mersin), 56(Kozan), 57(Adana) Divisions Directorate State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Construction - Open Tender	1672	667	365	5	%100 Financial Proposal	National / International firms - No consorsium - %15 Price Advanteges for National Companies
2	2016/137592	General Directorate of Highways 5.Regional Directorate 53. (Antakya) , 54. (Gaziantep), 55.(Kahramanmaraş), 58.(Elbistan) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Construction - Open Tender	2265	1298	365	5	%100 Financial Proposal	National / International firms - No consorsium - %15 Price Advanteges for National Companies
3	2016/100126	General Directorate of Highways 154 (Cide), 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	559	559	365	10	%100 Financial Proposal	National / International firms - No consorsium - %15 Price Advanteges for National Companies
4	2016/100627	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	977	977	365	10	%100 Financial Proposal	National / International firms - No consorsium - %15 Price Advanteges for National Companies
5	2016/99847	General Directorate of Highways 151 (Kastamonu) and 152 (İnebolu) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	444	444	365	10	%100 Financial Proposal	National / International firms - No consorsium - %15 Price Advanteges for National Companies
6	2016/76899	General Directorate of Highways 12 Regional Directorate121 (Aşkale), 122 (Erzurum) and 124 (Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	746	1249	365	15	%100 Financial Proposal	National / International firms - No consorsium - %15 Price Advanteges for National Companies
7	2016/77041	General Directorate of Highways 12 Regional Directorate123 (Ağrı) and 125 (Hınıs) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	577	838	365	15	%100 Financial Proposal	National / International firms - No consorsium - %15 Price Advanteges for National Companies
		Summation	-	7,240	6,032	2,555	70	-	-
		Average	-	1,034	862	365	10	-	-

* No cancelled tender.

Continuing: Road Maintenance Tenders No 1-7 in 2016

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
1	2016/138053	General Directorate of Highways 5.Regional Directorate 51 (Silifke) , 52 (Mersin), 56(Kozan), 57(Adana) Divisions Directorate State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Mix Unit Price and Lump sum	₺ 740.00	120	The winner was announced	4/25/2016	5/23/2016	28	8/5/2016	74
2	2016/137592	General Directorate of Highways 5.Regional Directorate 53. (Antakya) , 54. (Gaziantep), 55.(Kahramanmaraş), 58.(Elbistan) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Mix Unit Price and Lump sum	₺ 1,480.00	120	The winner was announced	4/25/2016	5/23/2016	28	12/28/2016	219
3	2016/100126	General Directorate of Highways 154 (Cide), 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 740.00	120	The winner was announced	4/25/2016	5/6/2016	11	6/9/2016	34
4	2016/100627	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 740.00	120	The winner was announced	4/25/2016	5/4/2016	9	5/31/2016	27
5	2016/99847	General Directorate of Highways 151 (Kastamonu) and 152 (İnebolu) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 740.00	120	The winner was announced	4/25/2016	5/3/2016	8	5/31/2016	28
6	2016/76899	General Directorate of Highways 12 Regional Directorate121 (Aşkale), 122 (Erzurum) and 124 (Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 740.00	90	The winner was announced	3/23/2016	4/12/2016	20	7/20/2016	99
7	2016/77041	General Directorate of Highways 12 Regional Directorate123 (Ağrı) and 125 (Hınıs) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 740.00	90	The winner was announced	3/23/2016	4/11/2016	19	9/27/2016	169
		Summation	-	₺ 5,920.00	780	-	-	-	123	-	650
		Average	-	₺ 845.71	111	-	-	-	18	-	93

* No cancelled tender.

Continuing: Road Maintenance Tenders No 1-7 in 2016

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders (Downloaded)	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
1	2016/138053	General Directorate of Highways 5.Regional Directorate 51 (Silifke) , 52 (Mersin), 56(Kozan), 57(Adana) Divisions Directorate State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	₺ 17,067,713	₺ 12,314,000	₺ 20,968,029	₺ 10,844,000	53	29	29	Not Applied
2	2016/137592	General Directorate of Highways 5.Regional Directorate 53. (Antakya) , 54. (Gaziantep), 55.(Kahramanmaraş), 58.(Elbistan) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	₺ 24,326,411	₺ 16,568,000	₺ 24,062,000	₺ 15,252,432	40	22	22	Not Applied
3	2016/100126	General Directorate of Highways 154 (Cide), 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 8,607,378	₺ 6,740,000	₺ 11,146,040	₺ 6,713,482	37	22	10	Not Applied
4	2016/100627	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 11,919,246	₺ 8,000,558	₺ 8,893,172	₺ 7,922,858	30	18	14	Not Applied
5	2016/99847	General Directorate of Highways 151 (Kastamonu) and 152 (Inebolu) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 6,701,012	₺ 4,870,000	₺ 9,200,000	₺ 4,858,102	36	23	16	Not Applied
6	2016/76899	General Directorate of Highways 12 Regional Directorate121 (Aşkale), 122 (Erzurum) and 124 (Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 12,425,245	₺ 8,705,200	₺ 13,464,080	₺ 5,804,410	38	13	6	Not Applied
7	2016/77041	General Directorate of Highways 12 Regional Directorate123 (Ağrı) and 125 (Hınıs) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 9,659,695	₺ 7,330,000	₺ 9,793,200	₺ 6,139,000	43	14	4	Not Applied
		Summation	₺ 90,706,700	₺ 64,527,758	₺ 97,526,521	₺ 57,534,284	277	141	101	-
		Average	₺ 12,958,100	₺ 9,218,251	₺ 13,932,360	₺ 8,219,183	40	20	14	-

* No cancelled tender.

APPENDIX_3 Road Maintenance Tenders No 1-13 in 2017

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
1	2017/630283	General Directorate of Highways 6. Regional Directorate 65 Yozgat and 68 Boğazlıyan Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Negotiated Tender	Tender Documents are not published	Tender Documents are not published	240	N.A	N.A	N.A
2	2017/448131	General Directorate of Highways 5 Regional Directorate 53 (Antakya) , 54 (Gaziantep), 55(Kahramanmaraş), 58(Elbistan) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Construction - Open Tender	1545	1024	180	5	%100 Financial Proposal	National / International firms - No consorsium
3	2017/283923	General Directorate of Highways 12 Regional Directorate 123 (Ağrı) and 125 (Hınıs) DivisionsRoutine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	530	805	365	10	%100 Financial Proposal	National firms - No consorsium
4	2017/219401	General Directorate of Highways 12 Regional Directorate 121 (Aşkale), 122 (Erzurum) and 124 (Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	697	1137	365	15	%100 Financial Proposal	National firms - No consorsium
5	2017/176031	General Directorate of Highways 5 Regional Directorate 51 (Silifke) , 52 (Mersin), 56(Kozan), 57(Adana) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Construction - Open Tender	1214	707	365	5	%100 Financial Proposal	National / International firms - No consorsium
6	2017/174657	General Directorate of Highways 10 Regional Directorate 105 Divisions (Trabzon) State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	907	-	200	15	%100 Financial Proposal	National / International firms - No consorsium
7	2017/174519	General Directorate of Highways 151 (Kastamonu) and 154 (Cide) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	229	229	365	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National firms - No consorsium
8	2017/175071	General Directorate of Highways 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	369	369	365	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National firms - No consorsium
9	2017/173840	General Directorate of Highways 10 Regional Directorate 101 Divisions (Gümüşhane) State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	484	-	200	15	%100 Financial Proposal	National firms - No consorsium
10	2017/123049	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	984	984	365	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National firms - No consorsium
11	2017/110667	General Directorate of Highways 6 Regional Directorate 62 Pınarbaşı and 63 Kayseri Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1385	1385	365	5	%100 Financial Proposal	National firms - No consorsium
12	2017/60011	General Directorate of Highways 10 Regional Directorate 103 Divisions (Rize) State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	502	-	240	15	%100 Financial Proposal	National firms - No consorsium
13	2017/59338	General Directorate of Highways 10 Regional Directorate 104 Divisions (Giresun) State and Provincial Roads Routine Road Maintenance	Construction - Open Tender	605	-	240	15	%100 Financial Proposal	National firms - No consorsium
		Summation	-	9,451	6,640	3,855	130	-	-
		Average	-	788	830	297	11	-	-

* 2 tenders are cancelled and then retendered.

Continuing: Road Maintenance Tenders No 1-13 in 2017

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
1	2017/630283	General Directorate of Highways 6. Regional Directorate 65 Yozgat and 68 Boğazlıyan Divisions Routine Road Maintenance, Snow and Ice Removal	N.A	N.A	N.A	The winner was announced	01/12/2017	05/12/2017	4	15/12/2017	10
2	2017/448131	General Directorate of Highways 5 Regional Directorate 53 (Antakya) , 54 (Gaziantep), 55(Kahramanmaraş), 58(Elbistan) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Mix Unit Price and Lump sum	₺ 800.00	180	The winner was announced	14/09/2017	17/10/2017	33	19/12/2017	63
3	2017/283923	General Directorate of Highways 12 Regional Directorate 123 (Ağrı) and 125 (Hınıs) DivisionsRoutine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 800.00	210	The winner was announced	09/06/2017	11/07/2017	32	8/25/2017	45
4	2017/219401	General Directorate of Highways 12 Regional Directorate 121 (Aşkale), 122 (Erzurum) and 124 (Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 800.00	150	Sonuç İlanı Yayımlanmış	05/05/2017	01/06/2017	27	25/07/2017	54
5	2017/176031	General Directorate of Highways 5 Regional Directorate 51 (Silifke) , 52 (Mersin), 56(Kozan), 57(Adana) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Mix Unit Price and Lump sum	₺ 800.00	180	The winner was announced	11/04/2017	12/05/2017	31	13/09/2017	124
6	2017/174657	General Directorate of Highways 10 Regional Directorate 105 Divisions (Trabzon) State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 400.00	90	The winner was announced	17/04/2017	09/05/2017	22	14/07/2017	66
7	2017/174519	General Directorate of Highways 151 (Kastamonu) and 154 (Cide) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 800.00	120	The winner was announced	11/04/2017	05/05/2017	24	30/05/2017	25
8	2017/175071	General Directorate of Highways 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 800.00	120	The winner was announced	11/04/2017	05/05/2017	24	30/05/2017	25
9	2017/173840	General Directorate of Highways 10 Regional Directorate 101 Divisions (Gümüşhane) State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 400.00	90	The winner was announced	17/04/2017	03/05/2017	16	21/06/2017	49
10	2017/123049	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 800.00	120	The winner was announced	24/03/2017	12/04/2017	19	26/05/2017	44
11	2017/110667	General Directorate of Highways 6 Regional Directorate 62 Pınarbaşı and 63 Kayseri Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 800.00	120	The winner was announced	08/03/2017	11/04/2017	34	16/05/2017	35
12	2017/60011	General Directorate of Highways 10 Regional Directorate 103 Divisions (Rize) State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 400.00	90	The winner was announced	13/02/2017	10/03/2017	25	24/03/2017	14
13	2017/59338	General Directorate of Highways 10 Regional Directorate 104 Divisions (Giresun) State and Provincial Roads Routine Road Maintenance	Lump sum	₺ 400.00	90	The winner was announced	13/02/2017	10/03/2017	25	11/05/2017	62
		Summation	-	₺ 8,000.00	1,560	-	-	-	316	-	616
		Average	-	₺ 666.67	130	-	-	-	24	-	47

* 2 tenders are cancelled and then retendered.

Continuing: Road Maintenance Tenders No 1-13 in 2017

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders (Downloaded)	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
1	2017/630283	General Directorate of Highways 6. Regional Directorate 65 Yozgat and 68 Boğazlıyan Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 11,215,704	₺ 9,470,000	₺ 9,800,000	₺ 9,470,000	5	3	3	Not Applied
2	2017/448131	General Directorate of Highways 5 Regional Directorate 53 (Antakya) , 54 (Gaziantep), 55(Kahramanmaraş), 58(Elbistan) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	₺ 11,047,523	₺ 8,265,680	₺ 11,890,000	₺ 8,265,680	28	13	9	Not Applied
3	2017/283923	General Directorate of Highways 12 Regional Directorate 123 (Ağrı) and 125 (Hınıs) DivisionsRoutine Road Maintenance, Snow and Ice Removal	₺ 11,870,850	₺ 8,982,000	₺ 10,500,000	₺ 8,982,000	25	10	6	Not Applied
4	2017/219401	General Directorate of Highways 12 Regional Directorate 121 (Aşkale), 122 (Erzurum) and 124 (Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 14,580,215	₺ 11,060,000	₺ 11,500,000	₺ 11,060,000	27	11	4	Not Applied
5	2017/176031	General Directorate of Highways 5 Regional Directorate 51 (Silifke) , 52 (Mersin), 56(Kozan), 57(Adana) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	₺ 13,951,700	₺ 9,737,000	₺ 16,580,000	₺ 9,047,000	60	45	37	Not Applied
6	2017/174657	General Directorate of Highways 10 Regional Directorate 105 Divisions (Trabzon) State and Provincial Roads Routine Road Maintenance	₺ 2,960,857	₺ 2,920,000	₺ 3,100,000	₺ 2,920,000	13	5	3	Not Applied
7	2017/174519	General Directorate of Highways 151 (Kastamonu) and 154 (Cide) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 4,160,299	₺ 3,535,198	₺ 7,217,000	₺ 3,535,198	31	21	16	Not Applied
8	2017/175071	General Directorate of Highways 155 (Devrek) and 156 (Bartın) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 7,076,362	₺ 5,640,000	₺ 8,417,000	₺ 5,640,000	31	23	18	Not Applied
9	2017/173840	General Directorate of Highways 10 Regional Directorate 101 Divisions (Gümüşhane) State and Provincial Roads Routine Road Maintenance	₺ 835,706	₺ 794,000	₺ 1,363,000	₺ 794,000	10	5	4	Not Applied
10	2017/123049	General Directorate of Highways 153 (Safranbolu) and 157 (Ilgaz) Divisions State and Provincial Roads Routine Road Maintenance, Snow and Ice Removal	₺ 13,072,460	₺ 10,800,000	₺ 14,985,000	₺ 10,800,000	27	18	2	Not Applied
11	2017/110667	General Directorate of Highways 6 Regional Directorate 62 Pınarbaşı and 63 Kayseri Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 5,590,268	₺ 5,077,200	₺ 6,400,000	₺ 5,077,200	28	15	3	Not Applied
12	2017/60011	General Directorate of Highways 10 Regional Directorate 103 Divisions (Rize) State and Provincial Roads Routine Road Maintenance	₺ 3,520,149	₺ 3,390,000	₺ 3,490,000	₺ 3,390,000	19	4	5	Not Applied
13	2017/59338	General Directorate of Highways 10 Regional Directorate 104 Divisions (Giresun) State and Provincial Roads Routine Road Maintenance	₺ 2,250,768	₺ 1,684,000	₺ 2,036,000	₺ 1,684,000	15	8	7	Not Applied
		Summation	₺ 102,132,859	₺ 81,355,078	₺ 107,278,000	₺ 80,665,078	319	181	117	-
		Average	₺ 7,856,374	₺ 6,258,083	₺ 8,252,154	₺ 6,205,006	25	14	9	-

* 2 tenders are cancelled and then retendered.

APPENDIX_3 Road Maintenance Tenders No 1-13 in 2018

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
1	2018/588529	General Directorate of Highways 41, 42 and 43 Divisions, Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	975	975	1095	40	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
2	2018/448174	General Directorate of Highways 9 Regional Directorate 91 Şanlıurfa, 92 Diyarbakır and 96 Siverek Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	2225	2225	1096	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
3	2018/451362	General Directorate of Highways 9 Regional Directorate 93 Mardin, 94 Siirt, 95 Cizre and 97 Batman Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	2507	2507	1096	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
4	2018/318034	General Directorate of Highways 5(Mersin) Regional Directorate 56(Kozan) and 57(Adana) Regional Directorate Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	793	1049	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
5	2018/317933	General Directorate of Highways 5(Mersin) Regional Directorate 51(Silifke) and 52(Mersin) Regional Directorate Roads Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	819	1346	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
6	2018/300085	General Directorate of Highways 14 Regional Directorate 143(Bursa), 144(Bilecik), 145(Kütahya), 146(Bandırma) , 147(İznik), 148(Emet) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	2028	2683	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
7	2018/317069	General Directorate of Highways 12 Regional Directorate 123(Ağrı) and 125(Hınıs) DivisionsRoutine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	461	461	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
8	2018/285407	General Directorate of Highways 8 Regional Directorate; 81(MALATYA), 82(ELAZIĞ), 84(BİNGÖL), 85(ARAPGİR), 86(TUNCELİ), 87(ADIYAMAN) Divisions Routine Road Maintenance (Except Patching), Snow and Ice Removal	Construction - Open Tender	1061	1061	1096	5	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
9	2018/276306	General Directorate of Highways 162 and 163 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	958	536	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
10	2018/268162	General Directorate of Highways 164 and 166 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1030	1030	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
11	2018/282659	General Directorate of Highways 44, 45, 46 and 47 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1231	1231	1095	40	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
12	2018/260002	General Directorate of Highways 161 and 165 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1380	1380	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies
13	2018/283078	General Directorate of Highways 14(İzmit) and 17(Sakarya) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	696	980	1096	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advantages for National Companies

Continuing: Road Maintenance Tenders No 1-13 in 2018

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
1	2018/588529	General Directorate of Highways 41, 42 and 43 Divisions, Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	210	Under Evaluation	21/11/2018	25/12/2018	34	-	-
2	2018/448174	General Directorate of Highways 9 Regional Directorate 91 Şanlıurfa, 92 Diyarbakır and 96 Siverek Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	Under Evaluation	24/09/2018	31/10/2018	37	-	
3	2018/451362	General Directorate of Highways 9 Regional Directorate 93 Mardin, 94 Siirt, 95 Cizre and 97 Batman Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	Under Evaluation	24/09/2018	31/10/2018	37	-	
4	2018/318034	General Directorate of Highways 5(Mersin) Regional Directorate 56(Kozan) and 57(Adana) Regional Directorate Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	03/07/2018	31/07/2018	28	14/09/2018	45
5	2018/317933	General Directorate of Highways 5(Mersin) Regional Directorate 51(Silifke) and 52(Mersin) Regional Directorate Roads Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	03/07/2018	25/07/2018	22	14/09/2018	51
6	2018/300085	General Directorate of Highways 14 Regional Directorate 143(Bursa), 144(Bilecik), 145(Kütahya), 146(Bandırma) , 147(İznik), 148(Emet) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	20/06/2018	20/07/2018	30	27/08/2018	38
7	2018/317069	General Directorate of Highways 12 Regional Directorate 123(Ağrı) and 125(Hınıs) DivisionsRoutine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	150	The winner was announced	26/06/2018	18/07/2018	22	07/09/2018	51
8	2018/285407	General Directorate of Highways 8 Regional Directorate; 81(MALATYA), 82(ELAZIĞ), 84(BİNGÖL), 85(ARAPGİR), 86(TUNCELİ), 87(ADIYAMAN) Divisions Routine Road Maintenance (Except Patching), Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	18/06/2018	17/07/2018	29	05/10/2018	80
9	2018/276306	General Directorate of Highways 162 and 163 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	150	The winner was announced	18/06/2018	17/07/2018	29	14/09/2018	59
10	2018/268162	General Directorate of Highways 164 and 166 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	150	The winner was announced	18/06/2018	16/07/2018	28	02/11/2018	109
11	2018/282659	General Directorate of Highways 44, 45, 46 and 47 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	210	The winner was announced	12/06/2018	11/07/2018	29	20/09/2018	71
12	2018/260002	General Directorate of Highways 161 and 165 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	150	The winner was announced	08/06/2018	10/07/2018	32	14/09/2018	66
13	2018/283078	General Directorate of Highways 14(İzmit) and 17(Sakarya) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	11/06/2018	09/07/2018	28	13/09/2018	66

Continuing: Road Maintenance Tenders No 1-13 in 2018

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders (Downloaded)	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
1	2018/588529	General Directorate of Highways 41, 42 and 43 Divisions, Routine Road Maintenance, Snow and Ice Removal	-	-	-	-	-	-	-	-
2	2018/448174	General Directorate of Highways 9 Regional Directorate 91 Şanlıurfa, 92 Diyarbakır and 96 Siverek Divisions Routine Road Maintenance, Snow and Ice Removal	-	-	-	-	-	-	-	-
3	2018/451362	General Directorate of Highways 9 Regional Directorate 93 Mardin, 94 Siirt, 95 Cizre and 97 Batman Divisions Routine Road Maintenance, Snow and Ice Removal	-	-	-	-	-	-	-	-
4	2018/318034	General Directorate of Highways 5(Mersin) Regional Directorate 56(Kozan) and 57(Adana) Regional Directorate Roads Routine Road Maintenance, Snow and Ice Removal	₺ 49,504,961	₺ 40,319,000	₺ 54,000,000	₺ 40,319,000	54	24	5	Applied
5	2018/317933	General Directorate of Highways 5(Mersin) Regional Directorate 51(Silifke) and 52(Mersin) Regional Directorate Roads Routine Road Maintenance, Snow and Ice Removal	₺ 42,531,216	₺ 34,335,160	₺ 43,383,250	₺ 34,335,160	54	19	6	Applied
6	2018/300085	General Directorate of Highways 14 Regional Directorate 143(Bursa), 144(Bilecik), 145(Kütahya), 146(Bandırma) , 147(İznik), 148(Emet) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 109,196,625	₺ 92,821,100	₺ 128,213,400	₺ 92,821,100	64	17	5	Not Applied
7	2018/317069	General Directorate of Highways 12 Regional Directorate 123(Ağrı) and 125(Hınıs) DivisionsRoutine Road Maintenance, Snow and Ice Removal	₺ 33,526,062	₺ 25,195,165	₺ 39,659,395	₺ 24,984,723	53	18	17	Not Applied
8	2018/285407	General Directorate of Highways 8 Regional Directorate; 81(MALATYA), 82(ELAZIĞ), 84(BİNGÖL), 85(ARAPGİR), 86(TUNCELİ), 87(ADIYAMAN) Divisions Routine Road Maintenance (Except Patching), Snow and Ice Removal	₺ 50,039,180	₺ 39,290,919	₺ 53,635,595	₺ 39,290,919	46	7	5	Applied
9	2018/276306	General Directorate of Highways 162 and 163 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 55,680,471	₺ 43,531,000	₺ 55,270,000	₺ 43,531,000	54	13	6	Not Applied
10	2018/268162	General Directorate of Highways 164 and 166 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 57,122,351	₺ 48,455,910	₺ 66,303,000	₺ 48,455,910	57	16	4	Not Applied
11	2018/282659	General Directorate of Highways 44, 45, 46 and 47 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 101,457,284	₺ 84,160,000	₺ 89,866,000	₺ 84,160,000	44	10	2	Applied
12	2018/260002	General Directorate of Highways 161 and 165 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 64,706,546	₺ 55,660,000	₺ 76,998,000	₺ 55,660,000	45	9	2	Not Applied
13	2018/283078	General Directorate of Highways 14(İzmit) and 17(Sakarya) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 72,642,288	₺ 57,800,000	₺ 70,724,000	₺ 57,400,000	60	13	4	Not Applied

Continuing: Road Maintenance Tenders No 14-28 in 2018

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
14	2018/283077	General Directorate of Highways 13(Gelibolu) and 18(Tekirdağ) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	902	902	1096	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
15	2018/283076	General Directorate of Highways 11 (Lüleburgaz), 12 (Mimarsinan) and 15 (Kırklareli) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1331	1331	1096	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
16	2018/299071	General Directorate of Highways 10Regional Directorate, 102 (Artvin) and 103 (Rize) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	529	529	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
17	2018/272970	General Directorate of Highways 61 Kırşehir, 64 Niğde and 67 Nevşehir Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1290	1290	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
18	2018/273204	General Directorate of Highways 62 Pınarbaşı, 63 Kayseri and 66 Deandli Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1415	1415	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
19	2018/273116	General Directorate of Highways 65 Yozgat and 68 Boğazliyan Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1375	1375	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
20	2018/270091	General Directorate of Highways 5 (Mersin) Regional Directorate 55(Kahramanmaraş) and 58(Elbistan) Divisions Routine Road Maintenance,Snow and Ice Removal	Construction - Open Tender	682	988	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
21	2018/258844	General Directorate of Highways 10 Regional Directorate, 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	472	472	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
22	2018/258882	General Directorate of Highways 10 Regional Directorate, 104 (Giresun) and 105 (Trabzon) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	683	683	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
23	2018/199627	General Directorate of Highways 2.Regional Directorate 21.(Ödemiş) and 25.(Uşak) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	980	980	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
24	2018/250958	General Directorate of Highways 151 (Kastamonu) and 157 (Ilgaz) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	785	785	1096	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
25	2018/250708	General Directorate of Highways 153(Safranbolu) and 155(Devrek) Divisions Routine Road Maintenance, Snow and Ice	Construction - Open Tender	540	540	1096	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
26	2018/250720	General Directorate of Highways 152(Inebolu),154(Cide) and 156(Bartın) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	367	367	1096	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
27	2018/198383	General Directorate of Highways 2.Regional Directorate 26.(Muğla),27.(Denizli) and 28.(Aydın) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1585	1585	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
28	2018/191964	General Directorate of Highways 2.Regional Directorate 23.(Manisa),24.(Izmir) and 29.(Ayvalık) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1177	1177	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies

Continuing: Road Maintenance Tenders No 14-28 in 2018

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
14	2018/283077	General Directorate of Highways 13(Gelibolu) and 18(Tekirdağ) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	11/06/2018	09/07/2018	28	18/09/2018	71
15	2018/283076	General Directorate of Highways 11 (Lüleburgaz), 12 (Mimarsinan) and 15 (Kırklareli) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	11/06/2018	09/07/2018	28	26/10/2018	109
16	2018/299071	General Directorate of Highways 10Regional Directorate, 102 (Artvin) and 103 (Rize) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	14/06/2018	06/07/2018	22	06/09/2018	62
17	2018/272970	General Directorate of Highways 61 Kırşehir, 64 Niğde and 67 Nevşehir Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	04/06/2018	04/07/2018	30	27/08/2018	54
18	2018/273204	General Directorate of Highways 62 Pinarbaşi, 63 Kayseri and 66 Deandli Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	04/06/2018	04/07/2018	30	15/08/2018	42
19	2018/273116	General Directorate of Highways 65 Yozgat and 68 Boğazliyan Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	04/06/2018	04/07/2018	30	11/10/2018	99
20	2018/270091	General Directorate of Highways 5 (Mersin) Regional Directorate 55(Kahramanmaraş) and 58(Elbistan) Divisions Routine Road Maintenance,Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	04/06/2018	03/07/2018	29	09/08/2018	37
21	2018/258844	General Directorate of Highways 10 Regional Directorate, 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	31/05/2018	25/06/2018	25	07/09/2018	74
22	2018/258882	General Directorate of Highways 10 Regional Directorate, 104 (Giresun) and 105 (Trabzon) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	31/05/2018	25/06/2018	25	13/09/2018	80
23	2018/199627	General Directorate of Highways 2.Regional Directorate 21.(Ödemiş) and 25.(Uşak) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	21/05/2018	21/06/2018	31	17/08/2018	57
24	2018/250958	General Directorate of Highways 151 (Kastamonu) and 157 (Ilgaz) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	24/05/2018	21/06/2018	28	19/10/2018	120
25	2018/250708	General Directorate of Highways 153(Safranbolu) and 155(Devrek) Divisions Routine Road Maintenance, Snow and Ice	Mix Unit Price and Lump sum	₺ 1,850.00	120	Under Evaluation	28/05/2018	20/06/2018	23	-	
26	2018/250720	General Directorate of Highways 152(Inebolu),154(Cide) and 156(Bartin) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	28/05/2018	20/06/2018	23	19/10/2018	121
27	2018/198383	General Directorate of Highways 2.Regional Directorate 26.(Muğla),27.(Denizli) and 28.(Aydin) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	21/05/2018	20/06/2018	30	17/08/2018	58
28	2018/191964	General Directorate of Highways 2.Regional Directorate 23.(Manisa),24.(Izmir) and 29.(Ayvalik) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	21/05/2018	19/06/2018	29	17/08/2018	59

Continuing: Road Maintenance Tenders No 14-28 in 2018

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders (Downloaded)	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
14	2018/283077	General Directorate of Highways 13(Gelibolu) and 18(Tekirdağ) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 66,500,224	₺ 54,371,740	₺ 56,520,000	₺ 54,371,740	59	4	4	Not Applied
15	2018/283076	General Directorate of Highways 11 (Lüleburgaz), 12 (Mimarsinan) and 15 (Kırklareli) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 95,393,081	₺ 71,357,000	₺ 109,768,800	₺ 53,600,830	73	23	23	Not Applied
16	2018/299071	General Directorate of Highways 10Regional Directorate, 102 (Artvin) and 103 (Rize) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 33,025,563	₺ 22,636,400	₺ 26,980,150	₺ 22,636,400	39	18	6	Not Applied
17	2018/272970	General Directorate of Highways 61 Kırşehir, 64 Niğde and 67 Nevşehir Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 84,634,332	₺ 70,858,700	₺ 70,858,700	₺ 70,858,700	51	10	1	Applied
18	2018/273204	General Directorate of Highways 62 Pınarbaşı, 63 Kayseri and 66 Deandli Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 76,216,133	₺ 60,386,000	₺ 76,250,000	₺ 60,386,000	51	11	3	Applied
19	2018/273116	General Directorate of Highways 65 Yozgat and 68 Boğazlıyan Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 68,400,324	₺ 57,920,000	₺ 81,700,000	₺ 57,920,000	58	23	3	Applied
20	2018/270091	General Directorate of Highways 5(Mersin) Regional Directorate 55(Kahramanmaraş) and 58(Elbistan) Divisions Routine Road Maintenance,Snow and Ice Removal	₺ 51,383,207	₺ 43,607,900	₺ 55,900,000	₺ 43,607,900	39	5	4	Applied
21	2018/258844	General Directorate of Highways 10 Regional Directorate, 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 22,298,271	₺ 16,922,000	₺ 20,515,108	₺ 16,922,000	40	9	6	Not Applied
22	2018/258882	General Directorate of Highways 10 Regional Directorate, 104 (Giresun) and 105 (Trabzon) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 33,599,722	₺ 27,985,350	₺ 31,940,000	₺ 27,985,350	43	7	4	Not Applied
23	2018/199627	General Directorate of Highways 2.Regional Directorate 21.(Odemiş) and 25.(Uşak) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 45,841,896	₺ 37,445,500	₺ 37,790,000	₺ 37,445,500	55	4	3	Applied
24	2018/250958	General Directorate of Highways 151 (Kastamonu) and 157 (Ilgaz) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 51,648,932	₺ 44,895,000	₺ 44,895,000	₺ 44,895,000	70	36	1	Applied
25	2018/250708	General Directorate of Highways 153(Safranbolu) and 155(Devrek) Divisions Routine Road Maintenance, Snow and Ice	-	-	-	-	-	-	-	-
26	2018/250720	General Directorate of Highways 152(Inebolu),154(Cide) and 156(Bartın) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 39,031,957	₺ 29,650,000	₺ 36,665,000	₺ 29,650,000	58	30	11	Not Applied
27	2018/198383	General Directorate of Highways 2.Regional Directorate 26.(Muğla),27.(Denizli) and 28.(Aydın) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 59,567,591	₺ 49,408,620	₺ 51,572,460	₺ 49,408,620	47	6	2	Applied
28	2018/191964	General Directorate of Highways 2.Regional Directorate 23.(Manisa),24.(Izmir) and 29.(Ayvalık) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 62,310,823	₺ 52,870,000	₺ 52,870,000	₺ 52,870,000	45	6	1	Applied

Continuing: Road Maintenance Tenders No 29-38 in 2018

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
29	2018/210209	General Directorate of Highways 3.Regional Directorate 31. and 32. Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1392	1392	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
30	2018/210239	General Directorate of Highways 3.Regional Directorate 33. and 37. Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1358	1358	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
31	2018/210261	Access Road 3.Regional Directorate 34. and 36. Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1289	1289	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
32	2018/210286	General Directorate of Highways 3. Regional Directorate 35. and 38. Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1334	1334	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
33	2018/225524	General Directorate of Highways 12 Regional Directorate 121(Aşkale), 122(Erzurum) and 124(Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	707	707	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
34	2018/192034	General Directorate of Highways 13 Regional Directorate 131 and 136 Divisions Rutin Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	855	206	1095	5	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National - No consorsium
35	2018/192538	General Directorate of Highways 13 Regional Directorate 133 and 135 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1062	908	1095	5	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
36	2018/192304	General Directorate of Highways 13 Regional Directorate 132 and 134 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1077	793	1095	5	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
37	2018/207857	General Directorate of Highways 18 Regional Directorate 182 and 184 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1002	1002	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
38	2018/203816	General Directorate of Highways 5(Mersin) Regional Directorate 53(Antakya) and 54(Gaziantep) Divisions Road Maintenance, Snow and Ice Removal	Construction - Open Tender	846	1267	1095	15	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium - %15 Price Advanteges for National Companies
		Summation	-	41,199	42,139	41,619	490	-	-
		Average	-	1,084	1,109	1,095	13	-	-

* 7 tenders are cancelled and then retendered. 1 tender is cancelled permanently

Continuing: Road Maintenance Tenders No 29-38 in 2018

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
29	2018/210209	General Directorate of Highways 3.Regional Directorate 31. and 32. Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	15/05/2018	13/06/2018	29	07/09/2018	86
30	2018/210239	General Directorate of Highways 3.Regional Directorate 33. and 37. Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	15/05/2018	13/06/2018	29	27/08/2018	75
31	2018/210261	Access Road 3.Regional Directorate 34. and 36. Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	15/05/2018	13/06/2018	29	15/08/2018	63
32	2018/210286	General Directorate of Highways 3. Regional Directorate 35. and 38. Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	15/05/2018	13/06/2018	29	15/08/2018	63
33	2018/225524	General Directorate of Highways 12 Regional Directorate 121(Aşkale), 122(Erzurum) and 124(Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	150	The winner was announced	14/05/2018	12/06/2018	29	28/09/2018	108
34	2018/192034	General Directorate of Highways 13 Regional Directorate 131 and 136 Divisions Rutin Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	08/05/2018	11/06/2018	34	14/08/2018	64
35	2018/192538	General Directorate of Highways 13 Regional Directorate 133 and 135 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	08/05/2018	11/06/2018	34	27/08/2018	77
36	2018/192304	General Directorate of Highways 13 Regional Directorate 132 and 134 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	120	The winner was announced	08/05/2018	11/06/2018	34	27/08/2018	77
37	2018/207857	General Directorate of Highways 18 Regional Directorate 182 and 184 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	150	The winner was announced	18/05/2018	08/06/2018	21	20/09/2018	104
38	2018/203816	General Directorate of Highways 5(Mersin) Regional Directorate 53(Antakya) and 54(Gaziantep) Divisions Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 1,850.00	180	The winner was announced	07/05/2018	05/06/2018	29	19/07/2018	44
		Summation	-	₺ 70,300.00	5,700	-	-	-	1,093	-	2,440
		Average	-	₺ 1,850.00	150	-	-	-	29	-	72

* 7 tenders are cancelled and then retendered. 1 tender is

Continuing: Road Maintenance Tenders No 29-38 in 2018

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders (Downloaded)	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
29	2018/210209	General Directorate of Highways 3.Regional Directorate 31. and 32. Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 52,661,006	₺ 41,976,300	₺ 44,761,000	₺ 34,989,951	49	13	13	Not Applied
30	2018/210239	General Directorate of Highways 3.Regional Directorate 33. and 37. Routine Road Maintenance, Snow and Ice Removal	₺ 46,704,322	₺ 33,726,000	₺ 39,743,500	₺ 30,690,000	51	17	17	Not Applied
31	2018/210261	Access Road 3.Regional Directorate 34. and 36. Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 48,620,467	₺ 36,357,820	₺ 41,327,000	₺ 32,310,000	54	22	22	Not Applied
32	2018/210286	General Directorate of Highways 3. Regional Directorate 35. and 38. Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 50,821,416	₺ 37,894,090	₺ 43,770,200	₺ 34,550,000	51	16	16	Not Applied
33	2018/225524	General Directorate of Highways 12 Regional Directorate 121(Aşkale), 122(Erzurum) and 124(Oltu) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 47,371,480	₺ 39,130,000	₺ 52,521,815	₺ 39,130,000	51	16	3	Applied
34	2018/192034	General Directorate of Highways 13 Regional Directorate 131 and 136 Divisions Rutin Routine Road Maintenance, Snow and Ice Removal	₺ 40,922,047	₺ 34,490,000	₺ 48,910,000	₺ 30,185,600	92	13	12	Not Applied
35	2018/192538	General Directorate of Highways 13 Regional Directorate 133 and 135 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 49,716,277	₺ 41,956,000	₺ 96,580,000	₺ 41,490,000	105	18	18	Applied
36	2018/192304	General Directorate of Highways 13 Regional Directorate 132 and 134 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 58,539,703	₺ 49,900,000	₺ 74,518,150	₺ 49,900,000	96	21	15	Applied
37	2018/207857	General Directorate of Highways 18 Regional Directorate 182 and 184 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 19,364,022	₺ 16,134,210	₺ 19,700,000	₺ 16,134,210	52	16	3	Applied
38	2018/203816	General Directorate of Highways 5(Mersin) Regional Directorate 53(Antakya) and 54(Gaziantep) Divisions Road Maintenance, Snow and Ice Removal	₺ 62,342,146	₺ 49,284,652	₺ 51,873,000	₺ 49,284,652	49	5	4	Applied
		Summation	₺ 1,903,321,926	₺ 1,542,731,536	₺ 1,946,582,523	₺ 1,502,180,265	1,909	495	251	-
		Average	₺ 55,980,057	₺ 45,374,457	₺ 57,252,427	₺ 44,181,773	56	15	7	-

* 7 tenders are cancelled and then retendered. 1 tender is

APPENDIX_3 Road Maintenance Tenders No 1-5 in 2019

No	Tender No	Name & Location	Project Type - Bidding Method	Road Maintenance (km)	Snow and ice removal (km)	Contract Duration (days)	Commencement Date after contract signing (days)	Selection Method	Eligibility of Bidders National (N) International (IN)
1	2019/133966	General Directorate of Highways 18. Regional Directorat, 183 Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1042	977	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
2	2019/157042	General Directorate of Highways 10 Regional Directorate 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	837	829	45	5	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National firms - No consorsium
3	2019/75070	General Directorate of Highways 7 Regional Directorate 72(Amasya), 74(Tokat), 76(Niksar) ve 77(Ordu) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	1843	1843	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
4	2019/74706	General Directorate of Highways 7 Regional Directorate 71(Osmancık), 73(Çorum), 75(Samsun), 78(Sinop) ve 79(Boyabat) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Construction - Open Tender	2060	2060	1095	10	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National / International firms - No consorsium
5	2019/12120	General Directorate of Highways 10 Regional Directorate 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	Construction - Open Tender	837	829	60	5	%50 Financial Proposal %50 Quality Proposal - Non-price factor	National firms - No consorsium
		Summation	-	6,619	6,538	3,390	40	-	-
		Average	-	1,324	1,308	678	8	-	-

* 5 tenders are cancelled and then retendered.

Continuing: Road Maintenance Tenders No 1-5 in 2019

No	Tender No	Name & Location	Contract Type	Price of Tender Documents	Validity of proposal (days)	Status	Notice date	Tender Submission	Duration from Notice to Tender Submission	Contract Date	Duration from Tender Submission to Contract Date
1	2019/133966	General Directorate of Highways 18. Regional Directorat, 183 Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 2,400.00	210	The winner was announced	25/03/2019	22/04/2019	28	18/06/2019	57
2	2019/157042	General Directorate of Highways 10 Regional Directorate 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	Unit Price	₺ 600.00	120	The winner was announced	03/04/2019	18/04/2019	15	5/6/2019	18
3	2019/75070	General Directorate of Highways 7 Regional Directorate 72(Amasya), 74(Tokat), 76(Niksar) ve 77(Ordu) Divisions Routine Road Maintenance, Snow and Ice Removal	Mix Unit Price and Lump sum	₺ 2,400.00	120	The winner was announced	19/02/2019	20/03/2019	29	02/09/2019	166
4	2019/74706	General Directorate of Highways 7 Regional Directorate 71(Osmancık), 73(Çorum), 75(Samsun), 78(Sinop) ve 79(Boyabat) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	Mix Unit Price and Lump sum	₺ 2,400.00	120	The winner was announced	19/02/2019	19/03/2019	28	02/07/2019	105
5	2019/12120	General Directorate of Highways 10 Regional Directorate 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	Lump sum	₺ 460.00	150	The winner was announced	15/01/2019	31/01/2019	16	04/02/2019	4
		Summation	-	₺ 8,260.00	720	-	-	-	116	-	350
		Average	-	₺ 1,652.00	144	-	-	-	23	-	70

* 5 tenders are cancelled and then retendered.

Continuing: Road Maintenance Tenders No 1-5 in 2019

No	Tender No	Name & Location	Estimated Cost (TL)	Contract Value (TL)	Highest Bid (TL)	Lowest Bid (TL)	# of Concerned Bidders (Downloaded)	# of Submitted tenders	# of valid tenders	%15 Price Advanteges for N firms
1	2019/133966	General Directorate of Highways 18. Regional Directorat, 183 Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 84,033,769	₺ 60,882,530	₺ 79,907,985	₺ 55,563,467	64	25	25	Applied
2	2019/157042	General Directorate of Highways 10 Regional Directorate 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 1,208,259	₺ 1,125,200	₺ 1,125,200	₺ 1,125,200	11	1	1	Not Applied
3	2019/75070	General Directorate of Highways 7 Regional Directorate 72(Amasya), 74(Tokat), 76(Niksar) ve 77(Ordu) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 128,297,185	₺ 87,732,465	₺ 103,944,550	₺ 87,732,465	61	26	4	Not Applied
4	2019/74706	General Directorate of Highways 7 Regional Directorate 71(Osmancık), 73(Çorum), 75(Samsun), 78(Sinop) ve 79(Boyabat) Divisions State and Provincial Roads Snow and Ice Removal, Routine Road Maintenance	₺ 165,699,769	₺ 106,145,520	₺ 132,619,680	₺ 106,145,520	50	18	6	Not Applied
5	2019/12120	General Directorate of Highways 10 Regional Directorate 101 (Gümüşhane) and 106 (Bayburt) Divisions Routine Road Maintenance, Snow and Ice Removal	₺ 2,136,561	₺ 1,983,490	₺ 2,136,886	₺ 1,983,490	14	2	2	Not Applied
		Summation	₺ 381,375,543	₺ 257,869,205	₺ 319,734,301	₺ 252,550,142	200	72	38	-
		Average	₺ 76,275,109	₺ 51,573,841	₺ 63,946,860	₺ 50,510,028	40	14	8	-

* 5 tenders are cancelled and then retendered.

APPENDIX_4 Comparison of MBC and PBC

Comparison of MBC & PBC

Turkey	Queensland - Australia
Method-based Contracting in Road Maintenance	**Performance-based Contracting in Road Maintenance**
Bid documents **Requested Documents** **1. Bank Reference Letter** **2. Presenting cash and non-cash credits** **3. Balance sheet and income statement** **4. Unit price proposal price list (Quantities are determined)** **5. Similar Experiences Form for ongoing projects** **6. Letter of bank guarantee for provisional acceptance of deficiencies** **7. Proposal Security** **8. Similar Experiences Form for completed projects** **9. Joint venture agreement for submitted experiences** **10. Proposal Cover Letter** **11. Letter of bank guarantee for final account** **12. Performance security** **13. Partnership status certificate**	**Bid documents** **Requested Documents** **1. Conditional Agreement - FORM C6094** **2. Schedule Summary-FORM C6084.1** **3. Network Schedule - FORM C6084.2** **4. Minor Works Schedule - FORM C6084.3** **5. Standing Offer Rates - FORM C6086** **6. Dayworks Schedule - FORM C6087** **7. Programmed Expenditure Flow - FORM C6088** **8. Intervention Level/Response Time Schedule - FORM C6095** **9. Queensland Code compliance - C6094 for requirement - FORM C6810.S6** **10. ISO 9001: 2008 Quality management systems – Requirements or Implementation Plan for Evidence Guide - FORM C6089** **11. Quality Plan** **12. Environmental Management Plan (Maintenance) (EMP Maintenance)** **13. Safety Plan**
Request to Proposal - **Subject of tender and submission process** **Clause_1_Client information** **Clause_2_Subject of tender** **Clause_3_Tender information (date etc)** Rules for tender submission procedure **Clause_4_Registration of EKAP (electronic public procurement platform of Turkey (eppp))** Purchase of tender documents Documents in Turkish are prevailing Registration of EKAP is mandatory. **Clause_5_Content of tender documents (forms and specifications)** - Administrative spec. - Technical spec. - Draft contract - Const works general spec. (not included in tender documents) - Standard forms - Work items for lump sum or percentage of progress for work groups and 1 nos analyze form - Unit price list - Map - Special Tech. Spec. - Site list - Lump sum percentage - OHS Contractor Affidavit **Clause_6 notification procedure** Notifications is made by electronically (EKAP) and hardcopy, in case of JV, Pilot partner shall be informed. **II. Participation of tender** **Clause_7_Requested documents and qualifications for participating tender** - Official documents belongs to company - Requested forms filled by the bidders - Bid security - Procedures for single entity or JV - No consortium - Bank Reference letter - Financial status of bidders - Experiences with certificates (true copy – notarized, for foreign bidders: apostilled)	**Invitation to Offer - April 2015** **1- Introduction** The aim **2- Definitions and interpretations** Explanation of the terms "Offer, Offerer, Offer Documents **3- Compliance with laws and other requirements** **General** Under some circumstances, adjustments of the total contract price may be allowed. Otherwise, offer shall not be changed. **4- Objectives** General expected objectives are mentioned **5- Scope of works** The scope of work within these Contracts covers: a. all pavement-related routine maintenance b. roadside signage and furniture maintenance c. vegetation management d. minor drainage and culvert maintenance e. incident management, including after hours and emergency call outs f. flood damage initial response works where the works are emergency in nature only and not restoration works g. environmental corridor management – this includes such items as graffiti control, litter control, some herbicide spraying, fire breaks and some vegetation control h. inspection and monitoring of the road Network i. Work with the department in providing asset management services for maintenance and rehabilitation activities. These services are to be provided for the National Highway Network and the Other State-Controlled Network. Activities considered out of scope are: A. route lighting B. network and traffic management systems — the Contractor will be required to manage the traffic safely through any work Sites C. programmed line marking — the Contractor will be responsible for line marking associated with any routine maintenance D. bridge and major culvert rehabilitation **6- Schedules to be completed** All required documents are listed **7- Agreement Negotiation** The parties may be negotiated over the contract for rates, quantities, activity standards and network schedule total.

- Vehicle list as requested in technical spec. (number, type, model are indicated)
  If Vehicles belong to tenderer, it shall be proved by certificate or if they are rented, contracts shall be submitted.
  Technical features of vehicles shall be proved by certificates given by related authorities.
- Procedures for submission of documents

Clause_8_Foreign companies can submit proposal

Clause_9_ Ineligible bidders

- According to Law 4734 clause 11 specified bidders – and clause 53 " bidders of specified foreign countries specified by cabinet of ministry not allowed

Clause_10_ Disqualified and illegal practices or behaviors

- According to Law 4734 clause 10-11-17

Clause_11_cost of preparation of tenders and currency

- All expenses while preparing the tender belong to Bidder.
- Turkish Lira is valid currency.

Clause_12_Site visits

- Expenses belong to bidders
- Necessary permission will be taken by Client
- The clients assume that bidder visit the site.

Clause_13_Clarfications for tender documents

- Procedures are mentioned for clarifications.
- Before 20 days of submission date, tenderer can ask a clarification form the client in written.

Clause_14_Modifications or changes at tender documents
Procedures are mentioned for modifications or changes.

Clause_15_Cancellation of tender before submission date
Tenderer can not claim anything from the client

Clause_16_Joint venture (Jointly and severely) allowed

Clause_17_Consorsium (not allowed)

Clause_18_Subcontractors (allowed)

Preparation and submission of tender

Clause_19_Type of proposal and contract
mix-type (Unit price and lump sum)

Clause_20_Partially proposal (not allowed)

Clause_21_ Reduction Electronically (not available)

Clause_22_submission of tender
All requested forms shall be submitted before the deadline

Clause_23_Format and content of proposal

Clause_24_Validity of proposal (120 days)

Clause_25_ Expenditures included to proposal.

- During the execution of the contract, any tax, fee, permit expenses and similar expenses, transportation, shipping and all insurance expenses to be paid by the tenderer are included in the bid price.
- Value added tax will be paid additionally to the Bidder by the client

Clause_26_ Proposal Security

- 3% of financial proposal shall be given otherwise the proposal rejects
- Validity of proposal security is mentioned.
- A Partner or partners can give PS in case JV

Clause_27_Assets will be accepted as security

- TL
- PS taken from bank

8- Resolution of non-agreement
If the parties do not reach agreement in contract negotiation, the following process will be different according to offerer is LG or not.
The contract negotiation will be terminated, if the parties can not finalized within 3 months.

9- Goods and Services Tax
If the Offerer is a local government agency, tax procedure will be different from the private sector.

Manual FOR Road Maintenance Performance Contract (RMPC) Sole Invitee (like TOR)

1 Preliminary

1.1 Introduction
Brief Introduction of the Client and Mission of the project
Offerers: Local Governments (LGs) and RoadTek

1.2 RMPC operating arrangements

1.2.1 Historical
For 70 years, these agencies has conducted maintenance works.
Since 2015,April;
1- Road Maintenance Performance Contract documents;
• Manual RMPC – Sole Invitee
• General Conditions
• Invitation to Offer and Forms
2- Road Asset Management Contract (RAMC)
3- Routine Maintenance Guidelines (available on the department's website)

1.2.2 Competitive environment and best value
The RMPC, as a result of the ongoing productivity-based, sole invitee arrangements with LGs and RoadTek, satisfies these requirements by providing the department with 'best value' for its maintenance dollar while giving Contractors the opportunity to increase efficiency in their maintenance operations.

1.2.3 Strategy-driven maintenance

1.3 Vision statement for Sole Invitee RMPC delivery

1.4 Defined terms in the RMPC documents
Maintenance Activity Standards = Performance indicators

2 RMPC process – key features

2.1 Roles of the parties

2.2 Partnering

2.3 Partners in Government Agreement (State and local governments)
If the parties are LG

2.4 The department's role

- **owner of the Road Network**
- **administration of the Contract in accordance with Contract Conditions, including re-allocation of funds, consideration of variation applications, auditing of quality systems and provision of relevant available information**
- **assessment of progress Claims and authorising payment**
- **cooperation with the Contractor in its stewardship role, and**
- **assessment of the Contractor's performance.**

2.5 The Contractor's roles

- **Network steward**
- **Maintenance Manager and Supervisor, and**
- **Operations Contractor.**

2.5.1 Network steward
Management of the network

2.5.2 Maintenance Manager and Supervisor
Supervision of all works

2.5.3 Operations Contractor
Maintenance services under quality plan

2.6 Emphasis on planning

2.6.1 General

2.6.2 Planning prior to Contract Period (by the department and Contractor)

- Government Domestic Debt Securities issued by the Undersecretaries of Treasury

Clause_28_Submission place for proposal security
Within proposal

Clause_29_Return of proposal security
- PS of 1st and 2nd tenderers in the rank hold after opening financial proposal.
- After the signing of contract with the winner, PS are released

Evaluation of tender and signing of contract

Clause_30_Recieved and opening of tender
- Evaluated in order of submission
- Firstly, existing of all forms and PS are checked.
- In this stage, rejection or acceptance of proposal are not announced. Corrections or completing can not be done.

Clause_31_Evaluation of tender
i) If Proposal letter and PS are missing in the proposal, it rejects.
ii) For some documents, clarification can be requested within not less than 2 days

Clause_32_Clarifications requests from bidders
Procedures are mentioned

Clause_33_Limit value
If financial proposal is under limit value determined by the client, Clarification shall be requested about construction method, technical solutions, and individuality of proposal. If clarifications are not satisfy the commission, it rejects

Clause_34_Rejection and cancellation of tender
The commission can reject all proposal without liability and announce the reason in written.

Clause_35_Determination of the most advantageous financial proposal
a)Total Score : Fin Prop. + Techn. Prop.
1- 50 points for Financial Proposal
FP = (FPmin*50)/ FP
2- 50 points for Quality Proposal
Work Items
Lump sum and Unit price,
- Minimum Offer Rate
- Maximum Offer Rate
- Points (proportional acc. to min and max.)

b) Non-price elements
=(highest point in fin. Prop.*100)/total point
- Lowest fin. Prop. is awarded if the total points are same.
- There is no advantages for local companies.

Clause_36_ Finalizing result of tender

Clause__37_Approval or Cancellation of result of tender
First and second firms are investigated acc to in black list. If they are, the tender is cancelled.
Within 5 days, it is cancelled or approved.

Clause_38_Announcement of result
After finalization, it is announced to all bidders within 3 days. After 10 days of announcement to all bidders, the contracts can be signed. (for objection)

Clause_39_Letter of Acceptance
After LOA, Contract shall be signed within the 10 days for local companies and 10+12 days for foreign companies.

Clause_40_Performance security.
- ✓ PS %6 of fin prop. shall be submitted to client before the signing contract.
- ✓ If fin prop. under threshold value, PS will be %9 of cost estimate
- ✓ If JV, it meets one of partners or sum of partners

Clause_41_Duties and responsibilities of bidder during contracting
Legal procedures are mentioned for local and foreign companies.

The Contract may also include:
- Network Schedule(s) – generally preferred.
- Schedules for individual road sections.
- Schedules for remote Works or Works in close proximity to the Contractor's depot.
- Schedules for specific Maintenance Activities where economy of scale considerations provide best value.
- Any combination of these as agreed with the department.

If both parties agreed to establish a contract for 24 months, then the Contractor will have to submit yearly Network Schedules based on the allocated funding. The type of Maintenance Activities and quantities can be modified after the first year

2.6.3 Planning during the Contract Period

2.7 Systematic Approach to the Management of Maintenance

2.7.1 General

2.7.2 System procedures
Identification of Maintenance in advance
Firstly, Initial Intervention level should be specified, by this way, it will help the preparation of action plan.
Aim is that defects should be detected before the Upper Intervention Level.
Planning and prioritising of Maintenance

2.7.3 System outputs
- Network inspection reports
- Forward List of Works – refer Clause 2.7.2
- Work Orders – refer Clause 2.7.2
- Record of completed Activities
- Monthly progress Claims including:
*signed Form C6096
*Form C6097 (mandatory requirement) or details of completed Activities in an electronic format (mandatory requirement)
*Form C6098 and variations (as required by the department).
- Completed, updated programmed expenditure report (as required by the department)
- Backlog Report
- Minor Works, including itemised Minor Works Schedules
- Emergency Maintenance, including completed relevant Schedules
- Progress Reports prepared regularly (every three months or as otherwise directed by the department). Unsatisfactory or unclear Progress Reports may result in a formal progress meeting.

2.8 Financial management

2.8.1 Discretionary management of expenditures
The Contractor has to make a decision in daily basis and has right to change maintenance needs or priority within the Network Schedule Total(s).
To help the Contractor manage these constraints, payment will be made on a Network and/or individual Schedule basis as determined locally. The Contractor has flexibility to vary the agreed quantity of each Maintenance Activity and/or individual Schedule total, where multiple Schedules are used, by ± 20 per cent (or any other figure as determined locally by the department).
Beyond the locally agreed discretionary level, prior authorisation from the department will be required. The department may:
• re-allocate funds from some other Maintenance Activity in the Schedule(s), retaining the original Network Schedule Total(s)
• varying Activity quantities outside the discretionary limits but maintaining the agreed Network Schedule Total(s)
• approve the Work as a variation to the Contract
• not approve the Work.

2.8.2 Variations

2.8.3 Progress Claims

2.9 Initiation of Work

2.9.1 Intervention Level / Response Time
As specified at Guidelines.

2.9.2 Department initiation

If the winner does not sign the contract, tender bond registers as revenue.

Legal documents are not meet the requirements in law, tender bond registers as revenue and any punishment are not applied. (like prohibition)

Clause_42_Notice to the bidder has the second most advantages proposal

If the winner does not signed the contract, the second one originated signing the contract.

Clause_43_Duties and responsibilities of client during contracting

If client does not sign the contract, the tender bond returns and the winner may request the expenses resulting from tender bond

Clause_44_Signing Contract

All expenses (notary, fee) compensated by the winner.

Execution of The Contract and Other Issues

Clause_45_Issues related with execution of the contract

- ✓ Start / completion date and penalties by delay are indicated at draft contract
- ✓ Place and conditions of payment, advanced payments to be given or not, if it is given conditions and rate.
- ✓ Liabilities for increment of work items or removing, time extension states and conditions.
- ✓ Insurance conditions
- ✓ Conditions for Inspection, controlling, acceptance
- ✓ The ways of dispute settlement
- ✓ Payments rates
  Example (1st %22 -2nd %33 – 3rd %33 – 4th %12)
- ✓ Price difference will be given acc specified conditions

Clause_46_Other Issues

Unit price parts specified

Work items are specified at table and Snow and Ice Fighting

Lump sum parts specified

Routine Maintenance and Repair Works for 36 months and traffic safety

Exp.

Lump sum part:

5.529 km various maintenance and traffic safety

Unit price

1- Availability of grader for snow and ice fighting (SIF) – unit: month
2- Working of grader for (SIF) – unit: hours
3- Cleaning and maintenance for ditches unit: km
4- Cleaning and maintenance for hydraulic superstructures - unit: cubic meter
5- Cleaning for landslide, slope slide and precipitation - unit: cubic meter
6- Availability of truck (with salt spreader, snow plough, solution tank)for (SIF) – unit: month
7- Availability of truck (with solution tank?)for (SIF) – unit: month
8- Working of truck (with salt spreader, snow plough, solution tank)for (SIF) – unit: hours
9- Working of truck (with solution tank?)for (SIF) – unit: hours
10- Layout of Hot mixed bituminous or base material with grader for all type of pavement – unit: ton
11- Supplying and transferring to depots of solvent and preventer liquid solution for (SIF) – unit: ton
12- Sweeping out road surface, curb, bottom of guardrail and sidewalks by machinery and manually – unit: km
13- Supplying and transferring to depots of salt for (SIF) – unit: ton
14- Layout of Hot mixed bituminous of base material by manual for all type of pavement – unit: ton
15- Weeding – unit: decare

3 Key contractual elements

3.1 Type of Contract

3.1.1 General

Duration of contract and Network Composition classify the RMPC.

3.1.2 Duration

Max 24 month – yearly renewed. End of the a year, both parties have right to terminate contract.

3.1.3 Composition

Composition of network may change by notice before 12 months or by agreement of two parties.

3.1.4 Extent of changes

Except decision of Australian Government, scope can not be reduced in large scale.

3.2 Work included under RMPC

3.2.1 Routine Maintenance

A specified in Routine Maintenance Guidelines under

- the National Highway Network
- the Other State-Controlled Network.

3.2.2 Emergency Maintenance

Payment will be done separately for this items

3.2.3 Minor Works (applicable to Contractors with sole invitee status)

For Minor Works means not over amount of 500.000 USD yearly.

*The Contractor and the department will agree on the quantities, rates and lump sums to complete the Works and the relevant design and construction standards, including any drawings and Specifications.

3.2.4 Dayworks

3.2.5 Provisional Sums

For unpredictable items

* These Provisional Sums may be subject to discretionary changes by the Contractor.

3.3 Liability for non-performance of Maintenance

Refers to law and as specified at contract

3.4 Quality, safety and environmental requirements

As refers to related standards

3.5 Other significant features

3.5.1 Insurance

Insurance conditions will be changed according the Contractors are LG or RoadTEK.

3.5.2 Rework

3.6 Dispute resolution

*where the Contractor is a LG — in accordance with the current Partners in Government Agreement between the state government and Local Government Association of Queensland

*where the Contractor is RoadTek — in accordance with the dispute resolution process as set out in a mutual obligations agreement between local delegates of the RoadTek and the district.

4 The RMPC process

4.1 General

4.1.1 Planning prior to agreement

- Budget and Intervention Levels
- Joint Maintenance Requirements Assessment
- Management of RMPC processes (example for a 12-month Contract Period)
- System approach to management of maintenance
- Identify Defects, relative priorities, Maintenance Activities, Maintenance Activity rates and quantities
-Schedule

4.1.2 Reaching agreement

4.1.3 Identify Maintenance in advance

- Survey Road Network and Network inspection reports
- List Defects and identify Activities to fix
- Routine Maintenance Performance Assessment and Strategic Analysis
- Work requests

4.1.4 Plan and priorities

16- Availability of loader for SIF – unit: month 17- Working of loader for SIF – unit: hours	Forward list of Works, identify priority Works and collate Work as Work orders **4.1.5 Undertake Maintenance** - Perform Work as per Quality Plan and record resources used - Provisional Sums - Monitoring of Works on an output basis **4.1.6 Record of completed Works** Measure and record Work completed and produce Progress Claim **4.2 Administration of the Contract** **4.2.1 Contractor** **4.2.2 The department** **4.2.3 Additional Activities** **4.3 Renegotiation** **5 Productivity and performance** **5.1 General** **5.2 Performance assessment methodology** **5.2.1 Determining key performance indicators** **5.2.2 Performance initiatives** **5.2.3 Supplier benchmarking for key performance indicators** **5.3 Rating and scoring calculations of Contractors** **5.3.1 Productivity gains** **5.3.2 Work health and safety** **5.3.3 Road user relationship** **5.3.4 Delivery system management** **5.3.5 Stewardship** **5.3.6 Process** **5.3.7 Operational** **5.4 Rating and scoring calculations of Principal's Representative** **5.5 Performance assessment template scoring** **5.6 Reporting on performance assessment** **Appendix 1: Road Reference system (RR) conventions** **Glossary of terms**
Draft Contract	**General Conditions** **Road Maintenance Performance Contract (RMPC)** **September 2018**
Clause_1_Contracting parties Name of Client and Contractor **Clause_2_Info of parties** Address and contact info of Client and Contractor **Clause_3_Name, location, nature, type and quantity of work** Name of project Lump sum and Unit price items with quantities **Clause_4_Language of contract** **Clause_5_Definitions** Definitions are valid in 4734 law of public procurement, 4735 law of public procurement contracts, General specification for construction works **Clause_6_Type and value of contract** Mix type (Lump sum and Unit Price) Total unit price and lump sum price are indicated separately. **Clause_7_Expenses included the contract values** All expenses and fee are included the contract price. Value-added Tax will be paid separately. **Clause_8_Contract annexes** Order of precedence for unit price 1- General specification for construction works 2- Administrative Specification 3- Contract 4- Unit price list 5- Site list 6- Specific Technical Specification 7- General Technical Specification 8- Preliminary / Final Designs 9- Clarifications (If any) 10- Other annexes	**Part A: Contract overview and fundamentals** **1 Definitions and interpretations** *1.2 Interpretations* **Part B: General Contract framework** **2 Nature of Contract** **2.1 Term :** Duration specified. **2.2 Cooperative approach** For both parties; the Principal (Client) and Contractor. **2.3 Objectives:** In this part, aims and purposes of Clients are mentioned in general manner. **2.4 Order of precedence of documents** - Conditional Agreement - Correspondence between the Client and Contractor (Variations are approved by both parties in the Contract Documents) - Appendix to Condition of contract - General Conditions - Documents incorporated by reference - Drawings -Invitation to Bidder - Work Schedule **2.5 Notices** Condition and type of writing are specified. **2.6 Assignment and Subcontracting** **2.6.1 Consent for assignment** Without any written approval of Client or mentioned previously, The contractor shall not assign the contract. **2.6.2 Consent for Subcontractors**

Order of precedence for lump sum

1- General specification for construction works (GSCW)
2- Administrative Specification
3- Contract
4- Detail Design (Construction drawings)
5- Site list
6- Specific Technical Specification
7- General Technical Specification
8- Clarifications (If any)
9- Other annexes

Clause_9_Dates of starting and completion
After signing, within 10 days, site delivery acc. to (GSCW)
Duration of works 1095 days (for provisional acceptance).
There is no time extension. (bad weather conditions and national holidays are considered while determining the total day of work)
There is no day-off
Clause_10_Provisions related with performance security
Quantity and validity of PS are specified.
If Price difference or increment of cost exist, additional PS will be requested with 6% of value difference.
Release of the PS acc to (GSCW)
Clause_11_Payment location and conditions
Payment will be made in the first five days of every month. Acc to budget, more than one payment may be made to contractor during a month with legal reduction
2019 - 22%
2020 - 33%
2021 - 33%
2022 - 12%
Clause_12_Work Schedule
After the delivery of site, work schedule shall be submitted within 15 days and after submission, work schedule shall be approved by the Client within 15 days.
Clause_13_Conditions and value of advance payments
No advance payments
Clause_14_Conditions of payment and calculations for Price difference
Price difference will be applied acc to law 4734.
Coefficients:

- Workmanship -0,55013
- Cement – 0,00036
- Iron and steel – 0,00188
- Fuel – 0,17769
- Timber - 0,00002
- Other materials – 0,16118
- Machinery and equipment – 0,10874

Total : 1.0
Clause_15_Subcontractors
With approval of client, subcontractors can be employed
Clause_16_ Requirements for support services such as installation, commissioning, training, maintenance, spare parts
Not specified
Clause_17_ Protection and insurance of work and workplace
Contractor shall insure called "all risk" to equipment, materials, plants, vehicles etc. from starting date to provisional acceptance
From provisional acceptance to final acceptance and, insurance shall be made by contractor
During the defect liability period, if damage or loss occurs by the reason of contractor's fail.
Acc. to (GSCW)
Clause_18_ Terms and conditions of time extension
Acc. to (GSCW)

Clause_19_ Conditions for delivery, inspection and acceptance

Without any written approval of Client or mentioned previously, The contractor shall not assign the sub-contractor wholly or partially.
The Sub-contractor shall be submitted to the Client for its approval.
2.6.3 Contractor remains liable
The contractor shall remain his responsibility even if the sub-contractor is assigned.
2.7 Contract Period
According to C6094, duration is up to 24 months (unless indicated otherwise)
2.7.1 Continuation of work after expiration of current contract
2 months are given to contractor by the client to continue work with same condition and prices.
2.7.2 Guaranteed Renewal Period
The Client can assign the contractor for additional contract periods.
2.7.3 Working Days and hours
As specified at agreement (exclude emergency acts)
2.8 Royalties, fees and Intellectual Property Rights (All payment and liabilities belong to Contractor.)
2.8.1 Copyright vested in Contractor
2.8.2 Royalties and other fees
2.8.3 Contractor's warranty

Part C: Contractor's obligations and warranties

3 Contractor's roles
General scope of project and responsible of contractor are mentioned.
3.1 Network stewardship
Responsibilities regarding network and scheduling. advising the Client, maintaining for the benefit of Client ideally, informing the client about on importance issues even if not related scope of work.
3.2 Principles for Routine Maintenance Works.

- Routine maintenance shall be executed as specifies in guidelines.
- Priority of defects are specified and The Contractor shall be considered the defects according order of precedence.
- Intervention Level and Response Time (IL/RT) of defect shall be determined firstly.
- The contractor have two weeks for Contract Review Meeting (CRM) (one meeting or more). Reports (listed in GC) related with scope will submitted to The Client during CRM.
- Joint Maintenance Requirement Assessment (JMRA),
- In every three months, reports will be submitted to the client
- All Maintenance works shall be provides in accordance with guidelines and specifications.

3.3 Design standards for Minor Works (if applicable)
If it is necessary, With approval of the Client and under standards and specifications
3.4 Construction standards for Minor Works
According to guidelines.
3.5 Warranties
The Contractor warranties in every aspect of work.
If design work is necessary, final design shall be executed by firm has Registered Professional Engineer of Queensland (RPEQ).
3.6 Labour, materials, plant and equipment
3.6.1 Supply of labour, materials, plant and equipment
Unless indicated otherwise, the contractor shall provide all.
3.6.2 Removal of materials, plant and equipment
Under some conditions with the Client request
3.6.3 Removal of Persons
Under some conditions with the Client request
3.6.4 No agency, relationships or representation
(Sole Invitee: Where the department offers Routine Maintenance Works to its traditional suppliers, Local Government (LG) and RoadTek without any competition from other Contractors.)
The Contractor may be a Local Government. No employee of the Contractor shall be in a relation with The Client.
3.6.5 Manufacture and supply of materials

Acc. to (GSCW)

Clause_20_Warranty period

12 months (Defect liability period)

Clause_21_ Requirements for building inspection and responsibility

Acc. to (GSCW)

Clause_22_Responsibilities of Contractors/subcontractors

Acc. to (GSCW)

Clause_23_ Technical personnel, machinery, installation and equipment

3 key staff

1- Site Chief; Civil or Mechanical Engineer, 5 years specific experience, driving license B class
2- Site Engineer; Civil or Mechanical Engineer, 3 years specific experience, driving license B class
3- Site Technicians; Civil, Mechanical or Transport and Traffic, 2 years specific experience, driving license B class

Specific exp: Road Construction and Maintenance.

Penalty if key staff does not located at site

Site chief – 1.050 TL per day

Other – 650 TL per day

After starting, equipment, materials and vehicles in specified shall be located at site acc. to work schedule

Condition of Domestic products usage – specified by related ministries.

Clause_24_ Amendments to the contract

Agreed by both parties;

"Location of site" and "duration of work and payment conditions" can be changed.

Clause_25_ Penalties in case of delay and termination of contract

If the contractor does not complete the woks within duration specified in the contract, a penalty of 0.03% of the contract value shall be applied for each day of delay.

Delay penalty will be applied over value of uncompleted part for provisional acceptance items.

Clause_26_ Conditions for termination of contract

According to Public Procurement Contracts Law No. 4735 and Acc. to (GSCW)

Clause_27_ Additional work, reduction of work and liquidation of work within the scope of contract,

Acc. to (GSCW)

Clause_28_ determination of unit price for work items not included in contract

Acc. to (GSCW)

Revision of unit price;

If quantity of item increase 20% and

the increment value of this item is over %1 of contract value;

acc. to specified formula, unit price shall be revised for that item. And payment will be done for the part over 20% increment.

Clause_29_ Responsibilities of the contractor regarding the personnel to be employed related with contract

Acc. to (GSCW)

ISG conditions.

Clause_30_ Final accounts and provisional acceptance deficiencies during under construction

For Unit price

Items, completed, final progress payments are not submitted to the client: %5 security or %5 retention

is requested

For Lump sum

Progress payment for provisional acceptance deficiencies, %3 security or %3 retention is requested

Clause_31_ Dispute resolution

Location of work courts and its debt enforcement office

The Client may request from the Contractor specific materials, machinery or equipment (m/m/e)

3.6.6 Use of proprietary, trade or brand names.

The Contractor feel free to select the any m/m/e. However, liability totally belongs to the Contractor.

3.7 Materials and Work

3.7.1 Quality of materials and Work

The contractor shall comply with Quality Plan.

3.7.2 Quality assurance

The Client will free to access the Contractor and its each sub-contractors quality system.

3.7.3 Contractor's obligations unaffected

Notwithstanding issues or items are not specified at Quality Plan, The Contractor still continue his liability.

3.7.4 Defective Work

If the Client recognized that improper works acc. to the Contract, he has authorization to remove the work done by the Contractor and reconstruct. (within 7 days by the written notice, otherwise, the Client made the work to the other companies and the payment will be claimed by the Contractor.)

3.7.5 Acceptance of defective Work

3.8 Work directed by the Principal

Part D: Principal's responsibilities

4 Principal's role

4.1 Duties and accountability

The Client responsibilities are indicated in detail.

4.2 Contract Review Meetings

4.2.1 Timing

In every three months, CRM is hold. (at least)

4.2.2 Notice of meetings

Client shall inform the Contractor before two weeks and specify the date, location and required documents must be submitted.

4.2.3 Purpose of meetings

To drive improvement and discuss possible issues.

4.3 Contract performance reports

4.3.1 General

The Client will draw up a report for the contractor (C6092 form). Before CRM, it is submitted to the Contractor to review.

4.3.2 Less than satisfactory performance

If performance of the Contractor is low and could not enhance, the Client may think over Guaranteed Renewal Period (GRP)

4.3.3 Unacceptable performance

If performing of the same performance indicator or item sequentially result in unsatisfactory in three times, the Client may use the right of Contract termination.

4.4 Principal supplied information

Part E: Claims and dispute resolution

5 Certificates and payments

5.1 Total Contract Amount

Contract value shall not pass sum of the Network Schedule Total and Minor Works Schedule total

(Excluded variation order)

5.2 Discretionary changes

The Contractor may change the quantities of each items within limitation and updated Network Schedule

5.3 Reallocation

The Contractor can not handle fulfillment of requirements by discretionary changes, he has entitled to claim reallocation.

5.4 Progress Claims

It is submitted to the Client monthly.

(Progress report work and price basis)

5.5 Supporting documents for progress Claims

Requested documents shall be submitted to the Client with Progress Claims

Clause_32_ situations for which there are no provisions Provisions are not specified in law 4734 and 4735, code of obligations is valid. **Clause_33_Other issues** 1. Client does not provide quarry and depot area. Contractor shall determine the quarries and materials shall be approved by related institution and government agency. Hauling distance shall not be changed after tender. 2. All liabilities for accident contractor's staff, vehicle belongs to Contractor. 3. Improper material – shall not be used. If used, it will replaced with the proper one. No time extension **4.** The client could provide the additional rental vehicle to the contractor if it is requested by contractor. 5. The contractor shall be available in 24 hours and provide necessary vehicle and staff in case of accident, road obstruction etc. 6. Clearing of field, If field is not cleaned or residual materials are not removed. The penalty will be applied to the contractor to be done by the client - 2% of contract value for the contract value less than 2.250.000 TL - 2% of contract value in first 2.250.000 TL and then 1% for the contract value between 2.250.000 TL and 9.000.000 TL - Above item is valid then 0.5% for the contract value more than 9.000.000 TL 7. Safety of road and service road belongs to contractor 8. All precautions shall be considered for Railway under road construction 9. Channels for land irrigation shall be constructed before irrigation season. 10. The contractor shall provide a vehicle for its each key staff. The contractor shall provide shelters or building for inspectors in specified conditions in contract. 11. Design and control of design 12. The contractor shall conceive labor rights 13. The contractor shall be aware of rules and regulations for conservation and usage of explosive substance or material labor 14. The contractor shall be protect rights of natural person or legal identity. 15. Submission of drawings and photos of projects 16. Service cross and scaffolding 17. Suspension of works 18. Usage of existing road and bridge 19. Excavation, finishing and environmental planning in properly 20. Warehousing payment 21. Penalties (GSCW) 22. EIA 23. Letter of authorization 24. Inspection of works and technical responsibility of Contractor 25. Traffic safety 26. Declaration of Contractor for OHS 27. Labor law, OHS 28. Release of Performance bond 29. Payment for utilities usage 30. To learn the method of maintenance and snow fighting in abroad, the trip will be arrange for 10 people from the KGM and expenses will be included to contract value 31. Supply of material The materials will be used for patching, providing by the client's asphalt plant 32. Supply of bituminous The bituminous materials will be used for patching, providing by the client 33. Contractor shall provide a car 2018 model to the Client for inspection within 15 days after site delivery. The car shall be approved by the Client. If the contractor could not provide the car, the penalty 500 TL/day will be imposed.	**5.6 Progress payments** After submission of Progress claim, the Client has 14 days to make a payment or to request clarification. **5.7 Offset** The Client has a right to deduct Contractor Payment with reason. **5.8 Emergency Maintenance** **6 Dispute resolution** **6.1 Notice of dispute** Firstly, party shall be inform with written notice to other party. **6.2 Partners in Government Agreement requirements** If the contractor is LG, the procedure is different. **6.3 Disputes involving with RoadTek** If the contractor is RoadTek, the procedure is different. **6.4 Work to continue during dispute** **Part F: Variations** **7 Variations to the Contract** **7.1 Allowable variation events** **7.1.1 Additional funds** a) Increment quantity for items existing at schedule. b) for items not mentioned at schedule c) New and increment at Minor Works Items. **7.1.2 Advice to public** **7.1.3 Emergency Maintenance** The Contractor is responsible **7.1.4 Defective Work** The Client has a right to accept defective work (under limit/standards) with reducing the price. **7.1.5 Omission or decrease in Work** The Client has a right to **7.1.6 Public Utility Plant, ancillary Works and encroachments** The Contractor is responsible for managing. **7.2 Notification** **7.2.1 Contractor's initiative** The Contractor determines the issue. (discretionary changes can not be managed and reallocation is not possible) **7.2.2 Principal's initiative** The Client will decide increment of work or cost. **7.2.3 Defective Work** The Client can accept the work item with reducing quantity and cost form the Contractor. **7.2.4 Emergency Maintenance** Inform within the next working day. **7.2.5 Quantification of variations** **7.2.6 Reduced payment for Defective Work.** **Part G: Insurances** **8 Insurance of the Works** **8.1 Care of uncompleted Work, materials and the Site** **8.2 Excepted risks** **8.3 Professional indemnity** **8.4 Public liability** **8.4.1 Damage to Persons and property other than the Work under the Contract** **8.4.2 Public liability insurance** **8.4.3 Principal's indemnity for non-performance** **8.4.4 Indemnity for Contractor's Work** **8.5 Insurance of employees – workers' compensation** **Part H: Site and execution of Work under the Contract** **9 The Site** **9.1 Extent of Site** Unless indicated otherwise, The Client shall not change within contract duration. If necessary, notice shall be given to the Contractor before 12 months. **9.2 Nature of possession** **9.2.1 Sufficiency of possession**

34. In case the subjects are not mentioned in this contract, Public procurement law, Labor law, OHS law, Social Insurance and General Health Insurance law, Highway Traffic law clauses will be valid. **Clause_34_Validity** **Clause_35_Signing Contract**	As defined in Clause 9.1 **9.2.2 Public use of Site** During the performance of the Contractor, Public and Client will use the work site. **9.2.3 Necessary possession** For only work under Contract **9.2.4 Approval for removal** Without permission of the Client, the Contractor can not remove any material (includes all vegetation) from the site. **9.2.5 Joint use of the Site** The Contractor shall work with third party or people appointed by the Client. **9.2.6 Principal's materials** Reuse of material and storage of them is mentioned here. - Pipes, guardrail, sign **9.3 Protection of people and property** **9.3.1 Contractor's responsibilities** **9.3.2 Damage to property** Properties are public utilities. Any damaged covered by the Contractor according to law. **9.3.3 Maintain clean and tidy Site** **9.3.4 Failure to comply** If the Contractor fails under this clause, The Client will rectify and expenses, loss or cost will be paid by the Contractor. **9.3.5 Urgent protective Work** If the Client has to perform urgent protective work under the contract, cost will be taken from the Contractor. **9.4 Safety** **9.4.1 Definitions** Refers to regulation **9.4.2 General** **9.4.3 Specific obligations – management and control** **9.4.4 Responsibilities and liabilities** **9.4.5 Notifiable incidents** **9.4.6 Indemnities** **General Indemnities belonging to the Contractor are specified** **9.5 Traffic management at Work Sites** **9.5.1 Traffic guidance schemes** Refers to regulation and standards related with traffic control and safety. *Expected traffic delays shall be calculated (form C6095) during the tender stage. If the delays exceeds mentioned at C6095, The client and related agencies shall be informed before two working days. **9.5.2 Public notification** Within specific duration. **9.5.3 Other traffic management issues** **9.6 Minerals, fossils and relics on Site** **9.7 Public Utility Plant, ancillary Works and encroachments** **9.7.1 Liaise with owner and Principal** Any changes locations of utilities, all parties shall cooperate with each others. **9.7.2 Cost of alteration** If relocation of utilities is not mandatory under the contract and it is performed by the Contractor, cost will be covered by the Contractor. **9.7.3 Indemnity** **For damage of utilities** **9.8 Suspension of the Work** **9.8.1 Suspension by Principal** The Client has right to suspend the entire or part of works with specified reasons in this clause. **9.8.2 Suspension by Contractor** With approval of the Client, The Contract has right to suspend the entire or part of works . **9.8.3 Recommencement of Work** **9.8.4 Cost of suspension**
Special Technical Specification **1. Definitions** Failure types of asphalt (insufficient) **2. The works will be executed by the contractor** **2.1. Routine Road maintenance** **2.1.1 Deterioration and repairing of asphalt pavement** Definition of deterioration and method statement of repair 2.1.2 Placement and Maintenance of Marker post and snow post 2.1.3 Cleaning and maintenance of Hydraulic structures, over and underpass, manholes 2.1.4 Cleaning and maintenance of ditches and undesigned minor landslides. 2.1.5 Placement and Maintenance of Traffic sign boards 2.1.6. Cleaning of weeds and wastes at cut, fill and central refuge 2.1.7 Cleaning of curbs bottom and minor maintenance for structures on route 2.1.8 Sweeping of free materials on pavement by manually or machinery 2.1.9 Sanding and sweeping to remove greasiness on pavement 2.1.10 Emergency marking and response **2.2. Snow and Ice fighting** 2.2.1. Snow fighting 2.2.1.1.Removing of snow from the road: Defining the road 2.2.1.2.Teams and machinery: attitude of teams and usage of machinery are defined 2.2.1.3. Snow fighting with machinery and equipment. Explanation of procedures and execution 2.2.1.4. If client's vehicle are used under emergency , cost will be deducted from contractor's progress payments. 2.2.1.5. the locations of snow fighting 2.2.1.6.Pavement 2.2.1.7.Shoulder 2.2.1.8.City crossing 2.2.1.9. Bridges 2.2.1.10. Tunnels 2.2.1.11. Grade crossing 2.2.1.12. Ramp 2.2.2. Ice fighting Explanation of ice fighting; Two stages: 1-prevention of icing 2-removing of icing 2.2.2.1. Materials and vehicles 2.2.2.2. Prevention of icing 2.2.2.3. Solid chemical material application 2.2.2.4. Washing Solid chemical material before application 2.2.2.5. removing of icing (salting) 2.2.2.6. Abrasive mtrl (properties of aggregate) gradation etc. 2.2.2.7.Chemical Materials 2.2.2.8. Mixing of Abrasive mtrl and salt 2.2.2.9. Usage of salt 2.2.2.10. Snow plough technical specification 2.2.2.11. Solution tank technical specification 2.2.2.12. Salt spreader technical specification 2.2.2.13. Provisions for liquid solutions **3. Provisions for Routine Road maintenance** **4. Provisions for snow and ice fighting** **5. General Provisions** **6. Machinery park and equipment list**	

6.1 Number of teams and staff
For maintenance 19 ekip *6= 114
For CTP and Traffic 8*3= 24
For emergency 5*4= 20
6.2 Machinery and equipment list between 1 April – 30 November (Summer time)
Name, type, capacity, features, model (year), numbers are specified.
26 various type machinery and equipment (206 nos in total)
6.3 Machinery and equipment list between 1 December – 31 March (Summer time)
Name, type, capacity, features, model (year), numbers are specified.
23 various type machinery and equipment (159 nos in total)
6.4 Technical features of Nailing equipment at vehicles of traffic and CTP team
6.5 Machinery and equipment list shall be belonged to Contractor.
Name, type, capacity, features, model (year), numbers are specified.
10 various type machinery and equipment (24 nos in total)

7. Penalties

7.1. Missing or non existing of vehicle
2.000 TL/ day
7.2. Missing or non existing of staff
1.050 TL/day for site chief
650 TL/day for engineer, site chief
250 TL/day for workers
7.3. Blocked road by ice or snow
If more than 3 hours in a day - 10.000 TL/hour
7.4 Non- providing of additional machinery/staff/equipment/
With request of client, if not provided, 2.000 TL/day
7.5. Delinquency
2.000 TL/day
All expenses and cost of accidents fault of contractor are covering by himself.
7.9 FOR Routine maintenance - LUMP SUM
If not fixed within 5 days after written notice by the client, the following penalties will be applied to contractor within that month and deducted from the progress payment of that month. Unit: km
Patching – 2.000 TL
Maintenance of marker post and snow pole – 1.500 TL
Maintenance of traffic sign and poles – 2.000 TL
Maintenance & cleaning of expropriation area – 2.000 TL
Sweeping out of free materials on road – 2.000 TL
Elimination of greasiness – 2.000 TL
Transport & placing of concrete guardrail – 2.000 TL
Minor maintenance of curb – 2.000 TL
Acting and maintenance of emergency like traffic accident – 2.000 TL
Cleaning of landslide, slope failure, precipitation (designing - free) – 2.000 TL
Sweeping out of pavement, curbs, bottom of guardrails and sidewalk with machinery or manually – 2.000 TL
Quantity of penalty = rate of penalty * length (in km) of items which are not provided by the contractor.

8. Other provisions

- Setting up of work site
- Supply of materials
- Occurrence of accident
- Non-acceptable material
- Covering and maintenance under traffic accident
- Cleaning of worksite otherwise penalty will be applied (specified)
- Provisions for railway – general statement

The reason of suspension is occurred by the Client or other parties not related the Contractor, The Client shall be cover the expenses with proofing documents provided by the Contractor.

Part I: Quality system

10 Requirements of the quality system

10.1 General

Refers to ISO 9001: 2015 Quality management systems
If The contractor does not have certificate, he will apply or will declare that meeting minimum quality requirements with form C6089.

10.2 Quality system

- Quality and Safety Plan
- Environmental Management Plan (Maintenance).

10.3 Quality Plan

10.3.1 Systematic Approach to the Management of Maintenance

All items must be indicated in quality plan are specified in this clause.

10.3.2 Operations

Quality plan shall be compatible with Maintenance Activity Standard.

10.4 Work health and safety management plan (safety plan)

The client and third parties shall be involved.

10.5 Environmental management

10.5.1 General obligations.

Refers to standards and general items are mentioned at this clause.

10.5.2 EMP (Maintenance)

Plan details, controlling, performing related with environmental issues are mentioned.

10.5.3 Administrative requirements

10.5.4 Management measures

10.5.5 Requirements

10.5.6 Environmental representative

10.5.7 Burning

10.5.8 Weed management

10.5.9 Erosion and sediment control

10.5.10 Stockpile Sites

10.5.11 Cultural heritage

10.6 Audits

The client has right to control the Contractor at any time regarding;

- compliance with the Client's requirements for quality system requirements and procedures
- - Independent testing for Works finalized

10.6.1 Keeping records

All records shall be kept 6 years (at least) according the legislation.

Part J: Default and termination

11 Default

11.1 General

11.2 Default by the Contractor

11.3 Requirements of a notice by the Principal to show cause

11.4 Rights of the Principal

The clauses between 11.1 -11.4 are specified the acts and rights of the Client when the Contractor defaults

11.5 Procedure and adjustment on completion when the Principal takes over Work

"If the cost incurred by the Principal is greater than the amount which would have been paid to the Contractor if the Work had been completed by the Contractor, the difference shall be a debt due and owing from the Contractor to the Principal. If the cost incurred by the Principal is less than the amount that would have been paid to the Contractor if the Work had been completed by the Contractor, the difference shall be a debt due and owing to the Contractor from the Principal. The Principal shall keep records of the cost."
If the Client has unpaid cost from the Contractor, The client has right to retain plants or other materials (or propety) until payment is made. Otherwise, the Client will put up all ones for sale. Overplus shall be paid back to the Contractor.

11.6 Default of the Principal

- Not making payment

	- not giving access to site to the Contractor more than 28 days . **11.7 Requirements of a notice by the Contractor to show cause** **11.8 Rights of the Contractor** The clauses between 11.6 -11.8 are specified the acts and rights of the Contractor when the Client defaults. **11.9 Rights of the parties on termination** Under common law and until the prevailing party recovers the damages **11.10 Termination without cause** Both party can terminate the Contract without any causes by a) Notice by the Contractor shall be for a minimum period of two years. b) Notice by the Principal shall be for a minimum period of one year. c) If the Contractor is an LG, the Contractor is terminated according to under the provisions of the Local Government Act 2009. **Part K: General provisions** **12 Miscellaneous** **12.1 Confidential Information** **12.1.1 Contractor's responsibility** **12.1.2 Termination** **12.2 Information Privacy Act** **12.3 The Queensland Code** **12.3.1 Primary obligation** **12.3.2 Access and information** **12.3.3 Sanctions** **Appendix A: Schedules** **Appendix B: Activity Standard**

Appendix_5 Interview Questions

Mülakat Soruları

1. Yaş:
2. Mezuniyet yılı ve bölüm
3. Yol sektöründeki deneyiminiz:
4. Yurt dışı deneyimi var mı varsa kaç yıl ve hangi alanda
   (Eğer var ise yurtdışında yol bakım çalışma deneyimi sorgulanabilir.)
5. Mevcut posizyonunuz, göreniz ve çalıştığınız kurum.(Devlet kurumu, özel sektör)
6. Türkiye'de mevcut yolun bakım onarım ihtiyacının tespiti nasıl ve ne zaman yapılmaktadır.
7. Deneyimlerinize dayanarak yol bakım onarım çalışmaları KGM tarafından mı (ilgili devlet idaresi veya kurum – in house) yoksa özel sektör tarafından mı yürütülmelidir.
8. Özel sektör tarafından yürütülen yol bakım- onarım çalışmaları geleneksel sözleşme tipi ile metot bazlı olarak yapılmaktadır. Bu sistemdeki teknik ve proje yönetimi açısından eksikleri ve olumsuzluklarından bahseder misiniz ve önlemek için önerileriniz nerdir.
9. Yol bakım onarım işlerinde dünyada kullanılan Performans bazlı sözleşmelerle ilgili bilgiye sahipmisiniz.
10. PBC sisteminn türkiyeye uyarlanabilmesi bahsettiğiniz olumsuzlara veya eksiklere çözüm olabileceğini düşünüyor musunuz.
11. Bu sistemde yer alan ve belirteceğim temel özelliklerin Türkiye'de uygulanabilirliği ve iş taraflarının yaklaşımları nasıl olacaktır.
    - Metot serbestliği
    - Uzun vadeli sözleşme özelliği
    - Teşvik ve cezaiyi işlem uygulamaları
    - Performans göstergelerinin oluşturulması ve uygulanma esesları

Appendix_6 Approval of Human Subjects Ethics Committee for Surveys and Interviews

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
ueam@metu.edu.tr

Sayı: 28620816 / 370

04 EKİM 2019

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Dr.Öğretim Üyesi Hande IŞIK ÖZTÜRK

Danışmanlığını yaptığınız **Koray ATEŞ'in "Karayolu Bakım Onarım Sözleşmeleri ve Hizmetleri Anketi "** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve **350 ODTÜ 2019** protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

Prof. Dr. Tülin GENÇÖZ
Başkan

Prof. Dr. Tolga CAN
Üye

Doç.Dr. Pınar KAYGAN
Üye

Dr. Öğr. Üyesi Ali Emre TURGUT
Üye

Dr. Öğr. Üyesi Şerife SEVİNÇ
Üye

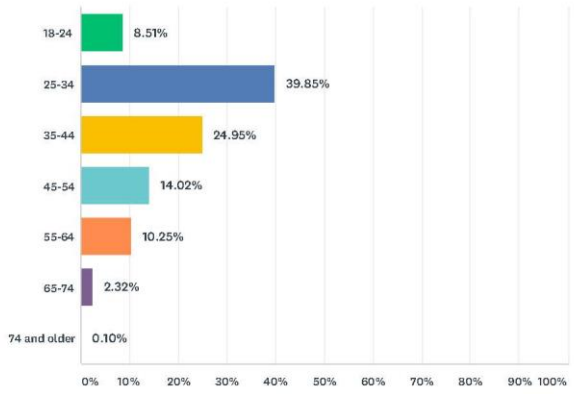
Dr. Öğr. Üyesi Müge GÜNDÜZ
Üye

Dr. Öğr. Üyesi Süreyya Özcan KABASAKAL
Üye

Appendix_7 Answers of Road User

Q1 Age Distribution of Participants

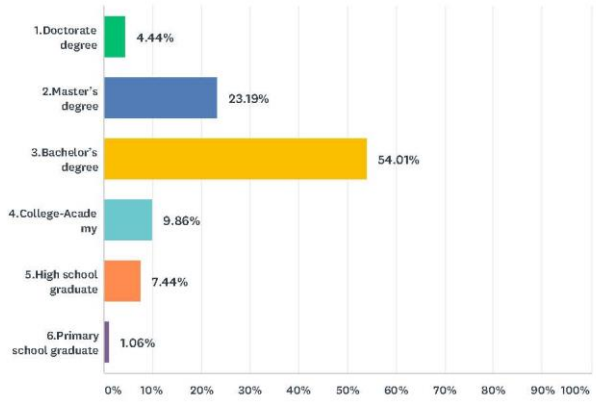
Answered: 1,034 Skipped: 2



ANSWER CHOICES	RESPONSES	
18-24	8.51%	88
25-34	39.85%	412
35-44	24.95%	258
45-54	14.02%	145
55-64	10.25%	106
65-74	2.32%	24
74 and older	0.10%	1
TOTAL		1,034

Q2 Education Status

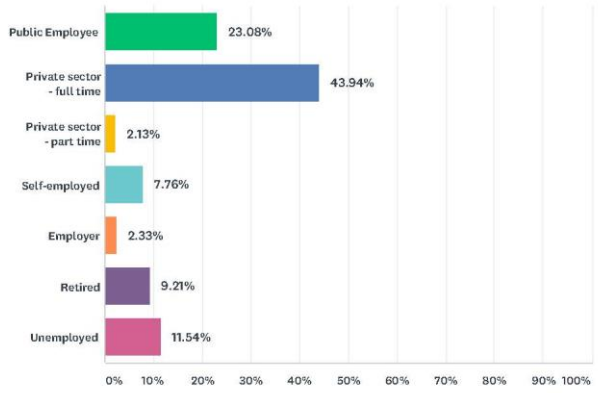
Answered: 1,035 Skipped: 1



ANSWER CHOICES	RESPONSES	
1.Doctorate degree	4.44%	46
2.Master's degree	23.19%	240
3.Bachelor's degree	54.01%	559
4.College-Academy	9.86%	102
5.High school graduate	7.44%	77
6.Primary school graduate	1.06%	11
TOTAL		1,035

Q3 Current employment status

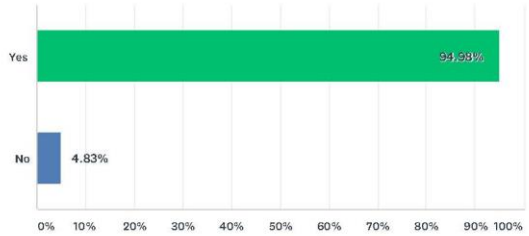
Answered: 1,031 Skipped: 5



ANSWER CHOICES	RESPONSES	
Public Employee	23.08%	238
Private sector - full time	43.94%	453
Private sector - part time	2.13%	22
Self-employed	7.76%	80
Employer	2.33%	24
Retired	9.21%	95
Unemployed	11.54%	119
TOTAL		1,031

Q4 Do you have driving license - If yes, how many years have you been driving?

Answered: 1,035 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	94.98%	983
No	4.83%	50
TOTAL		1,035

#	EĞER VARSA, KAÇ YILDIR ARABA KULLANIYORSUNUZ	DATE
1	25	10/12/2019 8:19 PM
2	3	10/11/2019 8:29 AM
3	28	10/10/2019 10:28 AM
4	15	10/9/2019 11:43 AM
5	12	10/9/2019 10:35 AM
6	3	10/9/2019 7:34 AM
7	15	10/9/2019 5:11 AM
8	14	10/8/2019 9:50 PM
9	20	10/8/2019 9:45 PM
10	15	10/8/2019 8:49 PM
11	20	10/8/2019 8:11 PM
12	10	10/8/2019 8:03 PM
13	19	10/8/2019 7:58 PM
14	8	10/8/2019 7:56 PM
15	5	10/8/2019 7:32 PM
16	10	10/8/2019 7:05 PM
17	15	10/8/2019 7:03 PM
18	11	10/8/2019 7:02 PM
19	6	10/8/2019 5:42 PM
20	7	10/8/2019 2:40 PM
21	10	10/8/2019 12:27 PM
22	16	10/8/2019 11:52 AM
23	10	10/8/2019 11:30 AM
24	10	10/8/2019 11:26 AM
25	25	10/8/2019 11:25 AM
26	10	10/8/2019 11:15 AM
27	40	10/8/2019 6:52 AM

28	25	10/8/2019 4:29 AM
29	30 Yıl	10/7/2019 11:45 PM
30	30	10/7/2019 8:46 PM
31	22	10/7/2019 7:47 PM
32	29	10/7/2019 7:30 PM
33	28	10/7/2019 7:21 PM
34	40	10/7/2019 6:04 PM
35	5	10/7/2019 5:24 PM
36	40	10/7/2019 12:59 PM
37	15	10/7/2019 12:19 PM
38	34	10/7/2019 11:32 AM
39	14	10/7/2019 10:34 AM
40	17	10/7/2019 9:04 AM
41	19	10/5/2019 4:44 PM
42	20	10/3/2019 9:20 PM
43	16	10/3/2019 8:03 AM
44	10	10/2/2019 9:20 PM
45	8	10/2/2019 7:03 PM
46	12	10/2/2019 6:55 PM
47	20	10/2/2019 6:52 PM
48	10 yıl	10/2/2019 6:48 PM
49	19	10/2/2019 6:48 PM
50	9	10/2/2019 6:42 PM
51	10	10/2/2019 10:37 AM
52	3	10/1/2019 12:49 PM
53	10	10/1/2019 12:46 PM
54	12	10/1/2019 10:41 AM
55	10	10/1/2019 7:34 AM
56	20	10/1/2019 5:42 AM
57	6	9/30/2019 1:28 PM
58	25	9/30/2019 9:19 AM
59	3	9/30/2019 9:15 AM
60	10yildir	9/30/2019 9:12 AM
61	15	9/30/2019 9:11 AM
62	2	9/30/2019 8:40 AM
63	8	9/30/2019 8:08 AM
64	40 yıl	9/30/2019 7:54 AM
65	11	9/30/2019 7:10 AM
66	33	9/30/2019 6:45 AM
67	30	9/30/2019 6:41 AM
68	25	9/30/2019 6:32 AM
69	7	9/30/2019 6:09 AM
70	10	9/30/2019 5:00 AM
71	4	9/30/2019 4:46 AM
72	6	9/30/2019 4:31 AM
73	30	9/30/2019 4:20 AM
74	5	9/30/2019 4:20 AM
75	20	9/30/2019 4:14 AM
76	32	9/30/2019 3:30 AM

77	24	9/30/2019 1:07 AM
78	12	9/29/2019 11:21 PM
79	20	9/29/2019 9:55 PM
80	6	9/29/2019 9:23 PM
81	15 yıl	9/29/2019 9:21 PM
82	42	9/29/2019 9:10 PM
83	20	9/29/2019 8:24 PM
84	23	9/29/2019 8:22 PM
85	50	9/29/2019 8:20 PM
86	35 sene	9/29/2019 8:18 PM
87	40	9/29/2019 8:17 PM
88	12	9/29/2019 8:12 PM
89	8	9/29/2019 8:09 PM
90	1	9/29/2019 8:06 PM
91	5	9/29/2019 8:01 PM
92	30	9/29/2019 7:47 PM
93	10	9/29/2019 7:40 PM
94	10	9/29/2019 7:32 PM
95	Bir yıl	9/29/2019 7:30 PM
96	30	9/29/2019 7:29 PM
97	23	9/29/2019 7:16 PM
98	7	9/29/2019 7:11 PM
99	Kullanmıyorum	9/29/2019 6:58 PM
100	Kullanmıyorum.	9/29/2019 6:55 PM
101	10	9/29/2019 6:53 PM
102	1	9/29/2019 6:52 PM
103	7	9/29/2019 6:49 PM
104	1	9/29/2019 6:48 PM
105	27	9/29/2019 6:45 PM
106	6	9/29/2019 6:44 PM
107	30	9/29/2019 6:41 PM
108	20	9/29/2019 6:39 PM
109	10	9/29/2019 6:35 PM
110	0	9/29/2019 6:32 PM
111	15	9/29/2019 6:30 PM
112	7	9/29/2019 6:29 PM
113	5	9/29/2019 6:29 PM
114	20	9/29/2019 6:28 PM
115	8	9/29/2019 6:27 PM
116	5	9/29/2019 6:26 PM
117	15	9/29/2019 6:26 PM
118	20	9/29/2019 6:25 PM
119	20	9/29/2019 6:25 PM
120	13	9/29/2019 6:23 PM
121	18	9/29/2019 6:23 PM
122	0	9/29/2019 6:20 PM
123	Kullanmiyorum	9/29/2019 6:20 PM
124	10	9/29/2019 6:19 PM
125	27	9/29/2019 6:18 PM

126	30 yıl	9/29/2019 6:18 PM
127	10	9/29/2019 6:14 PM
128	50	9/29/2019 6:12 PM
129	20	9/29/2019 6:08 PM
130	6	9/29/2019 6:07 PM
131	11	9/29/2019 6:06 PM
132	Araba kullanmıyorum	9/29/2019 6:02 PM
133	2	9/29/2019 5:57 PM
134	10	9/29/2019 5:56 PM
135	13	9/29/2019 5:55 PM
136	8	9/29/2019 5:55 PM
137	31	9/29/2019 5:54 PM
138	7	9/29/2019 5:53 PM
139	40 yıl	9/29/2019 5:52 PM
140	15	9/29/2019 5:52 PM
141	30	9/29/2019 5:43 PM
142	10	9/29/2019 5:39 PM
143	30	9/29/2019 9:59 AM
144	40	9/29/2019 3:39 AM
145	20 yil	9/28/2019 10:28 PM
146	11	9/28/2019 9:54 PM
147	11	9/28/2019 7:18 PM
148	25	9/28/2019 7:11 PM
149	14	9/28/2019 6:11 PM
150	3	9/28/2019 2:47 PM
151	15	9/28/2019 10:04 AM
152	15	9/28/2019 9:27 AM
153	15	9/28/2019 9:15 AM
154	9	9/28/2019 7:07 AM
155	7	9/27/2019 9:16 PM
156	9	9/27/2019 9:14 PM
157	14	9/27/2019 9:12 PM
158	1	9/27/2019 4:06 PM
159	4	9/27/2019 4:06 PM
160	12	9/27/2019 3:45 PM
161	30	9/27/2019 3:44 PM
162	2	9/27/2019 3:29 PM
163	20	9/27/2019 3:26 PM
164	23	9/27/2019 3:22 PM
165	5	9/27/2019 11:22 AM
166	5	9/27/2019 11:19 AM
167	5	9/27/2019 10:15 AM
168	21	9/27/2019 10:06 AM
169	11	9/27/2019 9:12 AM
170	22	9/27/2019 9:09 AM
171	10 yil	9/27/2019 9:07 AM
172	23	9/27/2019 9:06 AM
173	13	9/27/2019 9:00 AM
174	7	9/27/2019 8:42 AM

175	10	9/27/2019 8:40 AM
176	12	9/27/2019 8:33 AM
177	4	9/27/2019 8:30 AM
178	16	9/27/2019 8:13 AM
179	2	9/27/2019 8:03 AM
180	15	9/27/2019 7:56 AM
181	7	9/27/2019 6:58 AM
182	40	9/27/2019 6:46 AM
183	11	9/27/2019 6:40 AM
184	15	9/27/2019 6:39 AM
185	5	9/26/2019 3:42 PM
186	30	9/26/2019 12:34 PM
187	42	9/26/2019 11:55 AM
188	4	9/26/2019 11:31 AM
189	8	9/26/2019 10:58 AM
190	6	9/26/2019 10:51 AM
191	9	9/26/2019 10:30 AM
192	7	9/26/2019 10:24 AM
193	5	9/26/2019 9:09 AM
194	4	9/26/2019 6:54 AM
195	49	9/26/2019 6:35 AM
196	3	9/26/2019 5:39 AM
197	29	9/25/2019 8:29 PM
198	15	9/25/2019 8:13 PM
199	25	9/25/2019 7:56 PM
200	10	9/25/2019 7:19 PM
201	20	9/25/2019 7:12 PM
202	22	9/25/2019 6:36 PM
203	19	9/25/2019 6:30 PM
204	15	9/25/2019 6:27 PM
205	13	9/25/2019 6:23 PM
206	2013	9/25/2019 6:13 PM
207	5	9/25/2019 6:10 PM
208	9	9/25/2019 6:06 PM
209	8	9/25/2019 6:05 PM
210	22	9/25/2019 6:03 PM
211	2	9/25/2019 6:02 PM
212	10	9/25/2019 5:57 PM
213	9	9/25/2019 5:57 PM
214	11	9/25/2019 5:39 PM
215	15	9/25/2019 5:32 PM
216	7	9/25/2019 5:24 PM
217	10	9/25/2019 5:18 PM
218	3	9/25/2019 5:14 PM
219	6	9/25/2019 5:09 PM
220	12	9/25/2019 5:08 PM
221	7	9/25/2019 5:07 PM
222	4	9/25/2019 5:06 PM
223	9	9/25/2019 5:03 PM

224	15	9/25/2019 5:00 PM
225	10	9/25/2019 4:57 PM
226	9	9/25/2019 4:56 PM
227	17	9/25/2019 4:47 PM
228	26	9/25/2019 4:38 PM
229	29	9/25/2019 4:10 PM
230	12	9/25/2019 3:31 PM
231	14	9/25/2019 3:24 PM
232	2	9/25/2019 2:47 PM
233	11	9/25/2019 2:39 PM
234	11	9/25/2019 1:55 PM
235	1	9/25/2019 1:42 PM
236	10	9/25/2019 1:39 PM
237	11	9/25/2019 1:31 PM
238	6	9/25/2019 12:58 PM
239	38	9/25/2019 12:36 PM
240	6	9/25/2019 11:52 AM
241	9	9/25/2019 11:44 AM
242	18	9/25/2019 11:05 AM
243	2	9/25/2019 11:02 AM
244	38	9/25/2019 10:57 AM
245	5	9/25/2019 10:47 AM
246	15	9/25/2019 10:14 AM
247	7	9/25/2019 9:50 AM
248	13	9/25/2019 9:47 AM
249	6	9/25/2019 9:46 AM
250	23	9/25/2019 9:39 AM
251	10	9/25/2019 9:30 AM
252	25	9/25/2019 9:10 AM
253	1	9/25/2019 9:06 AM
254	8	9/25/2019 9:03 AM
255	6	9/25/2019 8:57 AM
256	9	9/25/2019 8:55 AM
257	15	9/25/2019 8:50 AM
258	0	9/25/2019 8:50 AM
259	18	9/25/2019 8:46 AM
260	20	9/25/2019 8:43 AM
261	12	9/25/2019 8:37 AM
262	10	9/25/2019 8:35 AM
263	5	9/25/2019 8:17 AM
264	17	9/25/2019 8:05 AM
265	1	9/25/2019 7:56 AM
266	2	9/25/2019 7:53 AM
267	2	9/25/2019 7:42 AM
268	0	9/25/2019 7:37 AM
269	16	9/25/2019 7:37 AM
270	8 yıldır ehliyetim var. Ara ara kullanıyorum.	9/25/2019 7:36 AM
271	5	9/25/2019 7:34 AM
272	10	9/25/2019 7:34 AM

273	Kullanmıyorum	9/25/2019 7:30 AM
274	6	9/25/2019 7:26 AM
275	10	9/25/2019 7:22 AM
276	10	9/25/2019 7:21 AM
277	11	9/25/2019 7:18 AM
278	3	9/25/2019 7:18 AM
279	7	9/25/2019 7:16 AM
280	7	9/25/2019 7:13 AM
281	15	9/25/2019 7:08 AM
282	9	9/25/2019 7:05 AM
283	32	9/25/2019 7:03 AM
284	6	9/25/2019 6:57 AM
285	1	9/25/2019 6:57 AM
286	2	9/25/2019 6:54 AM
287	7	9/25/2019 6:54 AM
288	5	9/25/2019 6:53 AM
289	20	9/25/2019 6:52 AM
290	25	9/25/2019 6:52 AM
291	5	9/25/2019 6:49 AM
292	4	9/25/2019 6:49 AM
293	Şu an kullanmıyorum	9/25/2019 6:42 AM
294	0	9/25/2019 6:38 AM
295	0	9/25/2019 6:34 AM
296	4	9/25/2019 6:29 AM
297	26	9/25/2019 6:22 AM
298	5	9/25/2019 6:18 AM
299	2000	9/25/2019 6:12 AM
300	10	9/25/2019 6:12 AM
301	Aktif olarak 8 yıldır	9/25/2019 6:11 AM
302	13	9/25/2019 6:02 AM
303	20	9/25/2019 6:01 AM
304	20	9/25/2019 5:11 AM
305	18	9/25/2019 5:03 AM
306	30 yılından fazla	9/25/2019 4:33 AM
307	32	9/25/2019 3:56 AM
308	6	9/25/2019 3:54 AM
309	10	9/25/2019 3:36 AM
310	30	9/25/2019 2:19 AM
311	Bir	9/24/2019 10:34 PM
312	11	9/24/2019 9:28 PM
313	7	9/24/2019 8:57 PM
314	30	9/24/2019 8:45 PM
315	5	9/24/2019 8:44 PM
316	5 yıl	9/24/2019 8:16 PM
317	16	9/24/2019 8:15 PM
318	32	9/24/2019 7:53 PM
319	2	9/24/2019 7:49 PM
320	6	9/24/2019 7:45 PM
321	20	9/24/2019 7:44 PM

322	25	9/24/2019 7:43 PM
323	0	9/24/2019 7:41 PM
324	5	9/24/2019 7:39 PM
325	11	9/24/2019 7:33 PM
326	25	9/24/2019 7:30 PM
327	1	9/24/2019 7:27 PM
328	2	9/24/2019 7:26 PM
329	4	9/24/2019 7:26 PM
330	3	9/24/2019 7:23 PM
331	4	9/24/2019 7:19 PM
332	3	9/24/2019 7:16 PM
333	5	9/24/2019 7:15 PM
334	4	9/24/2019 7:15 PM
335	2	9/24/2019 7:15 PM
336	18	9/24/2019 7:14 PM
337	3	9/24/2019 7:13 PM
338	5	9/24/2019 7:13 PM
339	5	9/24/2019 7:10 PM
340	10	9/24/2019 7:07 PM
341	1	9/24/2019 7:07 PM
342	7	9/24/2019 7:04 PM
343	4	9/24/2019 7:03 PM
344	30	9/24/2019 7:00 PM
345	6	9/24/2019 6:59 PM
346	3	9/24/2019 6:57 PM
347	21	9/24/2019 6:55 PM
348	14	9/24/2019 6:53 PM
349	13 yıl	9/24/2019 6:50 PM
350	29	9/24/2019 6:42 PM
351	4	9/24/2019 6:42 PM
352	20	9/24/2019 6:35 PM
353	28	9/24/2019 6:32 PM
354	25	9/24/2019 6:32 PM
355	14	9/24/2019 6:32 PM
356	16	9/24/2019 6:31 PM
357	25	9/24/2019 6:29 PM
358	10	9/24/2019 6:25 PM
359	15	9/24/2019 6:24 PM
360	11	9/24/2019 6:24 PM
361	11	9/24/2019 6:23 PM
362	25	9/24/2019 6:12 PM
363	21	9/24/2019 6:04 PM
364	12	9/24/2019 5:51 PM
365	20	9/24/2019 5:49 PM
366	31	9/24/2019 5:38 PM
367	5	9/24/2019 5:35 PM
368	2	9/24/2019 5:35 PM
369	4	9/24/2019 5:30 PM
370	8	9/24/2019 5:24 PM

371	28	9/24/2019 5:16 PM
372	11	9/24/2019 5:06 PM
373	17	9/24/2019 5:02 PM
374	10	9/24/2019 5:02 PM
375	30	9/24/2019 5:02 PM
376	34	9/24/2019 4:52 PM
377	25	9/24/2019 4:35 PM
378	20	9/24/2019 4:33 PM
379	20	9/24/2019 4:16 PM
380	19	9/24/2019 4:06 PM
381	26	9/24/2019 3:54 PM
382	10	9/24/2019 3:52 PM
383	20	9/24/2019 3:44 PM
384	24	9/24/2019 3:13 PM
385	25	9/24/2019 3:09 PM
386	22	9/24/2019 2:57 PM
387	23	9/24/2019 2:56 PM
388	2	9/24/2019 2:54 PM
389	15	9/24/2019 2:38 PM
390	5	9/24/2019 2:37 PM
391	20	9/24/2019 2:10 PM
392	7	9/24/2019 1:53 PM
393	15	9/24/2019 1:39 PM
394	20	9/24/2019 12:13 PM
395	2	9/24/2019 12:10 PM
396	1	9/24/2019 11:58 AM
397	2	9/24/2019 11:55 AM
398	0	9/24/2019 11:48 AM
399	22	9/24/2019 11:18 AM
400	25 YIL	9/24/2019 11:13 AM
401	20	9/24/2019 11:09 AM
402	18	9/24/2019 11:05 AM
403	15	9/24/2019 11:05 AM
404	30	9/24/2019 11:00 AM
405	30	9/24/2019 10:59 AM
406	Hiç kullanmıyorum	9/24/2019 10:59 AM
407	28	9/24/2019 10:57 AM
408	31	9/24/2019 10:52 AM
409	18	9/24/2019 10:51 AM
410	9	9/24/2019 10:47 AM
411	20	9/24/2019 10:45 AM
412	7	9/24/2019 10:33 AM
413	10	9/24/2019 10:31 AM
414	2	9/24/2019 10:30 AM
415	11	9/24/2019 10:27 AM
416	13	9/24/2019 10:21 AM
417	21	9/24/2019 10:15 AM
418	31	9/24/2019 9:55 AM
419	Kullanmıyorum, arabam yok	9/24/2019 9:42 AM

420	25	9/24/2019 9:34 AM
421	12	9/24/2019 9:30 AM
422	10	9/24/2019 9:24 AM
423	1	9/24/2019 9:21 AM
424	10	9/24/2019 9:20 AM
425	13	9/24/2019 9:17 AM
426	30	9/24/2019 9:10 AM
427	Kullanmıyorum.	9/24/2019 9:07 AM
428	3	9/24/2019 9:02 AM
429	24	9/24/2019 9:01 AM
430	7	9/24/2019 9:00 AM
431	25	9/24/2019 8:59 AM
432	30	9/24/2019 8:57 AM
433	5 yıl	9/24/2019 8:57 AM
434	12	9/24/2019 8:56 AM
435	32	9/24/2019 8:55 AM
436	25	9/24/2019 8:55 AM
437	20	9/24/2019 8:51 AM
438	14	9/24/2019 8:50 AM
439	5	9/24/2019 8:48 AM
440	12	9/24/2019 8:48 AM
441	8	9/24/2019 8:45 AM
442	6	9/24/2019 8:45 AM
443	1	9/24/2019 8:44 AM
444	19	9/24/2019 8:33 AM
445	5	9/24/2019 8:28 AM
446	4	9/24/2019 8:28 AM
447	28	9/24/2019 8:24 AM
448	9	9/24/2019 8:22 AM
449	0	9/24/2019 8:21 AM
450	19	9/24/2019 8:21 AM
451	3	9/24/2019 8:20 AM
452	25	9/24/2019 8:15 AM
453	Kullanmıyorum	9/24/2019 8:15 AM
454	10	9/24/2019 8:15 AM
455	15	9/24/2019 8:14 AM
456	9	9/24/2019 8:14 AM
457	17	9/24/2019 8:12 AM
458	7	9/24/2019 8:11 AM
459	15	9/24/2019 8:10 AM
460	2	9/24/2019 8:09 AM
461	29	9/24/2019 8:08 AM
462	15	9/24/2019 8:08 AM
463	20	9/24/2019 8:07 AM
464	36	9/24/2019 8:06 AM
465	10	9/24/2019 8:05 AM
466	Kullanmıyorum	9/24/2019 8:04 AM
467	11	9/24/2019 8:02 AM
468	30	9/24/2019 8:02 AM

469	9	9/24/2019 8:01 AM
470	10	9/24/2019 7:58 AM
471	5	9/24/2019 7:57 AM
472	7	9/24/2019 7:57 AM
473	4	9/24/2019 7:55 AM
474	5	9/24/2019 7:53 AM
475	7	9/24/2019 7:51 AM
476	8	9/24/2019 7:49 AM
477	20	9/24/2019 7:48 AM
478	10	9/24/2019 7:48 AM
479	15	9/24/2019 7:48 AM
480	46	9/24/2019 7:47 AM
481	12	9/24/2019 7:46 AM
482	10	9/24/2019 7:42 AM
483	5	9/24/2019 7:41 AM
484	11 yıldır	9/24/2019 7:36 AM
485	15	9/24/2019 7:32 AM
486	15	9/24/2019 7:32 AM
487	11	9/24/2019 7:31 AM
488	18	9/24/2019 7:26 AM
489	30	9/24/2019 7:10 AM
490	6	9/24/2019 7:10 AM
491	15	9/24/2019 7:06 AM
492	5	9/24/2019 7:04 AM
493	Hiç kullanmadım	9/24/2019 7:01 AM
494	44	9/24/2019 7:01 AM
495	23	9/24/2019 6:52 AM
496	10	9/24/2019 6:50 AM
497	10	9/24/2019 6:50 AM
498	7	9/24/2019 6:48 AM
499	18	9/24/2019 6:48 AM
500	27	9/24/2019 6:43 AM
501	20	9/24/2019 6:40 AM
502	25	9/24/2019 6:38 AM
503	6	9/24/2019 6:35 AM
504	7	9/24/2019 6:26 AM
505	26	9/24/2019 6:25 AM
506	7	9/24/2019 6:22 AM
507	18	9/24/2019 6:22 AM
508	5	9/24/2019 6:21 AM
509	35 YILDIR	9/24/2019 6:21 AM
510	10	9/24/2019 6:21 AM
511	20	9/24/2019 6:20 AM
512	5	9/24/2019 6:20 AM
513	10	9/24/2019 6:20 AM
514	26	9/24/2019 6:19 AM
515	16	9/24/2019 6:19 AM
516	10	9/24/2019 6:19 AM
517	15	9/24/2019 6:19 AM

518	31	9/24/2019 6:19 AM
519	1	9/24/2019 6:18 AM
520	10	9/24/2019 6:18 AM
521	27	9/24/2019 5:55 AM
522	Kırk	9/24/2019 5:44 AM
523	2	9/24/2019 5:23 AM
524	25 yıl	9/24/2019 5:13 AM
525	35	9/24/2019 4:31 AM
526	13	9/24/2019 4:24 AM
527	6	9/24/2019 4:19 AM
528	26	9/24/2019 4:14 AM
529	8	9/24/2019 4:04 AM
530	38	9/24/2019 3:51 AM
531	4 ay	9/24/2019 3:50 AM
532	20	9/24/2019 2:44 AM
533	10 yildir	9/24/2019 12:09 AM
534	11	9/23/2019 11:12 PM
535	26	9/23/2019 11:12 PM
536	21	9/23/2019 10:44 PM
537	20 yil	9/23/2019 10:24 PM
538	8	9/23/2019 9:46 PM
539	35	9/23/2019 9:19 PM
540	12	9/23/2019 9:19 PM
541	23	9/23/2019 9:02 PM
542	30	9/23/2019 9:01 PM
543	13	9/23/2019 8:58 PM
544	10	9/23/2019 8:56 PM
545	10	9/23/2019 8:55 PM
546	26	9/23/2019 8:49 PM
547	3	9/23/2019 8:41 PM
548	11	9/23/2019 8:34 PM
549	8	9/23/2019 8:33 PM
550	6	9/23/2019 8:28 PM
551	11	9/23/2019 8:28 PM
552	12	9/23/2019 8:27 PM
553	15	9/23/2019 8:27 PM
554	3	9/23/2019 8:16 PM
555	10	9/23/2019 8:15 PM
556	6	9/23/2019 8:11 PM
557	8	9/23/2019 8:10 PM
558	7	9/23/2019 8:09 PM
559	9	9/23/2019 8:06 PM
560	0	9/23/2019 8:05 PM
561	3	9/23/2019 8:05 PM
562	4	9/23/2019 8:04 PM
563	10	9/23/2019 8:04 PM
564	41	9/23/2019 8:02 PM
565	30	9/23/2019 8:00 PM
566	40	9/23/2019 7:51 PM

567	12	9/23/2019 7:49 PM
568	3	9/23/2019 7:45 PM
569	32	9/23/2019 7:44 PM
570	6	9/23/2019 7:42 PM
571	7	9/23/2019 7:42 PM
572	9	9/23/2019 7:38 PM
573	0	9/23/2019 7:36 PM
574	10	9/23/2019 7:33 PM
575	8	9/23/2019 7:33 PM
576	29 yıldır	9/23/2019 7:31 PM
577	35	9/23/2019 7:31 PM
578	8	9/23/2019 7:29 PM
579	12	9/23/2019 7:28 PM
580	10	9/23/2019 7:27 PM
581	27	9/23/2019 7:26 PM
582	27	9/23/2019 7:24 PM
583	20	9/23/2019 7:24 PM
584	20 yıl	9/23/2019 7:23 PM
585	3	9/23/2019 7:21 PM
586	30	9/23/2019 7:21 PM
587	20	9/23/2019 7:20 PM
588	7	9/23/2019 7:19 PM
589	18 yil	9/23/2019 7:18 PM
590	10	9/23/2019 7:18 PM
591	3	9/23/2019 7:17 PM
592	13	9/23/2019 7:14 PM
593	kullanmıyorum	9/23/2019 7:08 PM
594	7	9/23/2019 7:07 PM
595	15	9/23/2019 7:06 PM
596	5	9/23/2019 7:05 PM
597	3	9/23/2019 7:04 PM
598	18	9/23/2019 7:04 PM
599	1987 yılında aldım ehliyet	9/23/2019 7:03 PM
600	10 yil	9/23/2019 7:02 PM
601	2	9/23/2019 7:02 PM
602	3	9/23/2019 7:02 PM
603	9	9/23/2019 7:01 PM
604	28	9/23/2019 7:01 PM
605	2	9/23/2019 7:01 PM
606	16	9/23/2019 7:00 PM
607	12	9/23/2019 7:00 PM
608	10	9/23/2019 6:59 PM
609	16	9/23/2019 6:59 PM
610	32	9/23/2019 6:57 PM
611	4	9/23/2019 6:55 PM
612	10	9/23/2019 6:54 PM
613	2	9/23/2019 6:53 PM

614	4	9/23/2019 6:52 PM
615	24	9/23/2019 6:51 PM
616	5	9/23/2019 6:50 PM
617	2	9/23/2019 6:50 PM
618	19	9/23/2019 6:50 PM
619	17	9/23/2019 6:49 PM
620	6 yildir	9/23/2019 6:48 PM
621	10	9/23/2019 6:48 PM
622	3	9/23/2019 6:40 PM
623	10	9/23/2019 6:39 PM
624	8	9/23/2019 6:34 PM
625	3	9/23/2019 6:30 PM
626	14	9/23/2019 6:28 PM
627	3	9/23/2019 6:27 PM
628	6	9/23/2019 6:21 PM
629	5	9/23/2019 6:21 PM
630	4	9/23/2019 6:20 PM
631	8	9/23/2019 6:18 PM
632	7	9/23/2019 6:18 PM
633	2	9/23/2019 6:15 PM
634	20	9/23/2019 6:14 PM
635	13	9/23/2019 6:13 PM
636	30	9/23/2019 6:13 PM
637	2	9/23/2019 6:12 PM
638	26	9/23/2019 6:11 PM
639	1	9/23/2019 6:09 PM
640	38 Yıl	9/23/2019 6:09 PM
641	6	9/23/2019 6:07 PM
642	11	9/23/2019 6:06 PM
643	1	9/23/2019 6:05 PM
644	10	9/23/2019 6:04 PM
645	11	9/23/2019 6:03 PM
646	12	9/23/2019 6:01 PM
647	8	9/23/2019 6:01 PM
648	25	9/23/2019 6:00 PM
649	35	9/23/2019 5:58 PM
650	35	9/23/2019 5:55 PM
651	35	9/23/2019 5:55 PM
652	2	9/23/2019 5:55 PM
653	9	9/23/2019 5:53 PM
654	23	9/23/2019 5:53 PM
655	23	9/23/2019 5:52 PM
656	20	9/23/2019 5:51 PM
657	20	9/23/2019 5:49 PM
658	32	9/23/2019 5:48 PM
659	20	9/23/2019 5:48 PM
660	30	9/23/2019 5:48 PM
661	11	9/23/2019 5:47 PM

662	10	9/23/2019 5:46 PM
663	15	9/23/2019 5:39 PM
664	30	9/23/2019 5:38 PM
665	18	9/23/2019 5:38 PM
666	11	9/23/2019 5:36 PM
667	5	9/23/2019 5:30 PM
668	40	9/23/2019 5:28 PM
669	30	9/23/2019 5:28 PM
670	8	9/23/2019 5:25 PM
671	14	9/23/2019 5:25 PM
672	7	9/23/2019 5:24 PM
673	38	9/23/2019 5:22 PM
674	10	9/23/2019 5:19 PM
675	3	9/23/2019 5:16 PM
676	40	9/23/2019 5:12 PM
677	11	9/23/2019 5:12 PM
678	25	9/23/2019 5:09 PM
679	17	9/23/2019 5:08 PM
680	5	9/23/2019 5:05 PM
681	8	9/23/2019 5:05 PM
682	30	9/23/2019 5:03 PM
683	2	9/23/2019 5:02 PM
684	30	9/23/2019 5:02 PM
685	8	9/23/2019 5:00 PM
686	15	9/23/2019 5:00 PM
687	29	9/23/2019 4:55 PM
688	15	9/23/2019 4:54 PM
689	2	9/23/2019 4:54 PM
690	45	9/23/2019 4:54 PM
691	14	9/23/2019 4:51 PM
692	30	9/23/2019 4:47 PM
693	5	9/23/2019 4:40 PM
694	20	9/23/2019 4:39 PM
695	6	9/23/2019 4:39 PM
696	10	9/23/2019 4:37 PM
697	14	9/23/2019 4:34 PM
698	14	9/23/2019 4:34 PM
699	11	9/23/2019 4:29 PM
700	2	9/23/2019 4:28 PM
701	10	9/23/2019 4:27 PM
702	5	9/23/2019 4:24 PM
703	44	9/23/2019 4:21 PM
704	7	9/23/2019 4:18 PM
705	11	9/23/2019 4:18 PM
706	0	9/23/2019 4:10 PM
707	2	9/23/2019 4:10 PM
708	18	9/23/2019 4:07 PM
709	2	9/23/2019 4:04 PM

710	15	9/23/2019 4:03 PM
711	9	9/23/2019 4:02 PM
712	26	9/23/2019 3:57 PM
713	12	9/23/2019 3:53 PM
714	10	9/23/2019 3:49 PM
715	1	9/23/2019 3:47 PM
716	6	9/23/2019 3:45 PM
717	0	9/23/2019 3:45 PM
718	4	9/23/2019 3:44 PM
719	21	9/23/2019 3:41 PM
720	2	9/23/2019 3:40 PM
721	25	9/23/2019 3:40 PM
722	18	9/23/2019 3:39 PM
723	25	9/23/2019 3:39 PM
724	11	9/23/2019 3:36 PM
725	20	9/23/2019 3:35 PM
726	6	9/23/2019 3:33 PM
727	13	9/23/2019 3:33 PM
728	14	9/23/2019 3:29 PM
729	32	9/23/2019 3:29 PM
730	10	9/23/2019 3:29 PM
731	5	9/23/2019 3:28 PM
732	1	9/23/2019 3:27 PM
733	35	9/23/2019 3:26 PM
734	21	9/23/2019 3:25 PM
735	6	9/23/2019 3:24 PM
736	10	9/23/2019 3:24 PM
737	12	9/23/2019 3:21 PM
738	17	9/23/2019 3:20 PM
739	20	9/23/2019 3:19 PM
740	30	9/23/2019 3:19 PM
741	7	9/23/2019 3:18 PM
742	Trafik bilgim yok kullanmıyorum	9/23/2019 3:17 PM
743	8 yıl	9/23/2019 3:16 PM
744	22	9/23/2019 3:15 PM
745	15	9/23/2019 3:15 PM
746	19	9/23/2019 3:13 PM
747	9	9/23/2019 3:13 PM
748	6	9/23/2019 3:11 PM
749	1	9/23/2019 3:10 PM
750	1	9/23/2019 3:09 PM
751	18	9/23/2019 3:08 PM
752	14	9/23/2019 3:07 PM
753	7	9/23/2019 3:06 PM
754	30	9/23/2019 3:04 PM
755	22	9/23/2019 3:04 PM
756	23	9/23/2019 3:04 PM
757	13	9/23/2019 3:02 PM

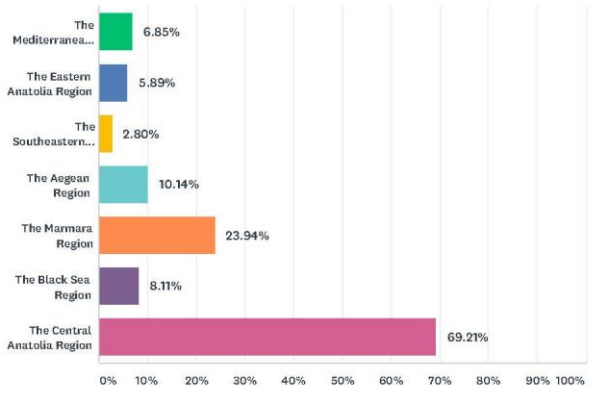
758	20	9/23/2019 3:02 PM
759	11	9/23/2019 3:00 PM
760	6	9/23/2019 2:59 PM
761	20	9/23/2019 2:59 PM
762	15	9/23/2019 2:58 PM
763	3	9/23/2019 2:58 PM
764	16	9/23/2019 2:56 PM
765	2	9/23/2019 2:56 PM
766	2	9/23/2019 2:55 PM
767	22	9/23/2019 2:54 PM
768	13	9/23/2019 2:54 PM
769	6	9/23/2019 2:54 PM
770	15	9/23/2019 2:53 PM
771	20	9/23/2019 2:50 PM
772	17	9/23/2019 2:50 PM
773	22	9/23/2019 2:48 PM
774	9	9/23/2019 2:45 PM
775	20 yıl	9/23/2019 2:44 PM
776	17	9/23/2019 2:44 PM
777	35	9/23/2019 2:42 PM
778	10	9/23/2019 2:42 PM
779	12	9/23/2019 2:40 PM
780	8	9/23/2019 2:39 PM
781	0	9/23/2019 2:39 PM
782	4 yıl	9/23/2019 2:37 PM
783	20	9/23/2019 2:37 PM
784	10	9/23/2019 2:35 PM
785	20	9/23/2019 2:35 PM
786	2	9/23/2019 2:34 PM
787	18	9/23/2019 2:33 PM
788	5	9/23/2019 2:33 PM
789	20	9/23/2019 2:30 PM
790	14	9/23/2019 2:30 PM
791	10	9/23/2019 2:28 PM
792	19	9/23/2019 2:28 PM
793	9	9/23/2019 2:22 PM
794	0	9/23/2019 2:21 PM
795	9	9/23/2019 2:20 PM
796	15	9/23/2019 2:20 PM
797	30	9/23/2019 2:18 PM
798	20	9/23/2019 2:17 PM
799	5	9/23/2019 2:17 PM
800	10	9/23/2019 2:16 PM
801	2	9/23/2019 2:15 PM
802	12	9/23/2019 2:15 PM
803	7	9/23/2019 2:14 PM
804	11	9/23/2019 2:14 PM
805	Kullanmıyorum	9/23/2019 2:13 PM

806	18	9/23/2019 2:12 PM
807	11	9/23/2019 2:11 PM
808	20	9/23/2019 2:10 PM
809	28	9/23/2019 2:10 PM
810	10	9/23/2019 2:04 PM
811	20	9/23/2019 2:03 PM
812	2	9/23/2019 2:03 PM
813	10	9/23/2019 1:58 PM
814	0	9/23/2019 1:55 PM
815	35	9/23/2019 1:55 PM
816	3yil	9/23/2019 1:54 PM
817	10	9/23/2019 1:52 PM
818	2.5	9/23/2019 1:50 PM
819	8 yıldır	9/23/2019 1:47 PM
820	12	9/23/2019 1:46 PM
821	10	9/23/2019 1:43 PM
822	10	9/23/2019 1:39 PM
823	12	9/23/2019 1:38 PM
824	17	9/23/2019 1:38 PM
825	10	9/23/2019 1:37 PM
826	0	9/23/2019 1:36 PM
827	12	9/23/2019 1:34 PM
828	4	9/23/2019 1:32 PM
829	24	9/23/2019 1:29 PM
830	10	9/23/2019 1:26 PM
831	15	9/23/2019 1:26 PM
832	5	9/23/2019 1:26 PM
833	8	9/23/2019 1:25 PM
834	4	9/23/2019 1:25 PM
835	41	9/23/2019 1:24 PM
836	22	9/23/2019 1:23 PM
837	25	9/23/2019 1:20 PM
838	4	9/23/2019 1:19 PM
839	23	9/23/2019 1:18 PM
840	20	9/23/2019 1:17 PM
841	13	9/23/2019 1:16 PM
842	45	9/23/2019 1:15 PM
843	Kullanmıyorum	9/23/2019 1:15 PM
844	20	9/23/2019 1:14 PM
845	5	9/23/2019 1:13 PM
846	11	9/23/2019 1:13 PM
847	33 yıl	9/23/2019 1:12 PM
848	10	9/23/2019 1:10 PM
849	30	9/23/2019 1:10 PM
850	11	9/23/2019 1:07 PM
851	6	9/23/2019 1:03 PM
852	30	9/23/2019 1:03 PM
853	10	9/23/2019 1:01 PM

854	9	9/23/2019 1:00 PM
855	11	9/23/2019 12:57 PM
856	13	9/23/2019 12:56 PM
857	23	9/23/2019 12:56 PM
858	10	9/23/2019 12:54 PM
859	25	9/23/2019 12:54 PM
860	11	9/23/2019 12:51 PM
861	10	9/23/2019 12:50 PM
862	2 Yıldır	9/23/2019 12:50 PM
863	2010	9/23/2019 12:49 PM
864	Kullanmıyorum	9/23/2019 12:49 PM
865	9	9/23/2019 12:41 PM
866	9	9/23/2019 12:40 PM
867	7	9/23/2019 12:39 PM
868	5	9/23/2019 12:38 PM
869	5	9/23/2019 12:37 PM
870	9	9/23/2019 12:36 PM
871	8	9/23/2019 12:35 PM
872	15	9/23/2019 12:34 PM
873	10	9/23/2019 12:33 PM
874	13	9/23/2019 12:32 PM
875	15	9/23/2019 12:32 PM
876	6	9/23/2019 12:31 PM
877	17	9/23/2019 12:30 PM
878	8	9/23/2019 12:29 PM
879	9	9/23/2019 12:29 PM
880	9	9/23/2019 12:28 PM
881	4	9/23/2019 12:28 PM
882	1	9/23/2019 12:27 PM
883	19	9/23/2019 12:27 PM
884	4	9/23/2019 12:26 PM
885	7	9/23/2019 12:25 PM
886	22	9/23/2019 12:25 PM
887	6	9/23/2019 12:25 PM
888	7	9/23/2019 12:25 PM
889	20	9/23/2019 12:24 PM
890	8	9/23/2019 12:24 PM
891	10	9/23/2019 12:23 PM
892	5	9/23/2019 12:23 PM
893	12	9/23/2019 12:23 PM
894	13	9/23/2019 12:21 PM
895	11	9/23/2019 12:18 PM
896	19	9/23/2019 12:10 PM
897	20	9/23/2019 11:57 AM
898	13	9/23/2019 10:23 AM
899	kullanmıyorum	9/23/2019 10:09 AM
900	15	9/23/2019 10:02 AM
901	14	9/22/2019 4:50 PM

Q5 The region you live (You can select more than one option)

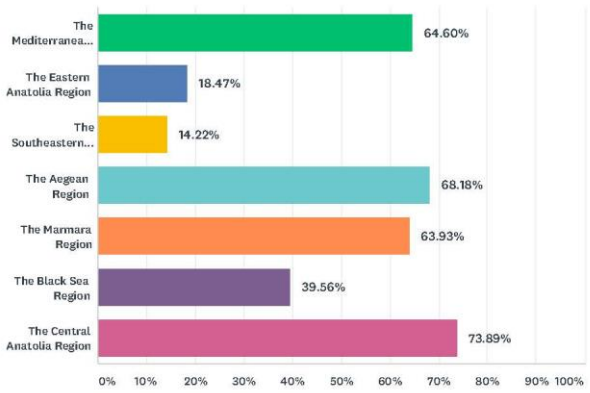
Answered: 1,036 Skipped: 0



ANSWER CHOICES	RESPONSES	
The Mediterranean Region	6.85%	71
The Eastern Anatolia Region	5.89%	61
The Southeastern Anatolia Region	2.80%	29
The Aegean Region	10.14%	105
The Marmara Region	23.94%	248
The Black Sea Region	8.11%	84
The Central Anatolia Region	69.21%	717
Total Respondents: 1,036		

Q6 Which regions have you traveled in the last 5 years by using highway ? (You can select more than one option)

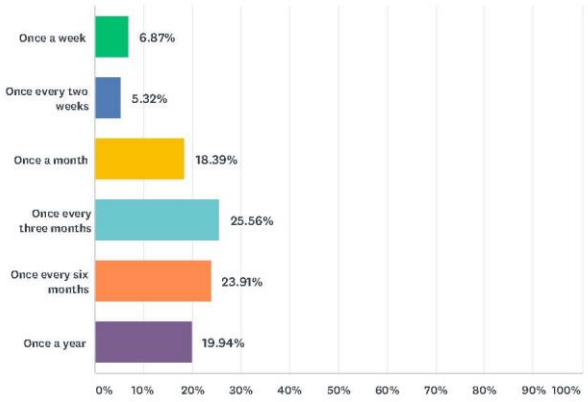
Answered: 1,034 Skipped: 2



ANSWER CHOICES	RESPONSES	
The Mediterranean Region	64.60%	668
The Eastern Anatolia Region	18.47%	191
The Southeastern Anatolia Region	14.22%	147
The Aegean Region	68.18%	705
The Marmara Region	63.93%	661
The Black Sea Region	39.56%	409
The Central Anatolia Region	73.89%	764
Total Respondents: 1,034		

Q7 How often have you traveled by using highway ?

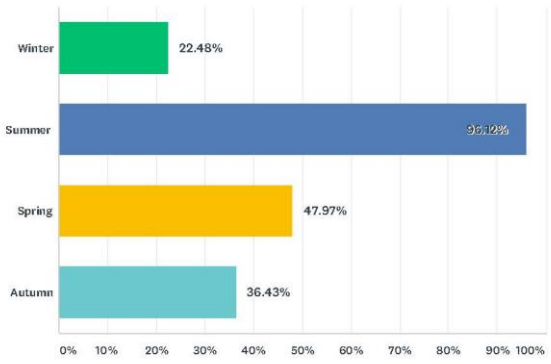
Answered: 1,033 Skipped: 3



ANSWER CHOICES	RESPONSES	
Once a week	6.87%	71
Once every two weeks	5.32%	55
Once a month	18.39%	190
Once every three months	25.56%	264
Once every six months	23.91%	247
Once a year	19.94%	206
TOTAL		1,033

Q8 In which season do you make your travel between the cities by using highway ? (You can select more than one option)

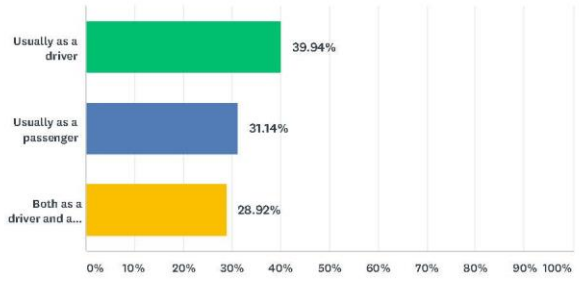
Answered: 1,032 Skipped: 4



ANSWER CHOICES	RESPONSES	
Winter	22.48%	232
Summer	96.12%	992
Spring	47.97%	495
Autumn	36.43%	376
Total Respondents: 1,032		

Q9 How do you make your travel between the cities by using highway ?

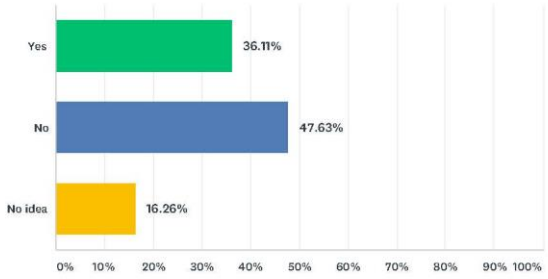
Answered: 1,034 Skipped: 2



ANSWER CHOICES	RESPONSES	
Usually as a driver	39.94%	413
Usually as a passenger	31.14%	322
Both as a driver and as a passenger	28.92%	299
TOTAL		1,034

Q10 Do you think that road maintenance works are carried out regularly for highway?

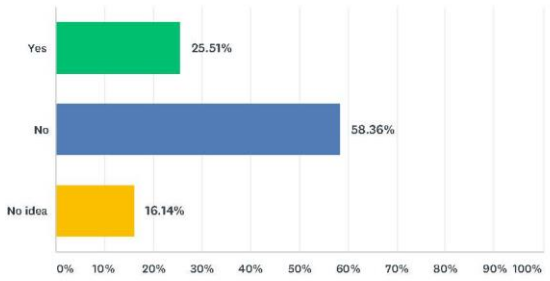
Answered: 1,033 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes	36.11%	373
No	47.63%	492
No idea	16.26%	168
TOTAL		1,033

Q11 Do you think that road maintenance works are carried out efficiently for highway?

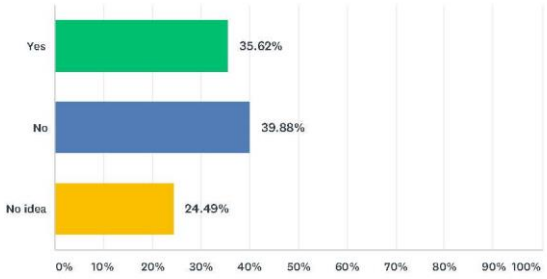
Answered: 1,035 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	25.51%	264
No	58.36%	604
No idea	16.14%	167
TOTAL		1,035

Q12 Do you think that snow and ice removal works are carried out efficiently for highway in winter season ?

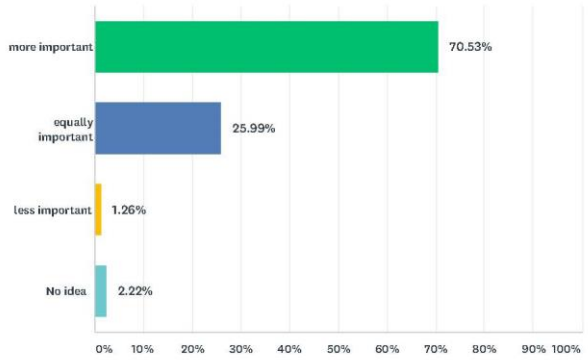
Answered: 1,033 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes	35.62%	368
No	39.88%	412
No idea	24.49%	253
TOTAL		1,033

Q13 If we kindly request to compare the importance given to road maintenance with the construction of new roads, road maintenance should be

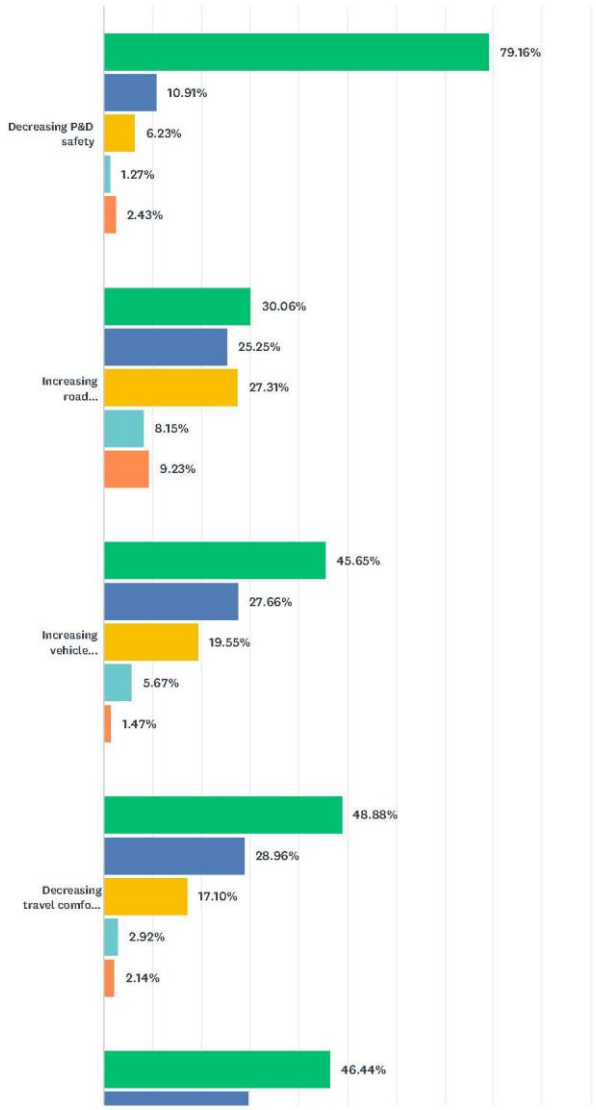
Answered: 1,035 Skipped: 1



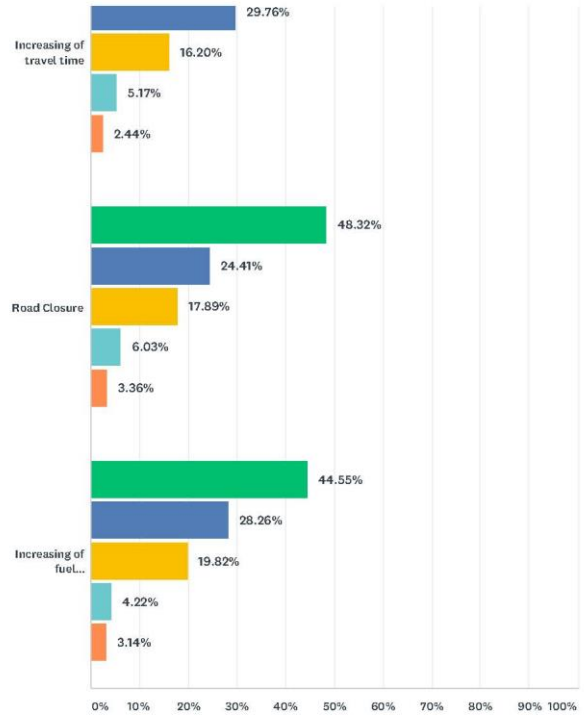
ANSWER CHOICES	RESPONSES	
more important	70.53%	730
equally important	25.99%	269
less important	1.26%	13
No idea	2.22%	23
TOTAL		1,035

Q14 We kindly request to evaluate following topics when the road maintenance are not carried out regularly and efficiently for highway. (5 most important - 1 less important)

Answered: 1,030 Skipped: 6



32 / 33

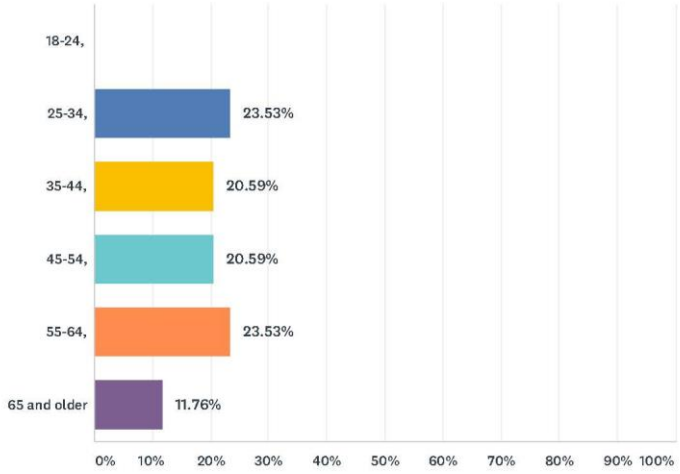


	5 - MOST IMPORTANT	4 - BETWEEN 5 AND 3	3 - MODERATELY IMPORTANT	2 - BETWEEN 3 AND 1	1 - LEAST IMPORTANT	TOTAL	WEIGHTED AVERAGE
Decreasing P&D safety	79.16% 813	10.91% 112	6.23% 64	1.27% 13	2.43% 25	1,027	1.37
Increasing road maintenance cost	30.06% 306	25.25% 257	27.31% 278	8.15% 83	9.23% 94	1,018	2.41
Increasing vehicle maintenance cost	45.65% 467	27.66% 283	19.55% 200	5.67% 58	1.47% 15	1,023	1.90
Decreasing travel comfort of P&D	48.88% 503	28.96% 298	17.10% 176	2.92% 30	2.14% 22	1,029	1.80
Increasing of travel time	46.44% 476	29.76% 305	16.20% 166	5.17% 53	2.44% 25	1,025	1.87
Road Closure	48.32% 489	24.41% 247	17.89% 181	6.03% 61	3.36% 34	1,012	1.92
Increasing of fuel consumption	44.55% 454	28.26% 288	19.82% 202	4.22% 43	3.14% 32	1,019	1.93

Appendix_8_Answers of Road Expert

Q1 Your Age

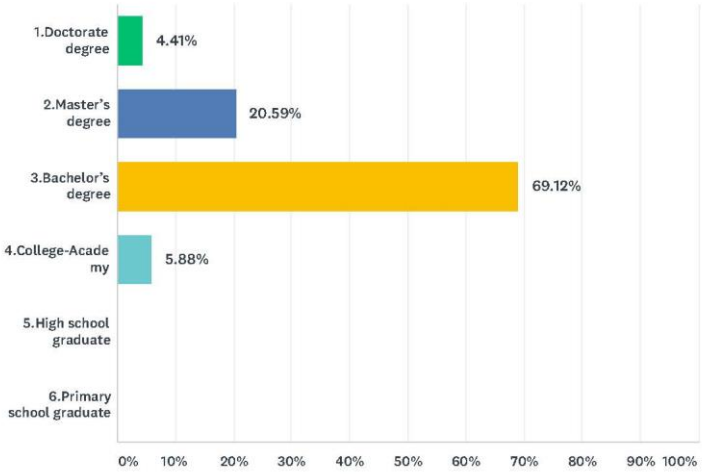
Answered: 68 Skipped: 0



ANSWER CHOICES	RESPONSES	
18-24,	0.00%	0
25-34,	23.53%	16
35-44,	20.59%	14
45-54,	20.59%	14
55-64,	23.53%	16
65 and older	11.76%	8
TOTAL		68

Q2 Education Status

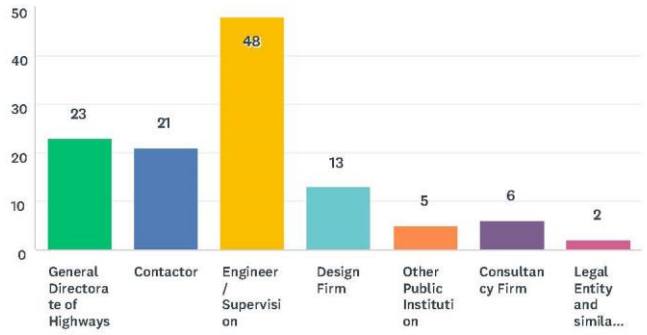
Answered: 68 Skipped: 0



ANSWER CHOICES	RESPONSES	
1.Doctorate degree	4.41%	3
2.Master's degree	20.59%	14
3.Bachelor's degree	69.12%	47
4.College-Academy	5.88%	4
5.High school graduate	0.00%	0
6.Primary school graduate	0.00%	0
TOTAL		68

Q3 Type of institution you work (You can select more than one option)

Answered: 68 Skipped: 0

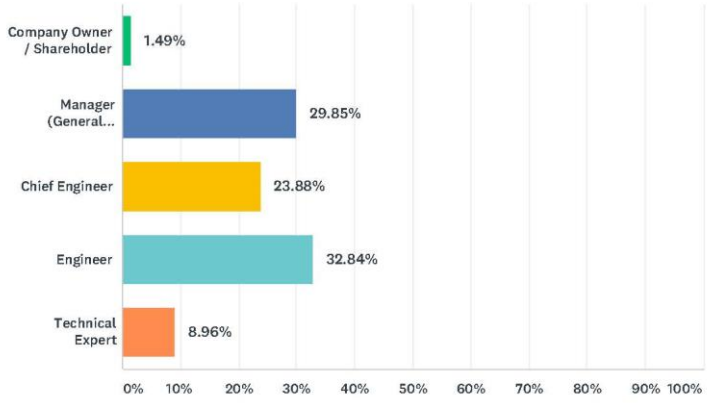


ANSWER CHOICES	RESPONSES	
General Directorate of Highways	33.82%	23
Contactor	30.88%	21
Engineer / Supervision	70.59%	48
Design Firm	19.12%	13
Other Public Institution	7.35%	5
Consultancy Firm	8.82%	6
Legal Entity and similar organizations	2.94%	2
Total Respondents: 68		

#	DİĞER (LÜTFEN BELIRTIN)	DATE
1	Yüksel Proje	10/18/2019 6:35 PM
2	Üniversite/akademisyen	10/8/2019 2:21 PM
3	ISITMA, MEKANİK TESİSAT KONULARINDA PROJE YAPMIŞ	10/4/2019 9:07 AM
4	Saudi Arabia (Muhammet Binladen)+(Şerikatil Arabia)	10/3/2019 2:01 PM
5	daha önce izmir baydırlık bakanlığı yapı işleri 3. bölge müdürlüğünde kontrol müh.	10/3/2019 1:41 PM
6	Ücret Toplama Sistemleri	10/3/2019 1:34 PM
7	Proje Firmaları	10/1/2019 9:27 AM

Q4 Your position in your Institution

Answered: 67 Skipped: 1

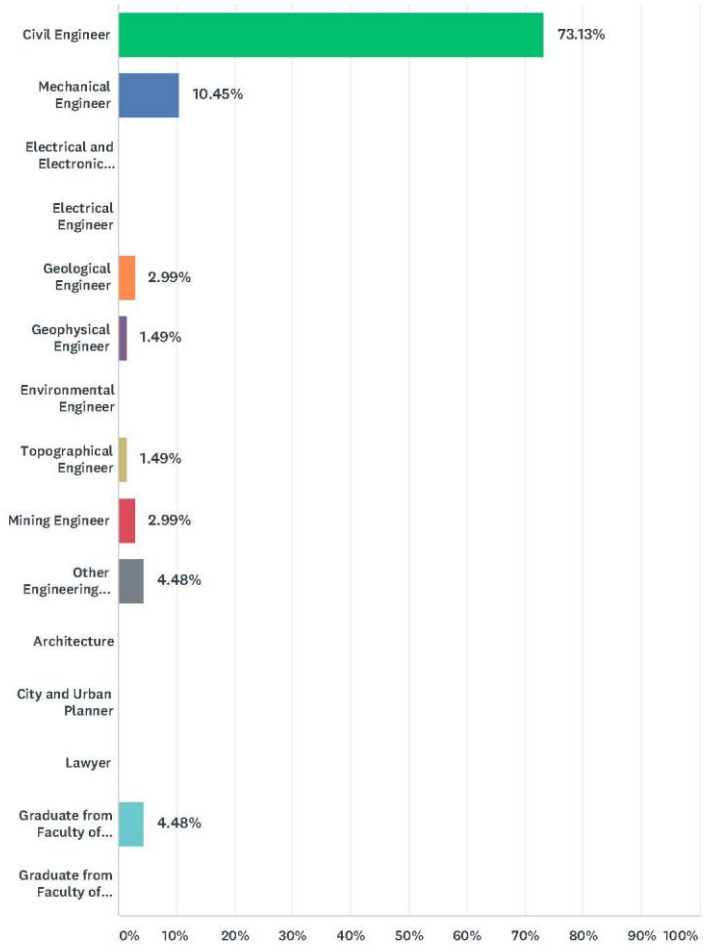


ANSWER CHOICES	RESPONSES	
Company Owner / Shareholder	1.49%	1
Manager (General Manager, Head of department etc.)	29.85%	20
Chief Engineer	23.88%	16
Engineer	32.84%	22
Technical Expert	8.96%	6
TOTAL		67

#	DİĞER (LÜTFEN BELIRTIN)	DATE
1	prof.dr.	10/8/2019 2:21 PM
2	BÖLGE MÜDÜR YARDIMCILIĞI	10/4/2019 9:07 AM
3	Tekniker	10/4/2019 8:39 AM
4	Tekniker	10/3/2019 5:01 PM
5	kontrol mühendisi.	10/3/2019 1:41 PM
6	Gözetmen	10/3/2019 1:34 PM

Q5 Your profession (You can select more than one option)

Answered: 67 Skipped: 1



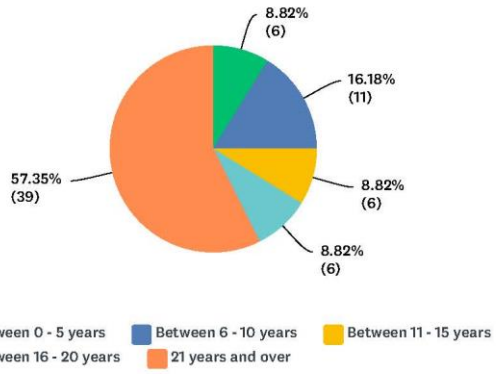
ANSWER CHOICES	RESPONSES	
Civil Engineer	73.13%	49
Mechanical Engineer	10.45%	7
Electrical and Electronic Engineer	0.00%	0

Electrical Engineer	0.00%	0
Geological Engineer	2.99%	2
Geophysical Engineer	1.49%	1
Environmental Engineer	0.00%	0
Topographical Engineer	1.49%	1
Mining Engineer	2.99%	2
Other Engineering Departments	4.48%	3
Architecture	0.00%	0
City and Urban Planner	0.00%	0
Lawyer	0.00%	0
Graduate from Faculty of Economics and Administrative Sciences	4.48%	3
Graduate from Faculty of Human Sciences	0.00%	0
Total Respondents: 67		

#	DIĞER (LÜTFEN BELIRTIN)	DATE
1	Peyzaj Mimarı	10/18/2019 9:41 AM
2	İnşaat Teknikeri	10/3/2019 5:01 PM
3	Asma Köprüler	10/3/2019 2:38 PM
4	İş Sağlığı ve Güvenliği	10/3/2019 2:01 PM
5	Kimya Mühendisliği	10/3/2019 1:52 PM
6	İşletme	10/3/2019 1:34 PM

Q6 Total experience

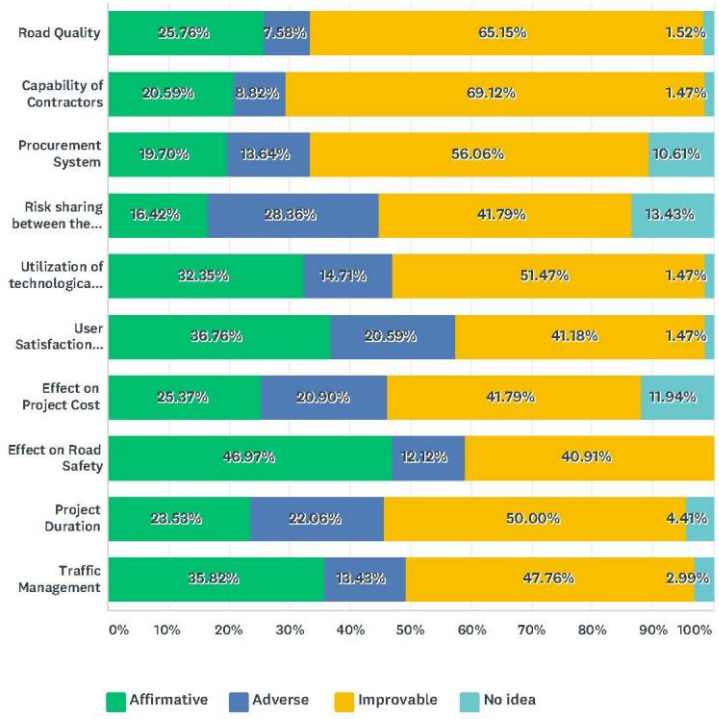
Answered: 68 Skipped: 0



ANSWER CHOICES	RESPONSES	
Between 0 - 5 years	8.82%	6
Between 6 - 10 years	16.18%	11
Between 11 - 15 years	8.82%	6
Between 16 - 20 years	8.82%	6
21 years and over	57.35%	39
TOTAL		68

Q7 Please evaluate the existing road maintenance projects, tender documents, contracts and specifications executed in Turkey with following items.

Answered: 68 Skipped: 0

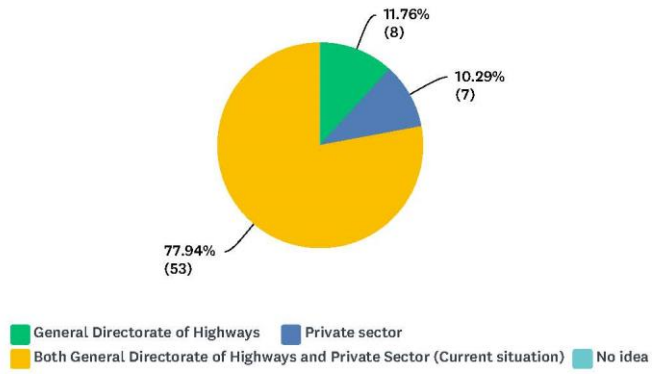


	AFFIRMATIVE	ADVERSE	IMPROVABLE	NO IDEA	TOTAL	WEIGHTED AVERAGE
Road Quality	25.76% 17	7.58% 5	65.15% 43	1.52% 1	66	2.42
Capability of Contractors	20.59% 14	8.82% 6	69.12% 47	1.47% 1	68	2.51
Procurement System	19.70% 13	13.64% 9	56.06% 37	10.61% 7	66	2.58
Risk sharing between the parties	16.42% 11	28.36% 19	41.79% 28	13.43% 9	67	2.52
Utilization of technological developments	32.35% 22	14.71% 10	51.47% 35	1.47% 1	68	2.22

User Satisfaction (In point of passenger and drivers)	36.76% 25	20.59% 14	41.18% 28	1.47% 1	68	2.07
Effect on Project Cost	25.37% 17	20.90% 14	41.79% 28	11.94% 8	67	2.40
Effect on Road Safety	46.97% 31	12.12% 8	40.91% 27	0.00% 0	66	1.94
Project Duration	23.53% 16	22.06% 15	50.00% 34	4.41% 3	68	2.35
Traffic Management	35.82% 24	13.43% 9	47.76% 32	2.99% 2	67	2.18

Q8 Which institution should carry out road maintenance services?

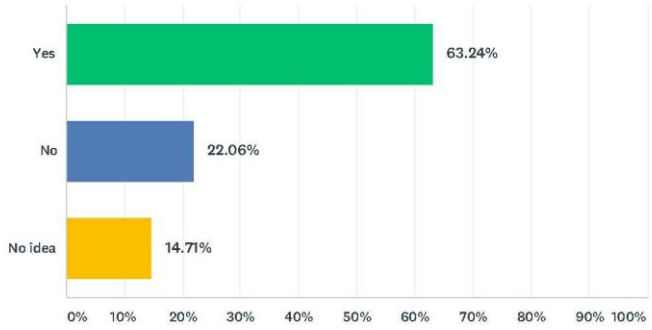
Answered: 68 Skipped: 0



ANSWER CHOICES	RESPONSES	
General Directorate of Highways	11.76%	8
Private sector	10.29%	7
Both General Directorate of Highways and Private Sector (Current situation)	77.94%	53
No idea	0.00%	0
TOTAL		68

Q9 Do you think that it is necessary to change to different type of contract, considering the existing state of road maintenance services?

Answered: 68 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	63.24%	43
No	22.06%	15
No idea	14.71%	10
TOTAL		68

Q10 Please indicate that if you have any positive or negative opinions about the existing status of road maintenance ?

Answered: 39 Skipped: 29

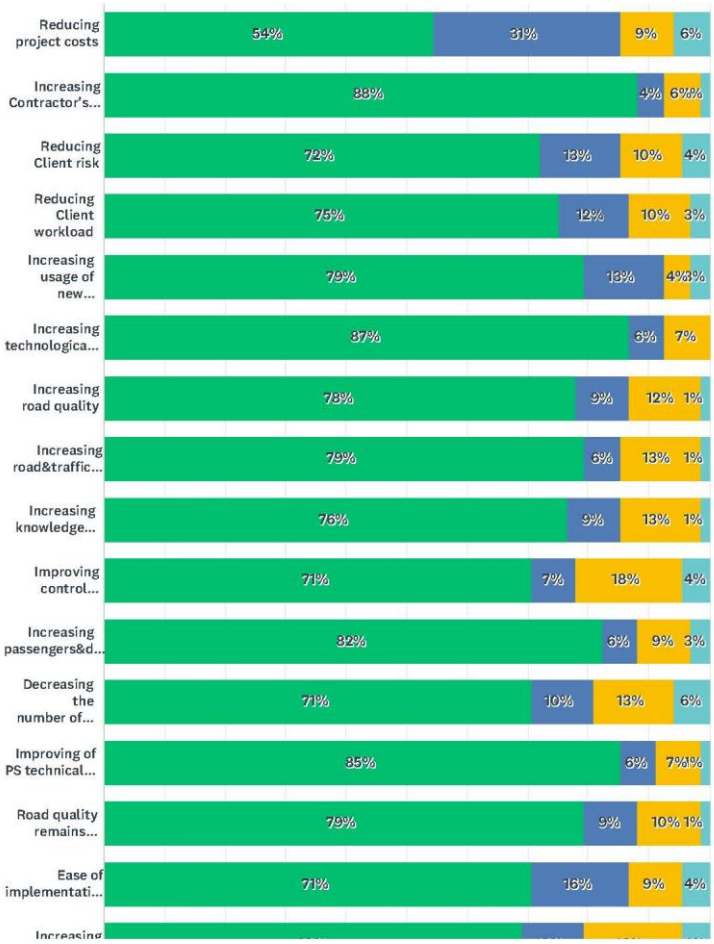
#	RESPONSES	DATE
1	Her Sözleşme tipinin artı ve eksileri vardır. Sözleşmelerin uygulama ve yürütme hususları ayrıca önem arz etmektedir.	10/22/2019 12:26 PM
2	Türkiye'de bulunan otoyollar ve devlet yollarını diğer ülkeler ile kıyaslayınca Türkiye'de durumun çok iyi olduğunu gözlemliyorum.	10/18/2019 6:35 PM
3	Yüzeysel bilgiye ve deneyime sahip bir kitle tarafından, Yol bakım hizmetlerinin tamamen özelleştirilmesi, özel teşebbüslere devredilmesi gerektiği yönünde görüşler dile getirilmekte. Ancak vatandaşların sürekli ve acil ihtiyaçlarının finansal endişelerden uzak bir yaklaşım ile giderilmesi, Atatürk'ün hiç eskimeyecek Devletçilik ilkesi gereği şarttır. Dolayısıyla Devlet yani KGM kısmen ihale ile bu hizmetleri gerçekleştirebilir fakat tamamen elini çekmemelidir.	10/18/2019 4:23 PM
4	Yol bakım onarım işleri, yeni yol yapım işinden çok daha önemsenmesi gereken, profesyonellik gerektiren bir konudur. İşinin ehli, bilgili personel tarafından, düzenli olarak yürütülen bakım hizmetleri hem yolun ömrünü arttıracak hem de trafik güvenliği sağlayacaktır. Yeni yapmak yerine mevcudu korumak, en uzun ömürlü şekilde kullanmak bizim gibi ekonomisi bozuk bir ülke için çok önemlidir. O nedenle sistem iyileştirme çalışmaları yapılarak en etkin şekilde bu hizmetlerin yürütülmesi esastır. Yol bakım hizmetlerinin mevcut durumu bana göre profesyonellikten uzaktır. En az fiyatı atan müteahhide ihaleyi verip, sonra yıllarca ona iş yaptırmak için yoruluyoruz. Devletin pahalı malzemelerini (bitüm gibi, asfalt gibi) bu firmalara teslim edip, israf etmeden bakım hizmetlerini yürütmesini bekliyoruz. Maalesef gördüğüm kadarıyla beceren kişi sayısı çok kısıtlı. İhale maliyetleri ve malzeme giderleri git gide artmakta. Benim 15-20 yıllık karayolculuk geçmişimde gördüğüm budur.	10/18/2019 9:16 AM
5	Verim artırılabilir	10/17/2019 10:14 PM
6	peformanssa dayalı ve daha uzun süreleri içeren sözleşmeler imzalanmalıdır.	10/17/2019 3:42 PM
7	İhale süresi 3 yıldan az olmamalıdır Yüklenicinin getirdiği Makine ve Ekipmanlar teknik özellikleri açısından yetersizdir, iyileştirilmelidir. Kurumumuz adına hizmet veren Yüklenicinin sahip olduğu makine ve ekipmanların genel dış görünüşü (boya , kaporta, tepe lambası v.b.) istenilen düzeyde olmayıp kurumumuzun prestij kaybına neden olmaktadır. İstenilen büyüklük ve yeterlilikte firmalar henüz oluşmamıştır. Yüklenici firmalar ticari kaygılarla tecrübesiz personel çalıştırmakta buda hizmetlerin aksamasına neden olmaktadır. Özellikle Kar ve buzla mücadele hizmet alımından gerekli verim alınamamıştır. Kar ve buzla mücadelenin sadece emanet güçle yapılması daha doğru olacaktır. Şartnameler hazırlanırken ihtiyaç duyulan makine, ekipman ve personel ihtiyacı daha iyi etüt edilerek gereksiz maliyetlerden kaçınılmalıdır.	10/17/2019 3:03 PM
8	Kesinlikle Performans Bazlı Sözleşmeler ve teknik şartnameler oluşturulmalı ve bu sisteme geçilmelidir.	10/14/2019 10:10 PM
9	yapımda ve bakımda güncel ve yenilikçi teknikler uygulanmalı. Yerli kaynaklar tercih edilebilir çeşitli uzmanlık alanlarında, örneğin kireç modifiye asfalt	10/8/2019 2:21 PM
10	İdare tarafından denetimin daha sık ve adil bir şekilde yürütülmesi, sözleşmede ön görülen Teknik personel, makine parkı, malzeme, alet ve edevatın sürekli şartnameye uygunluğunun denetlenmesi. Mevcut ihale sistemlerinin yetersiz kalması nedeniyle yavaş yavaş Performans ihale sistemine geçilmesi artık elzem hale gelmiştir.	10/7/2019 9:47 AM
11	EKSİKLİKLER GİDERİLEBİLİR	10/4/2019 9:07 AM
12	Karayolları özel sektör birlikte çalışmalıdır	10/3/2019 5:23 PM
13	1- Garanti süresinde yüklenici sözleşme ve eklerine sadık kalarak bakım ve onarımı yürütmelidir. 2- Karayolları Genel Müdürlüğü tarafından bakım ve işletme liderliğinde bakım ve işletme yürütülmelidir.	10/3/2019 5:23 PM
14	BU İŞ TAMAMEN ÖZEL SEKTÖR TARAFINDAN YAPILMALI	10/3/2019 5:08 PM

15	Yol Bakım onarım hizmetlerinde kalifiye personel eksikliği bulunmaktadır. Daha iyi bir hizmetin sunulması için bu alanda gerekli eğitimlerle birlikte yetkin elemanların yetiştirilmesi gerekmektedir.	10/3/2019 2:51 PM
16	-	10/3/2019 2:33 PM
17	Fikrim yok	10/3/2019 2:25 PM
18	Özel sektöre ihale edilmiş olmasına rağmen özel sektör ekipmanlarının yetersiz kalmış olduğu noktalarda karayolları ekipmanları devreye girmekte olup özel sektörün işini karayolları yapmaktadır.	10/3/2019 2:25 PM
19	Yol bakım ve onarım hizmetlerinin standarlarına göre yapıldığının kontrolü aşamasında bağımsız müşavir uzmanlarının görevlendirilmesi yaygın hale getirilmelidir.	10/3/2019 2:06 PM
20	Yolda oluşan hasarların tamiratı yapılırken kalitesiz ve özverisiz yapıldığını düşünüyorum. Yollarımız ne yazık ki yamalı yamalı görünmektedir. Tamir çalışmalarında yapılan yamanın kotlarının yol kotuna uyduğuna şahit olduğumu hatırlamıyorum. Hem sektörün içinde gördüklerimden hem de yolculuk yaparken yaşadıklarıma dayanarak ciddiyetten uzak bir çalışma yürütüldüğünü düşünüyorum. Balıkesir Gelembe yolu çok fazla kar yağışı alan bir bölge, 2-3 kere kar yağışına denk geldiğim bölgede karla mücadele ekiplerinin çalışmasının çok geç kaldığını söyleyebilirim. Kavşak bölgelerindeki bakım onarım süreçlerinde trafik işaretlemelerinin yetersiz olduğunu düşünüyorum. Daha dün (02.10.2019) güzergahta hemen önümde yola bir köpek çıktı ve bir önümdeki arabanın altında kalarak can verdi. Bu hayvan büyük cins bir köpek ya da başka büyük bir hayvan olsaydı ölümcül kaza kaçınılmazdı. Yol güvenlik işlerinin özellikle tel çit, otokorkuluk ve aydınlatma işlerinin titizlikle yürütülmesi gerektiğini düşünüyorum.	10/3/2019 2:01 PM
21	otoyol güzelgahının bahar ve kış aylarında sabahları saatlerinde yoğun sisli olan kesimlerve viyadüklerin kış döneminde aşırı derecede rüzdar esindisin de tedbirleri alınması fikrindeyim.	10/3/2019 1:41 PM
22	Daha dinamik bir kontrol sisteminin olması, zamanında müdahale edilebilecek bir uyarı sisteminin geliştirilmesi yol kullanıcıları için daha güvenli bir ulaşıma olanak sağlayacakır.	10/1/2019 9:27 AM
23	sistemli gözlem ve müdahele mekanizması eksikliği	9/28/2019 3:09 PM
24	Olumlu herhangi bir görüşüm bulunmaması ile birlikte, yol bakım onarım hizmetleri esnasında trafik kontrolü, alternatif yol hizmetlerinin hayata geçirilmesi gerektiğini düşünmekteyim.	9/27/2019 11:59 AM
25	Proje başlangıcında ve Yapım aşamalarında Yol bakım onarım işleri minimize olacak şekilde her türlü Yol Altyapı işleri için gerekli hassasiyet gösterilmeli ve gerekli bütün işler projelere işlenmelidir. Ucuz Maliyetle yapılacak işler sonradan büyük Maliyetler getirebilir.	9/25/2019 5:53 PM
26	Modern karayolu ulaşım yatırımları çok büyük maliyetlerle gerçekleştirilmektedir. Bu yapıları tamamlandıktan sonra kendi halinde bırakmak, eskime, yıpranma veya doğanın tahribatlarını giderecek çalışmaları aksatmak, yapının kullanın standartlarını düşürecek, ekonomik ömrünü azaltacaktır. Yapılan yatırımın tasarın kriterlerinde sürekli hizmet verebilmesini sağlamak için ekonomik ömrü boyunca daimî, ehil kadrolarca bakım ve onarımlarının yapılması gerekmektedir. Bugüne kadar, bir kamu kurumu olan KGM tarafından yapılan bakım/onarım hizmetlerinin profesyonel kadroları ihtiva eden firmalarca yapılması ve bu firmaların sorumluluğuna belli güzergah yollarının bağlanması, işler yürümediğinde de ihmalkârlık gösteren ilgili firmadan hesap sorulması yöntemi, topyekün ülke çapında yollarımızın kalitesini ve güvenliğini arttıracağı kanaatindeyim.	9/25/2019 3:40 PM
27	Yüklenici firmaların daha sıkı denetlenmesi gerekmektedir. Bakım ve onarım konularında yapılması gerekip zamanında yapılmayan işler için KGM'nin sözleşmelerde de yeri olan yaptırımları olmalı ve uygulanmalıdır.	9/25/2019 12:16 PM
28	Yol bakım hizmetlerinde güncel teknolojiden ve literatürden fazla yaralanılmadığını düşünüyorum. Problemlere neden olan etmenler üzerinde çok düşünülmeden geçici, maliyetli ve sık tekrar gerektiren çözümler uygulanıyor. Kamu yararına yapılan her işte olması gerektiği gibi yol bakım işlerinde de uygulamayı yapan paydaşa olumsuz durumlarda yaptırımın ağır olması gerektiğini düşünüyorum.	9/25/2019 12:05 PM
29	Kalite, yol güvenliği, bakım-onarım zamanlaması, vb. geliştirilmesi gereken önemli husus mevcuttur.	9/25/2019 11:31 AM
30	Mevcut durumda ekip ve ekipmanın yetersiz kalması halinde özel sektör takviyesine ihtiyaç olmaktadır.	9/25/2019 10:24 AM
31	Yol bakım kalitesinin artması gerektiğini ve verimli yapılması gerektiğini düşünüyorum. Yapılan hizmetlerin hep kısa süreli etki göstermesi olumsuz bir durumdur.	9/24/2019 8:43 PM

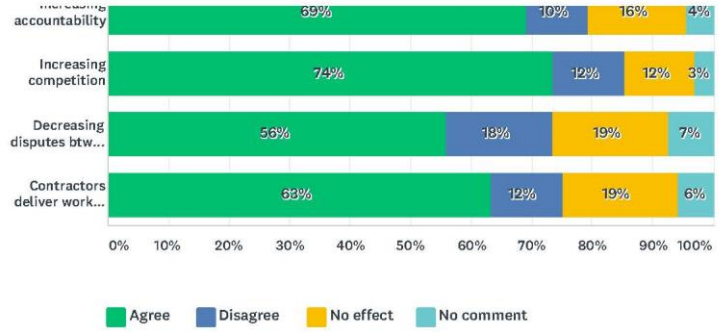
32	Yol bakım onarım hizmetlerini alan özel sektör firmaları gerekli ekip ve ekipmanı yeterli miktarda bulundurmuyorlar. Özellikle kış şartlarında zamanında bakım işinde geç kalıyorlar. Bu tür firmaların ihale şartlarındaki ekip ve ekipmanı bulundurma durumusıkı kontrol edilmelidir.	9/24/2019 3:40 PM
33	Bakım onarım hizmetlerinin ekonomik olabilmesi için önleyici ve koruyucu bakım konusuna ağırlık verilmesi en büyük eksiğimizdir.	9/24/2019 3:09 PM
34	yol bakım onarım hizmetleri eksik ,yetersiz personel ve eksik makine parkı ile yürütülmektedir.	9/24/2019 2:26 PM
35	Sözleşmenin; - içeriğinde yaptırımların net olması, - gereklerinin tavizsiz yerine gelmesi, - İşlet - Devret sözleşme örneklerine benzer uygulamalar	9/24/2019 2:15 PM
36	Öncelikle yola ait tüm yapıların envanteri çıkarılmalı Dört aşamada değerlendirilmeli; 1-Zaruri bakımlar.(Kaplama arızaları, otokorkuluk ve levha tahribatları, şev akmaları, hidrolik yapıların dolması v.b.) 2-Elektromekanik işlerin bakımları. (VMS, VTS, Aydınlatma, Kamera, Yangın söndürme, algılama sistemleri v.b. zaruri ve rutin bakımlar.) 3-Rutin bakımlar. (Envanterdeki tüm yapıların her yapıya özel tespit edilecek aralıklarla kontrolu. Hidrolik yapıların doluluğu, köprü-viyadük altı çatlak kırık kontrolu, kafa hendekleri kontrolu gibi. 4-Yüklenici bakımları.Yüklenicilerin 5-10 yıl doğal afetler dışında tüm yapılardan sorumlu tutulması yoluyla yapılacak bakımlar.)	9/24/2019 1:43 PM
37	KARLA MÜCADELENİN KGM TARAFINDAN YÜRÜTÜLMESİ GÖRÜŞÜNDEYİM. ÖZEL SEKTÖR KAZANÇ TARAFINDA OLDUĞU İÇİN AKSAMALAR OLMAKTADIR. KARLA MÜCADELE ÖZEL İHTİSAS İSTEMEKTEDİR	9/24/2019 1:11 PM
38	Yol bakım hizmetlerinin daha verimli yapılabileceğini düşünüyorum.	9/23/2019 2:42 PM
39	Mevcut Sinyalizasyon onarım ve güncellenmesi yapılmalı, karla mücadele geliştirilebilir. Trafik işaretlerinin özellikle yeni açılan yollarda yeterli kullanılmaması güvenliği ihlal etmektedir.	9/23/2019 2:35 PM

Q11 What do you think about the meeting of performance criteria by contractor for road maintenance services that are determined before the tender stage when PBC is implemented? (IRI, slip resistance, wheel track, passive protection devices, snow-ice removal, lighting systems, AUS, accident response, environment-landscape etc.) (This system gives the contractor freedom of methods, materials, equipment and labor provided that it meets the performance criteria.)

Answered: 68 Skipped: 0



15 / 27



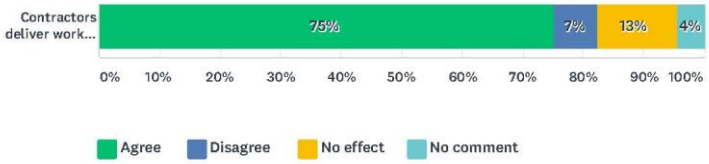
	AGREE	DISAGREE	NO EFFECT	NO COMMENT	TOTAL	WEIGHTED AVERAGE
Reducing project costs	54% 37	31% 21	9% 6	6% 4	68	1.66
Increasing Contractor's responsibilities	88% 60	4% 3	6% 4	1% 1	68	1.21
Reducing Client risk	72% 49	13% 9	10% 7	4% 3	68	1.47
Reducing Client workload	75% 51	12% 8	10% 7	3% 2	68	1.41
Increasing usage of new materials & equipment	79% 54	13% 9	4% 3	3% 2	68	1.31
Increasing technological implementation	87% 59	6% 4	7% 5	0% 0	68	1.21
Increasing road quality	78% 53	9% 6	12% 8	1% 1	68	1.37
Increasing road&traffic safety	79% 54	6% 4	13% 9	1% 1	68	1.37
Increasing knowledge sharing btwn Client&PS	76% 52	9% 6	13% 9	1% 1	68	1.40
Improving control mechanism of Client for Contractor	71% 48	7% 5	18% 12	4% 3	68	1.56
Increasing passengers&drivers satisfaction	82% 56	6% 4	9% 6	3% 2	68	1.32
Decreasing the number of traffic accidents	71% 48	10% 7	13% 9	6% 4	68	1.54
Improving of PS technically & administratively	85% 58	6% 4	7% 5	1% 1	68	1.25
Road quality remains constant over the long term	79% 54	9% 6	10% 7	1% 1	68	1.34
Ease of implementation for Contractor	71% 48	16% 11	9% 6	4% 3	68	1.47
Increasing accountability	69% 47	10% 7	16% 11	4% 3	68	1.56
Increasing competition	74% 50	12% 8	12% 8	3% 2	68	1.44

Decreasing disputes btwn Client&Contractor	56% 38	18% 12	19% 13	7% 5	68	1.78
Contractors deliver work timely&quality	63% 43	12% 8	19% 13	6% 4	68	1.68

Q12 What do you think about the incentive & disincentive system in road maintenance services (When PBC is implemented)?

Answered: 68 Skipped: 0

18 / 27

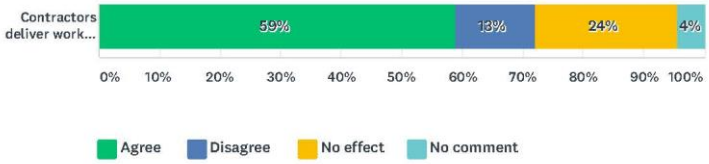


	AGREE	DISAGREE	NO EFFECT	NO COMMENT	TOTAL	WEIGHTED AVERAGE
Reducing project costs	51% 35	21% 14	21% 14	7% 5	68	1.84
Increasing Contractor's responsibilities	88% 60	3% 2	7% 5	1% 1	68	1.22
Reducing Client risk	72% 49	7% 5	19% 13	1% 1	68	1.50
Reducing Client workload	68% 46	9% 6	21% 14	3% 2	68	1.59
Increasing usage of new materials & equipment	79% 54	9% 6	10% 7	1% 1	68	1.34
Increasing technological implementation	84% 57	4% 3	10% 7	1% 1	68	1.29
Increasing road quality	82% 56	3% 2	13% 9	1% 1	68	1.34
Increasing road&traffic safety	82% 56	3% 2	13% 9	1% 1	68	1.34
Increasing knowledge sharing btwn Client&PS	76% 52	6% 4	16% 11	1% 1	68	1.43
Improving control mechanism of Client for Contractor	79% 54	3% 2	15% 10	3% 2	68	1.41
Increasing passengers&drivers satisfaction	79% 54	3% 2	16% 11	1% 1	68	1.40
Decreasing the number of traffic accidents	75% 51	6% 4	13% 9	6% 4	68	1.50
Improving of PS technically & administratively	87% 59	3% 2	9% 6	1% 1	68	1.25
Road quality remains constant over the long term	79% 54	3% 2	15% 10	3% 2	68	1.41
Ease of implementation for Contractor	66% 45	21% 14	12% 8	1% 1	68	1.49
Increasing accountability	78% 53	4% 3	13% 9	4% 3	68	1.44
Increasing competition	74% 50	9% 6	13% 9	4% 3	68	1.49
Decreasing disputes btwn Client&Contractor	59% 40	18% 12	16% 11	7% 5	68	1.72
Contractors deliver work timely&quality	75% 51	7% 5	13% 9	4% 3	68	1.47

Q13 What do you think about if project duration is more than 3 years in road maintenance services (When PBC is implemented)?

Answered: 68 Skipped: 0

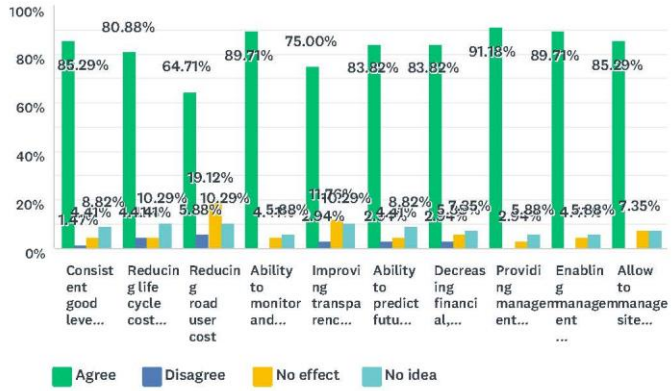
20 / 27



	AGREE	DISAGREE	NO EFFECT	NO COMMENT	TOTAL	WEIGHTED AVERAGE
Reducing project costs	56% 38	24% 16	12% 8	9% 6	68	1.74
Increasing Contractor's responsibilities	69% 47	6% 4	21% 14	4% 3	68	1.60
Reducing Client risk	72% 49	4% 3	19% 13	4% 3	68	1.56
Reducing Client workload	68% 46	7% 5	21% 14	4% 3	68	1.62
Increasing usage of new materials & equipment	62% 42	16% 11	19% 13	3% 2	68	1.63
Increasing technological implementation	72% 49	9% 6	16% 11	3% 2	68	1.50
Increasing road quality	68% 46	9% 6	21% 14	3% 2	68	1.59
Increasing road&traffic safety	74% 50	7% 5	16% 11	3% 2	68	1.49
Increasing knowledge sharing btwn Client&PS	62% 42	6% 4	28% 19	4% 3	68	1.75
Improving control mechanism of Client for Contractor	63% 43	9% 6	22% 15	6% 4	68	1.71
Increasing passengers&drivers satisfaction	62% 42	6% 4	26% 18	6% 4	68	1.76
Decreasing the number of traffic accidents	51% 35	10% 7	31% 21	7% 5	68	1.94
Improving of PS technically & administratively	79% 54	7% 5	10% 7	3% 2	68	1.37
Road quality remains constant over the long term	74% 50	7% 5	13% 9	6% 4	68	1.51
Ease of implementation for Contractor	75% 51	9% 6	13% 9	3% 2	68	1.44
Increasing accountability	63% 43	9% 6	22% 15	6% 4	68	1.71
Increasing competition	66% 45	12% 8	18% 12	4% 3	68	1.60
Decreasing disputes btwn Client&Contractor	59% 40	9% 6	26% 18	6% 4	68	1.79
Contractors deliver work timely&quality	59% 40	13% 9	24% 16	4% 3	68	1.74

Q14 Road Asset Management “A systematic process of maintaining, upgrading and operating assets, combining engineering principles with sound business practice and economic rationale, and providing tools to facilitate a more organised and flexible approach to making the decisions necessary to achieve the public’s expectations. The European Union Road Federation (ERF) draws attention to the establishment of road asset management system in countries in recent years. Please evaluate with following items in case this system is implemented in Turkey?

Answered: 68 Skipped: 0

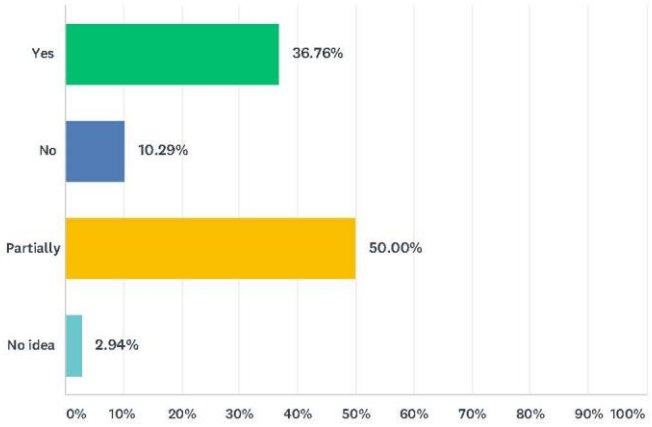


	AGREE	DISAGREE	NO EFFECT	NO IDEA	TOTAL	WEIGHTED AVERAGE
Consistent good level of service	85.29% 58	1.47% 1	4.41% 3	8.82% 6	68	1.37
Reducing life cycle cost of the project	80.88% 55	4.41% 3	4.41% 3	10.29% 7	68	1.44
Reducing road user cost	64.71% 44	5.88% 4	19.12% 13	10.29% 7	68	1.75
Ability to monitor and follow up services	89.71% 61	0.00% 0	4.41% 3	5.88% 4	68	1.26
Improving transparency in decision making	75.00% 51	2.94% 2	11.76% 8	10.29% 7	68	1.57
Ability to predict future funding needs	83.82% 57	2.94% 2	4.41% 3	8.82% 6	68	1.38
Decreasing financial, operational and legal risk	83.82% 57	2.94% 2	5.88% 4	7.35% 5	68	1.37
Providing management plan for road maintenance services in the long term	91.18% 62	0.00% 0	2.94% 2	5.88% 4	68	1.24

Enabling management of data, info and inventory system	89.71% 61	0.00% 0	4.41% 3	5.88% 4	68	1.26
Allow to manage site operation efficiently and quickly	85.29% 58	0.00% 0	7.35% 5	7.35% 5	68	1.37

Q15 Do you think that using Performance Based Contracts in road maintenance services will eliminate the current problems?

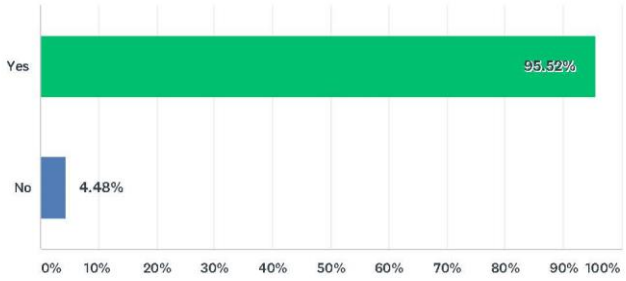
Answered: 68 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	36.76%	25
No	10.29%	7
Partially	50.00%	34
No idea	2.94%	2
TOTAL		68

Q16 Do you think that the existing road maintenance services need to be developed in Turkey?

Answered: 67 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	95.52%	64
No	4.48%	3
TOTAL		67

#	EVET ISE HANGI AÇIDAN VE GÖRÜŞLERINIZ BELIRTIR MISINIZ ?	DATE
1	Türkiye'de yol yapım hizmetlerinin geliştirilerek yolun bakım ve onarımına hizmet edeceğini düşünüyorum.	10/22/2019 12:26 PM
2	Akıllı sistemler daha fazla noktada uygulanabilir ve diğer ulaşım türleri ile etkileşim artırılabilir.	10/18/2019 6:35 PM
3	Kısa vadeli bakım hizmetlerinde yüklenicinin maliyet/kar endişelerinden uzaklaşmak için idarenin teçhizatlanarak tali yollar kaplama kalitesini tedricen arttırması düşünülebilir.	10/18/2019 4:23 PM
4	Yukarıda da belirttiğim gibi yol bakım hizmetlerinin; uzmanlık, altyapı, deneyim sahibi insanlar tarafından yürütülmesi gerektiğini düşünüyorum. Her kamyonu, greyderi olan yol bakım ihalesine girmemelidir. Maalesef son yıllarda makine ve personel açısından Karayolları Genel Müdürlüğü çok zayıflamıştır. Bu nedenle bu hizmetler büyük oranda ihale edilmektedir. Ancak firmalar işinin uzmanı değildir. Takibi ve tespiti çok zor olan bu tip işler, suistimale açıktır. Kesinlikle performansa dayalı ihale edilmesi gerekir.	10/18/2019 9:16 AM
5	Kalifiye elemanlar ile teknik çalışma artırılmalı, ara eleman (formen, teknisyen, tekniker) sayısı artırılmalı.	10/17/2019 10:14 PM
6	daha bilinçli geleceğini gören müteahhit ve çalışan personelinin ödül ve ceza veya performans sistemi ile verimi artıracağını düşünüyorum.	10/17/2019 3:42 PM
7	1- Şu anda uygulanan Yap İşlet Devret sözleşmelerinin tekrar ele alınarak bakım ve işletme açısından revize edilmesi gerekmektedir. 2- Bakım-Onarım ve İşletme konularına ait özel teknik şartnameler ve performans kriterleri oluşturulmalı 3- İdare'de Bakım-Onarım ve İşletme konularına ait yeni yapılanma ve kadro uzmanlaşması oluşturulmalı	10/14/2019 10:10 PM
8	Üstyapı yönetimi açısından uzun ve kısa vadeli ileriye dönük projeksiyonların geliştirilmesi ve güçlendirilmesi gerektiği kanaatindeyim.	10/9/2019 9:51 AM
9	özellikle yapım sırasındaki kalitenin artırılması için karışımın homojenitesini artıaracak yapım teknikleri uygulanmalı nanokil kullanımı başlatılmalı kireç modifiye asfaltlar uygulanmalı yoğurmalı pres yaygınlaştırılmalı agrega mineralojisi konuya daha kapsamlı katılmalı	10/8/2019 2:21 PM

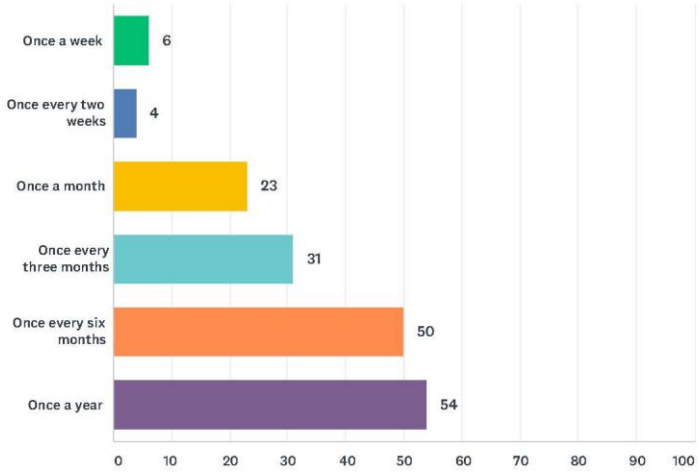
10	Yollarda yama yapılması konusunda fazla kilometre yapma anlayışından vazgeçilerek, günümüzde geliştirilmiş olan makine , alet ve edavatlarla Tekniğine uygun yama yapımının sağlanması için çalışmaların yürütülmesi Maliyetine bakılmaksızın bütün yollarda Otokorkuluk inşa edilmesi ve hayvan girişini önleyecek, hem hayvanların telef olmasını hemde can ve mal kaybına neden olan trafik kazalarının önlenmesi açısından Otokorkuluğun arkasında hayvanın üzerinden atlayamayacağı yükseklikte belli bir mesafede tel çit yapılması	10/7/2019 9:47 AM
11	1-Personel eğitimlerine önem verilmeli 2-Çalışma usül ve esaslarına azami ölçüde uygulanması sağlanmalı 3-Bakımın öneminin her şeyden değerli olacağı bilinmeli ve çaba gösterilmeli 4-Kazaların dahada azaltılması yönünde tedbirler düşünülmeli ve uygulamaya alınmalı 5-İstişareler sürekli yapılmalı 6-Tasarrufa çok kıymet verilmeli 7-İstişare sonucu alınan kararların önemli olduğunu bilmeli 8-Akla gelecek diğer hususlar 9-Sağlık ve afiyet diliyorum.Hayırlı olsun	10/4/2019 9:07 AM
12	Yapılan bakım kalitelerinin arttırılması ve periyodik bakım takvimlerinin daha ciddiyetle takip edilmesi gerektiğini düşünmekteyim.	10/4/2019 8:39 AM
13	Mevcut yollarımızdaki bakım onarım hizmetlerinin yeterli olmadığının kanısındayım.	10/3/2019 5:23 PM
14	Fonksiyonel ve kullanılabilir her yapının işletmeye başladığı andan itibaren bakım ve onarım işleri başlamış demektir.Bu çerçevede tüm tarafların prensip ve kurallara uyma zorunluluğu başlar.Bu hususta gerekli düzenlemelerin her işe göre ayrı ayrı planlanması gerekir.	10/3/2019 5:23 PM
15	YOLLARIMIZ BAKIMSIZ	10/3/2019 5:08 PM
16	Yıllar geçtikçe yollarda oluşan tüm olumsuzluklar yol bakım hizmetleri ile giderilebilir. Bu sayede sürücülerin konforu devam eder.	10/3/2019 5:01 PM
17	Yol ve yapıların güvenli ve hizmet verebilir şekilde muhafaza edilebilmesi için yeterli ve yetkin personel ile tekniğine uygun çalışmaların yürütülmesi faydalı olacaktır.	10/3/2019 2:51 PM
18	-	10/3/2019 2:33 PM
19	Yollar, tamamıyla elektronik ortamda izlenebilir olmalı, trafik yönetim merkezlerinde yetkin personel çalıştırılmalı ve olağan veya acil durumlarda makul sürede müdahale edilmeli, gerekli tedbirler eksiksiz uygulanmalı, yol kullanıcıları değişken mesaj panolarıyla sürekli bilgilendirilmeli ve uyarılmalıdır. Yol boyu hizmet tesisleri kaliteli hale getirilmeli ve sürücü performansının artması için yol kullanıcılarının daha kısa aralıklarla bu tesislerden faydalanmaları özendirilmelidir.	10/3/2019 2:25 PM
20	Ülkemizde yolların işletilmesi ve bakım hizmetlerinin Avrupa Birliği Tarafından oluşturulmuş standartlarda yapılması ve kontrolü (yeni bir yol yapılması esnasındaki aşamalara göre) geliştirilmelidir. Özellikle yollar üzerinde bulunan sanat yapılarının bakım ve onarımlarının periyodik aralıklarla gerçekleştirmelidir. (hasar oluşmadan). Bu aşamada rutin incelemelerin işin uzmanları tarafından gerçekleştirilmesi sağlanmalıdır. (Rutin inceleme yol ve trafik koşullarının belirlenmesine yönelik bir araştırmadır. Bu inceleme, yolun ve yolla ilgili yapıların ve sistemlerin bozuklukların, hasarların, eskime ve yıpranmasını erken teşhis etmeye yarar.) Ayrıca oluşan trafik kazalarından sonra, şiddetli rüzgar, şiddetli yağmur, kar, deprem vb. gibi doğa olaylarından sonrada rutin ve periyodik inceleme ek olarak özel incelemeler uzmanlarca yapılmalıdır.	10/3/2019 2:06 PM
21	Anketinizdeki soruları cevaplarken özellikle 11,12,13 ve 14. sorularda ideal ve sağlıklı bir ortamda olması gereken neyse onu düşünerek cevapladım. Mevcut yol bakım onarım hizmetlerimizin geliştirilmesini elbette düşünüyorum fakat burada verdiğim yanıtlar Türkiye için ne kadar geçerli olur gerçekten şüpheliyim.	10/3/2019 2:01 PM
22	yol bakım onarım hizmetleri her sene ve diger ülkelerdede teknolojik uygulamalarının yapılması fikrindeyim.	10/3/2019 1:41 PM
23	Özellikle kar mücadelesinde Karayolları Genel Müdürlüğü+Özel Sektör çalışmasında Özel Sektörün,Karayolları tarafından sıkı takip edilip yönlendirilmesi gerekmektedir(Aralık/2014 te İzmir'den Bursa'ya seyahatimde Akhisar'ı geçer geçmez Gelenbe mevkii vardır.Orada 01.00 dan 24.00 a kadar daha sonra TIR ların kış koşullarına uygun olmayan lastik kullanımlarından kayarak yolu kapatmalarından dolayı ertesi gün 15.00 da Bursa'ya varabildik). Özellikle kritik mevkilerde TIR trafiğinin denetlenmesi gerekir.	10/3/2019 1:33 PM
24	Gelişime açık ülkelerde yol bakımları gerek yol kullacıları gerekse yapım firmalarını doğudan etkileyebilmektedir. Yol kullanıcıları için düzenli ve zamanında yapılan bir bakım onarım hem trafik güvenliğini hemde ulaşım sürelerini belirli oranlarda azaltabilir. Yeni yapılan bir yol yapımı çerçevesinde düşünüldüğünde ise baştan doğru tekniklerle yapılacak bir uygulama ile (yol üstyapısı, zemin araştırmaları, toprak işleri, v.b) uzun bir süre bakım onarıma ihtiyaç duyulmayabilir.	10/1/2019 9:27 AM
25	...	9/28/2019 3:09 PM

26	Yol bakım harici hiçbir etken düşünmeksizin, işler yürütülmeye çalışılıyor. Geliştirmesi değil, sıfırdan inşa edilmesi gerek.	9/27/2019 11:59 AM
27	Ülkemizde zaman geçtikçe her türlü Şartname, Kanun ve İhale Sistemleri çok hızlı bir şekilde yetersiz kalmakta ve sürekli değişiklikler yapılmaktadır. Yürütülen süreçte hiçbir şey eksiksiz değildir. Bu bakımdan yetersiz görülen Şartname, Sözleşme, Kanun, İhale Sistemleri v.b. durumlar zaman içerisinde gerekli ilaveler yapılarak geliştirilmelidir.	9/25/2019 5:53 PM
28	Yol standartlarımız maalesef Türkiye çapında aynı değil. Bunu yazmakdaki kastım, her yere otoyol yapılması değil. Ancak içinde bulunduğumuz çağın gereği olarak, bir köy yolunda dahi artık düzgün bir yol sathı, standart yol çizgi ve işaretlemeleri, gerekli fiziki yol şartlarını temin etmek durumundayız. Ayrıca aydınlatma tesisi kurulmuş, bunun için ilk yatırım maliyetine katlanılmış otoyol ve yolların, sırf arızalı olası nedeni ile karanlığa gömülmesi, o yolların bakım onarımından sorumlu kadroların ayıbı ve ihmalidir. Ülke çapına yayılmış, KGM gibi bir kamu kurumunu işveren konumuna alıp, özel sektörce takip edilecek bir bakım onarım teşkilatından bu soromluluğu yürütmesini istemek, hesap sorma açısından daha isabetli olacaktır.	9/25/2019 3:40 PM
29	İmalat kalitesinin yükseltilmesi açısından bakıldığında yolun yapım aşamasında taraflarca özenin gösterilmesi şarttır. Yüklenicilerin yetkin olmaları ve kaliteli iş yapma kültürüne sahip olmaları gerekmektedir. Yapımın gerektiği kalitede sonuçlandırıldığında bakım aşamasında bakım onarım maliyetlerinin düşeceği unutulmamalıdır. Bu durum ulusal bütçeye de katkı sağlayacaktır.	9/25/2019 12:16 PM
30	Güncel teknoloji ve literatür kullanımı arttırılmalı. Problemlerin sonuçları tespit edilip buna göre çözümler üretilmeli. Mühendisliğe aykırı günü kurtarmaya yönelik çözümlerden uzak durulmalı. Kalitesizlik maliyetleri takip edilmeli ve sorumlular cezalandırılmalı.	9/25/2019 12:05 PM
31	Mevcut yol bakım onarım hizmetleri sözleşmelerinde bir ölçüm ve ölçüm sonucuna göre ödeme yapılması söz konusu değil, ödemeler yol ne durumda olursa olsun yapılıyor, bir yaptırım söz konusu değil. Alınan hizmetin kalitesini arttırmak için performans bazlı bir ölçüm sistemine geçilmesinin gerekli olduğunu düşünüyorum.	9/25/2019 11:51 AM
32	Kalite, yol güvenliği, zamanlama, gibi geliştirilmesi gereken önemli hususlar mevcuttur. Bu konuda; mevcut sistemde oluşan deneyim, bilgi birikimi ve verilerin yanına özel sektör dinamizminin de rekabetçi bir ortamda sisteme dahil edilmesinin önemli yararları olabileceği düşüncesindeyim.	9/25/2019 11:31 AM
33	Trafik güvenliği ve konforu açısından yol bakım ve onarım hizmetlerinin önemli olduğunu düşünüyorum.	9/25/2019 10:24 AM
34	Yol bakım onarım hizmetlerini alan özel sektör firmaları gerekli ekip ve ekipmanı yeterli miktarda bulundurmuyorlar. Özellikle kış şartlarında zamanında bakım işinde geç kalıyorlar. Bu tür firmaların ihale şartlarındaki ekip ve ekipmanı bulundurma durumu sıkı kontrol edilmelidir	9/24/2019 3:40 PM
35	öncelikle koruyucu ve önleyici bakım uygulamasına geçilmesi gereklidir. bakım işlerinin belli peryotlarda ve uzun vadeli planlamalar ile yapılması gereklidir. günü kurtaracak bakım ve onarım yöntemlerine baş vurulmamalıdır. yolu kullanan sürücülerin konforlarının bozulmaması için gerekli önlemlerin alınması lazımdır.	9/24/2019 3:09 PM
36	Yüklenicilerin yetkinlik, liyakat, makine parkı teşkili, Sürdürülebilirlik,	9/24/2019 2:15 PM
37	Trafik güvenliği, seyahat konforu ve zaman erişim planlamaları için sistematik uygulamalar yapılmalı. Teknolojiden istifade edilerek GPS ile çalışma güzergahları ve çalışma alanı süreleri denetlenmeli. Yapılan işlerin öncesi ve sonrası gün- saat olarak video veya fotoğraf ile merkezi kayıta geçirilmelidir. Çalışmalarda bakım ve onarım standartları oluşturulmalı. Operasyonel hareketlerde; işaretleme, bayrakçı, gerekli ekip ekipman, gerekli malzemeler ve uygulanacak teknikler için senaryolar oluşturulmalı, personele eğitimi verilmelidir. Kaplama platformu ve diğer tüm yapıların belli periyotlarda kontrolü çek edilmelidir. Kar mücadelesi ve buz çözücüler ayrı başlıkta değerlendirilmelidir.	9/24/2019 1:43 PM
38	HERŞEYDEN ÖNCE; İNSANIMIZA EKONOMİK, KOLAY, EMNİYETLİ VE BENZERİ HİZMETLERİN ALINMASI HUSUSUNDA BAKIM ONARIM HİZMETLERİNİN KALİTESİNİN ÖNEM ARZ EDECEĞİ KANAATİNDEYİM. SAYGILARIMLA. CELAL GURSOY	9/24/2019 1:11 PM
39	Mevcut Sinyalizasyon onarım ve güncellenmesi yapılmalı, karla mücadele geliştirilebilir. Trafik işaretlerinin özellikle yeni açılan yollarda yeterli kullanılmaması güvenliği ihlal etmektedir.	9/23/2019 2:35 PM

Appendix_9 Selection of No Idea for Question_10

Q7 How often have you traveled by using highway ?

Answered: 168 Skipped: 0

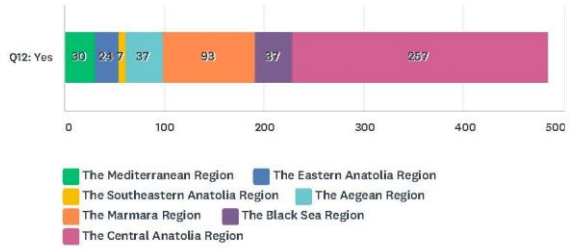


ANSWER CHOICES	RESPONSES	
Once a week	3.57%	6
Once every two weeks	2.38%	4
Once a month	13.69%	23
Once every three months	18.45%	31
Once every six months	29.76%	50
Once a year	32.14%	54
TOTAL		168

Appendix_10 Selection of Yes for Question_12

Q5 The region you live (You can select more than one option)

Answered: 368 Skipped: 0

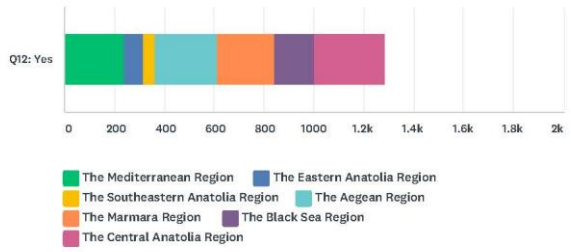


	THE MEDITERRANEAN REGION	THE EASTERN ANATOLIA REGION	THE SOUTHEASTERN ANATOLIA REGION	THE AEGEAN REGION	THE MARMARA REGION	THE BLACK SEA REGION	THE CENTRAL ANATOLIA REGION	TOTAL
Q12: Yes	8.15% 30	6.52% 24	1.90% 7	10.05% 37	25.27% 93	10.05% 37	69.84% 257	131.79% 485
Total Respondents	30	24	7	37	93	37	257	368

Karayolu Yol Bakım Onarım Hizmetleri Anketi SurveyMonkey

Q6 Which regions have you traveled in the last 5 years by using highway ? (You can select more than one option)

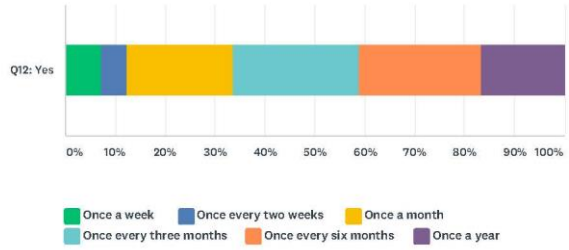
Answered: 368 Skipped: 0



	THE MEDITERRANEAN REGION	THE EASTERN ANATOLIA REGION	THE SOUTHEASTERN ANATOLIA REGION	THE AEGEAN REGION	THE MARMARA REGION	THE BLACK SEA REGION	THE CENTRAL ANATOLIA REGION	TOTAL
Q12: Yes	63.86% 235	21.20% 78	13.04% 48	67.93% 250	62.50% 230	43.75% 161	76.90% 283	349.18% 1,285
Total Respondents	235	78	48	250	230	161	283	368

Q7 How often have you traveled by using highway ?

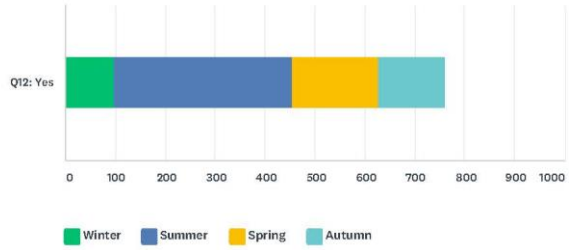
Answered: 367 Skipped: 1



	ONCE A WEEK	ONCE EVERY TWO WEEKS	ONCE A MONTH	ONCE EVERY THREE MONTHS	ONCE EVERY SIX MONTHS	ONCE A YEAR	TOTAL
Q12: Yes	7.08% 26	5.18% 19	21.25% 78	25.34% 93	24.52% 90	16.62% 61	100.00% 367
Total Respondents	26	19	78	93	90	61	367

Q8 In which season do you make your travel between the cities by using highway ? (You can select more than one option)

Answered: 367 Skipped: 1

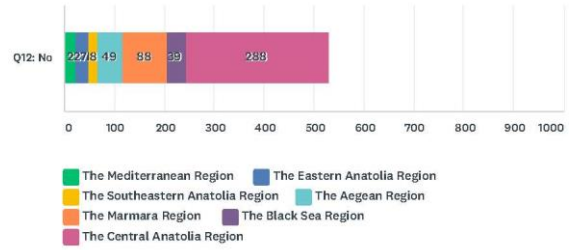


	WINTER	SUMMER	SPRING	AUTUMN	TOTAL
Q12: Yes	26.16% 96	97.55% 358	46.87% 172	36.78% 135	207.36% 761
Total Respondents	96	358	172	135	367

Appendix_11 Selection of No for Question_12

Q5 The region you live (You can select more than one option)

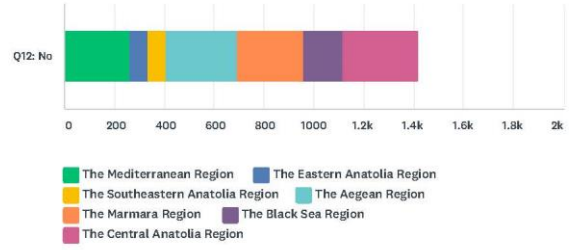
Answered: 412 Skipped: 0



	THE MEDITERRANEAN REGION	THE EASTERN ANATOLIA REGION	THE SOUTHEASTERN ANATOLIA REGION	THE AEGEAN REGION	THE MARMARA REGION	THE BLACK SEA REGION	THE CENTRAL ANATOLIA REGION	TOTAL
Q12: No	5.34% 22	6.55% 27	4.37% 18	11.89% 49	21.36% 88	9.47% 39	69.90% 288	128.88% 531
Total Respondents	22	27	18	49	88	39	288	412

Q6 Which regions have you traveled in the last 5 years by using highway ? (You can select more than one option)

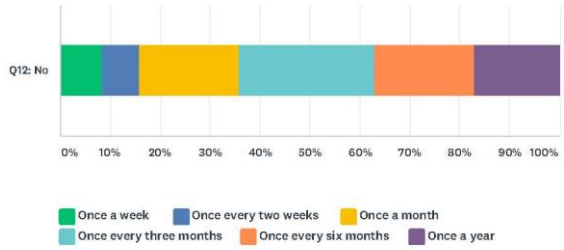
Answered: 410 Skipped: 2



	THE MEDITERRANEAN REGION	THE EASTERN ANATOLIA REGION	THE SOUTHEASTERN ANATOLIA REGION	THE AEGEAN REGION	THE MARMARA REGION	THE BLACK SEA REGION	THE CENTRAL ANATOLIA REGION	TOTAL
Q12: No	63.66% 261	18.05% 74	16.83% 69	69.76% 286	64.39% 264	39.02% 160	74.15% 304	345.85% 1,418
Total Respondents	261	74	69	286	264	160	304	410

Q7 How often have you traveled by using highway ?

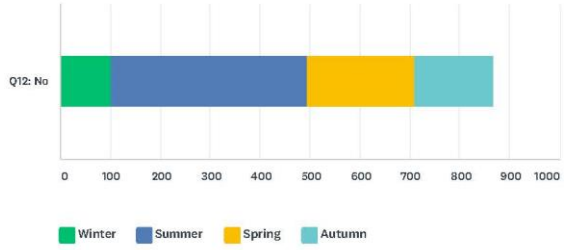
Answered: 411 Skipped: 1



	ONCE A WEEK	ONCE EVERY TWO WEEKS	ONCE A MONTH	ONCE EVERY THREE MONTHS	ONCE EVERY SIX MONTHS	ONCE A YEAR	TOTAL
Q12: No	8.27% 34	7.30% 30	20.19% 83	27.01% 111	20.19% 83	17.03% 70	100.00% 411
Total Respondents	34	30	83	111	83	70	411

Q8 In which season do you make your travel between the cities by using highway ? (You can select more than one option)

Answered: 410 Skipped: 2

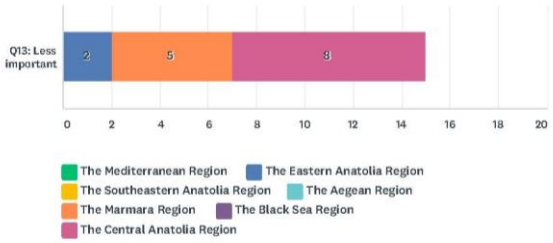


	WINTER	SUMMER	SPRING	AUTUMN	TOTAL
Q12: No	24.63% 101	95.85% 393	52.44% 215	38.78% 159	211.71% 868
Total Respondents	101	393	215	159	410

Appendix_12 Selection of Less Important for Question_13

Q5 The region you live (You can select more than one option)

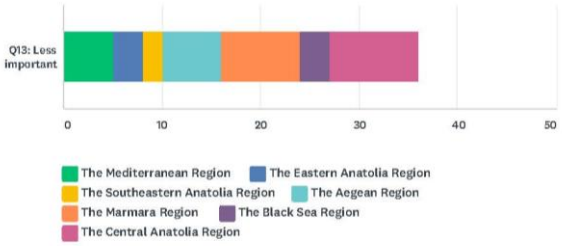
Answered: 13 Skipped: 0



	THE MEDITERRANEAN REGION	THE EASTERN ANATOLIA REGION	THE SOUTHEASTERN ANATOLIA REGION	THE AEGEAN REGION	THE MARMARA REGION	THE BLACK SEA REGION	THE CENTRAL ANATOLIA REGION	TOTAL
Q13: Less important	0.00% 0	15.38% 2	0.00% 0	0.00% 0	38.46% 5	0.00% 0	61.54% 8	115.38% 15
Total Respondents	0	2	0	0	5	0	8	13

Q6 Which regions have you traveled in the last 5 years by using highway ? (You can select more than one option)

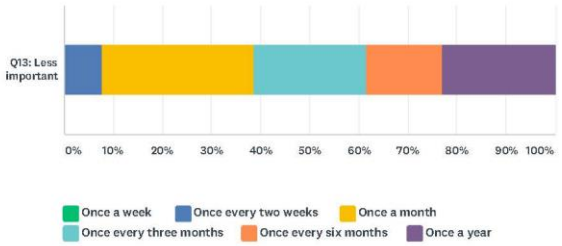
Answered: 13 Skipped: 0



	THE MEDITERRANEAN REGION	THE EASTERN ANATOLIA REGION	THE SOUTHEASTERN ANATOLIA REGION	THE AEGEAN REGION	THE MARMARA REGION	THE BLACK SEA REGION	THE CENTRAL ANATOLIA REGION	TOTAL
Q13: Less important	38.46% 5	23.08% 3	15.38% 2	46.15% 6	61.54% 8	23.08% 3	69.23% 9	276.92% 36
Total Respondents	5	3	2	6	8	3	9	13

Q7 How often have you traveled by using highway ?

Answered: 13 Skipped: 0



	ONCE A WEEK	ONCE EVERY TWO WEEKS	ONCE A MONTH	ONCE EVERY THREE MONTHS	ONCE EVERY SIX MONTHS	ONCE A YEAR	TOTAL
Q13: Less important	0.00% 0	7.69% 1	30.77% 4	23.08% 3	15.38% 2	23.08% 3	100.00% 13
Total Respondents	0	1	4	3	2	3	13

Appendix_13 Answers for Frequent Road Users

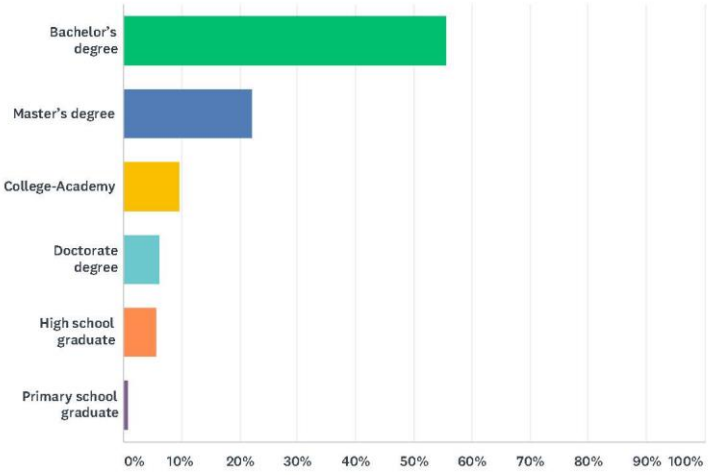
Q1 Age Distribution of Participants

Answered: 126 Skipped: 0

ANSWER CHOICES	RESPONSES	
18-24	7.14%	9
25-34	46.03%	58
35-44	30.95%	39
45-54	8.73%	11
55-64	7.14%	9
65-74	0.00%	0
74 and older	0.00%	0
TOTAL		126

Q2 Education Status

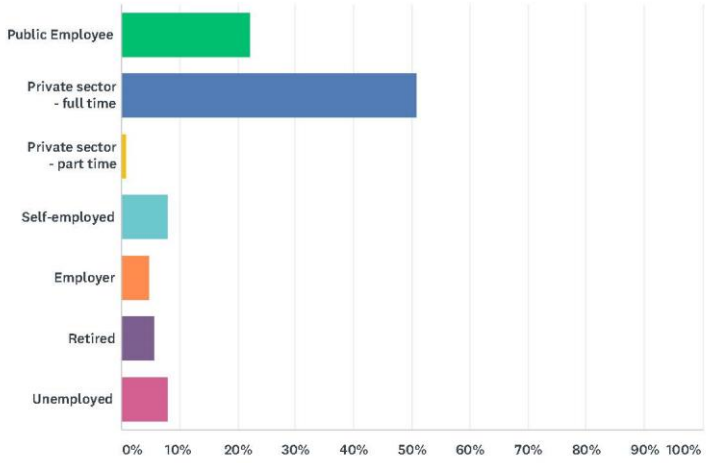
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Bachelor's degree	55.56%	70
Master's degree	22.22%	28
College-Academy	9.52%	12
Doctorate degree	6.35%	8
High school graduate	5.56%	7
Primary school graduate	0.79%	1
TOTAL		126

Q3 Current employment status

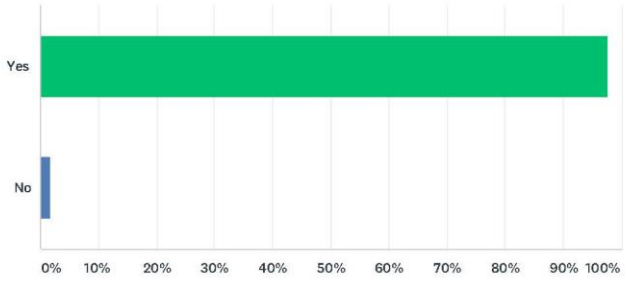
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Public Employee	22.22%	28
Private sector - full time	50.79%	64
Private sector - part time	0.79%	1
Self-employed	7.94%	10
Employer	4.76%	6
Retired	5.56%	7
Unemployed	7.94%	10
TOTAL		126

Q4 Do you have driving license - If yes, how many years have you been driving?

Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	97.62%	123
No	1.59%	2
TOTAL		126

#	EĞER VARSA, KAÇ YILDIR ARABA KULLANIYORSUNUZ	DATE
1	20	10/9/2019 12:45 AM
2	20	10/8/2019 11:11 PM
3	15	10/8/2019 10:03 PM
4	6	10/8/2019 8:42 PM
5	7	10/8/2019 5:40 PM
6	16	10/8/2019 2:52 PM
7	10	10/8/2019 2:26 PM
8	25	10/8/2019 2:25 PM
9	10	10/8/2019 2:15 PM
10	28	10/7/2019 10:21 PM
11	5	10/7/2019 8:24 PM
12	12	10/2/2019 9:55 PM
13	19	10/2/2019 9:48 PM
14	20	10/1/2019 8:42 AM
15	24	9/30/2019 4:07 AM
16	12	9/30/2019 2:21 AM
17	23	9/29/2019 11:22 PM
18	7	9/29/2019 9:29 PM
19	20	9/29/2019 9:28 PM

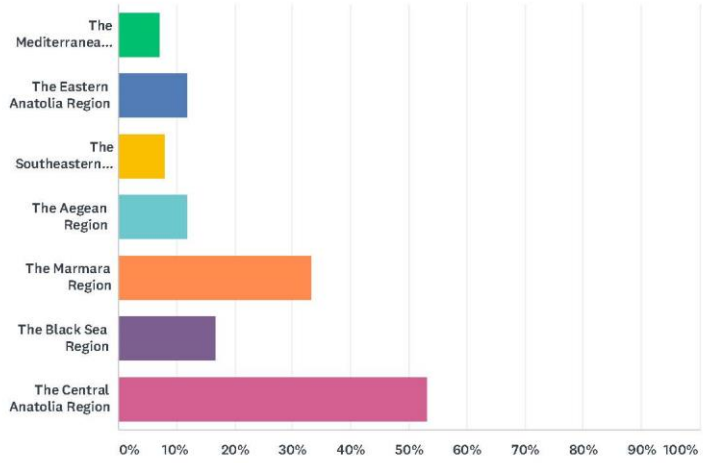
20	10	9/29/2019 8:39 PM
21	3	9/28/2019 5:47 PM
22	7	9/28/2019 12:16 AM
23	2	9/27/2019 6:29 PM
24	4	9/27/2019 11:30 AM
25	11	9/27/2019 9:40 AM
26	29	9/25/2019 11:29 PM
27	15	9/25/2019 9:27 PM
28	2013	9/25/2019 9:13 PM
29	5	9/25/2019 9:10 PM
30	10	9/25/2019 8:57 PM
31	10	9/25/2019 8:18 PM
32	26	9/25/2019 7:38 PM
33	14	9/25/2019 6:24 PM
34	11	9/25/2019 5:39 PM
35	6	9/25/2019 11:57 AM
36	20	9/25/2019 11:43 AM
37	17	9/25/2019 11:05 AM
38	2	9/25/2019 10:53 AM
39	2	9/25/2019 10:42 AM
40	5	9/25/2019 9:49 AM
41	20	9/25/2019 8:11 AM
42	30 yılından fazla	9/25/2019 7:33 AM
43	5	9/24/2019 10:39 PM
44	5	9/24/2019 10:13 PM
45	30	9/24/2019 10:00 PM
46	28	9/24/2019 9:32 PM
47	16	9/24/2019 9:31 PM
48	10	9/24/2019 9:25 PM
49	21	9/24/2019 9:04 PM
50	26	9/24/2019 6:54 PM
51	22	9/24/2019 5:57 PM
52	1	9/24/2019 2:58 PM
53	20	9/24/2019 2:09 PM
54	18	9/24/2019 2:05 PM
55	10	9/24/2019 12:20 PM
56	20	9/24/2019 11:51 AM
57	14	9/24/2019 11:50 AM
58	12	9/24/2019 11:48 AM
59	9	9/24/2019 11:22 AM
60	3	9/24/2019 11:20 AM

61	25	9/24/2019 11:15 AM
62	17	9/24/2019 11:12 AM
63	36	9/24/2019 11:06 AM
64	11	9/24/2019 11:02 AM
65	23	9/24/2019 9:52 AM
66	10	9/24/2019 9:19 AM
67	20	9/24/2019 5:44 AM
68	21	9/24/2019 1:44 AM
69	13	9/23/2019 11:58 PM
70	3	9/23/2019 11:16 PM
71	8	9/23/2019 11:10 PM
72	40	9/23/2019 10:51 PM
73	32	9/23/2019 10:44 PM
74	8	9/23/2019 10:29 PM
75	3	9/23/2019 10:04 PM
76	1987 yılında aldım ehliyet	9/23/2019 10:03 PM
77	4	9/23/2019 9:52 PM
78	8	9/23/2019 9:34 PM
79	3	9/23/2019 9:27 PM
80	8	9/23/2019 9:01 PM
81	35	9/23/2019 8:58 PM
82	35	9/23/2019 8:55 PM
83	10	9/23/2019 8:46 PM
84	8	9/23/2019 8:25 PM
85	25	9/23/2019 8:09 PM
86	15	9/23/2019 7:54 PM
87	14	9/23/2019 7:34 PM
88	11	9/23/2019 7:18 PM
89	6	9/23/2019 6:45 PM
90	25	9/23/2019 6:40 PM
91	13	9/23/2019 6:33 PM
92	14	9/23/2019 6:29 PM
93	23	9/23/2019 6:04 PM
94	22	9/23/2019 5:54 PM
95	20	9/23/2019 5:37 PM
96	19	9/23/2019 5:28 PM
97	10	9/23/2019 5:16 PM
98	12	9/23/2019 5:15 PM
99	Kullanmıyorum	9/23/2019 5:13 PM
100	10	9/23/2019 4:58 PM
101	3yil	9/23/2019 4:54 PM

102	10	9/23/2019 4:52 PM
103	8 yıldır	9/23/2019 4:47 PM
104	4	9/23/2019 4:32 PM
105	5	9/23/2019 4:26 PM
106	4	9/23/2019 4:25 PM
107	5	9/23/2019 4:13 PM
108	23	9/23/2019 3:56 PM
109	2 Yıldır	9/23/2019 3:50 PM
110	8	9/23/2019 3:35 PM
111	13	9/23/2019 3:32 PM
112	9	9/23/2019 3:28 PM
113	19	9/23/2019 3:27 PM
114	22	9/23/2019 3:25 PM
115	19	9/23/2019 3:10 PM

Q5 The region you live (You can select more than one option)

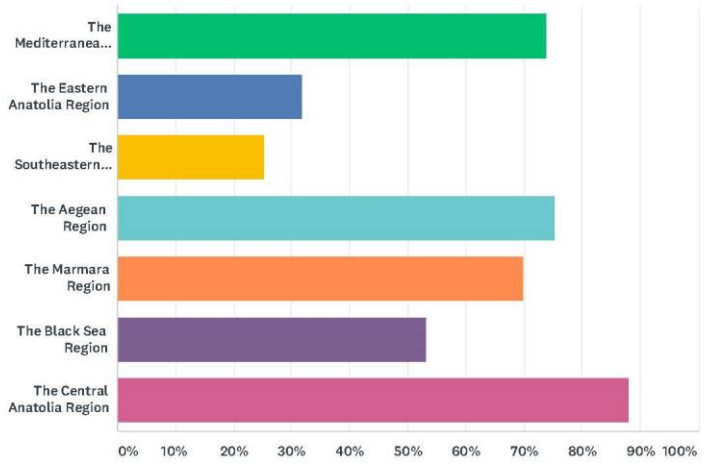
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
The Mediterranean Region	7.14%	9
The Eastern Anatolia Region	11.90%	15
The Southeastern Anatolia Region	7.94%	10
The Aegean Region	11.90%	15
The Marmara Region	33.33%	42
The Black Sea Region	16.67%	21
The Central Anatolia Region	53.17%	67
Total Respondents: 126		

Q6 Which regions have you traveled in the last 5 years by using highway ? (You can select more than one option)

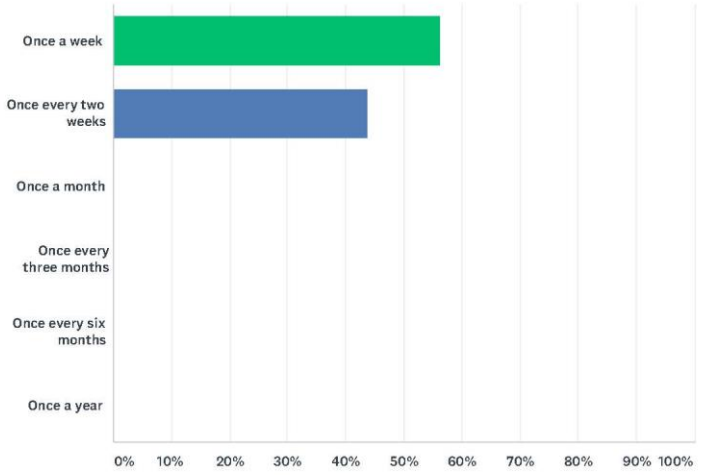
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
The Mediterranean Region	73.81%	93
The Eastern Anatolia Region	31.75%	40
The Southeastern Anatolia Region	25.40%	32
The Aegean Region	75.40%	95
The Marmara Region	69.84%	88
The Black Sea Region	53.17%	67
The Central Anatolia Region	88.10%	111
Total Respondents: 126		

Q7 How often have you traveled by using highway ?

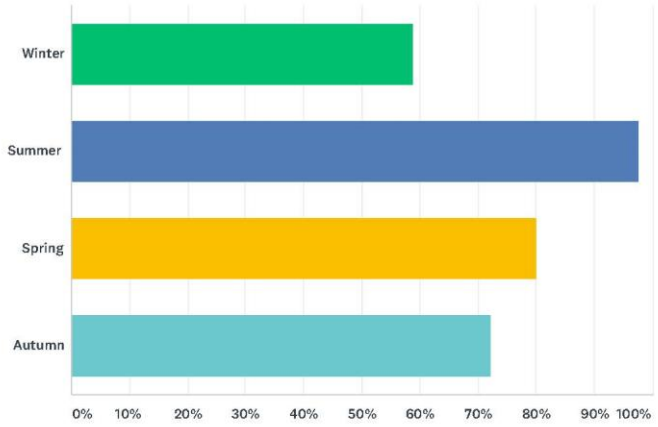
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Once a week	56.35%	71
Once every two weeks	43.65%	55
Once a month	0.00%	0
Once every three months	0.00%	0
Once every six months	0.00%	0
Once a year	0.00%	0
TOTAL		126

Q8 In which season do you make your travel between the cities by using highway ? (You can select more than one option)

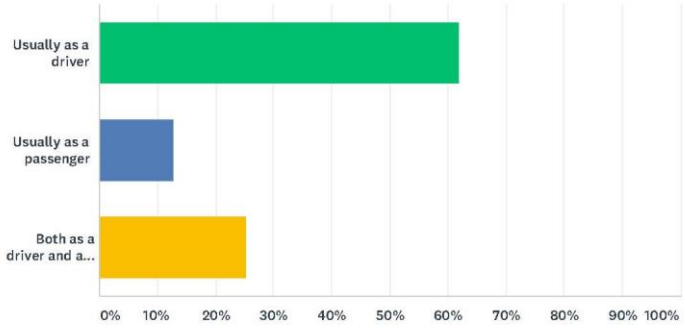
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Winter	58.73%	74
Summer	97.62%	123
Spring	80.16%	101
Autumn	72.22%	91
Total Respondents: 126		

Q9 How do you make your travel between the cities by using highway ?

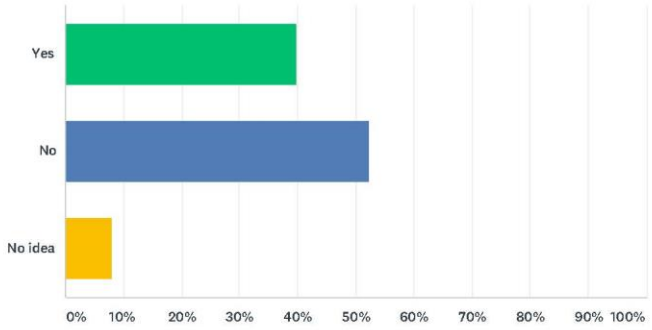
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Usually as a driver	61.90%	78
Usually as a passenger	12.70%	16
Both as a driver and as a passenger	25.40%	32
TOTAL		126

Q10 Do you think that road maintenance works are carried out regularly for highway?

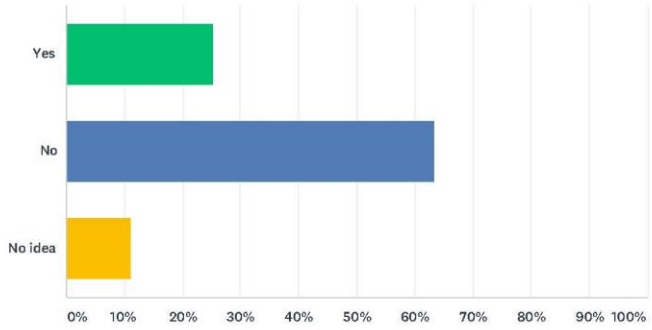
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	39.68%	50
No	52.38%	66
No idea	7.94%	10
TOTAL		126

Q11 Do you think that road maintenance works are carried out efficiently for highway?

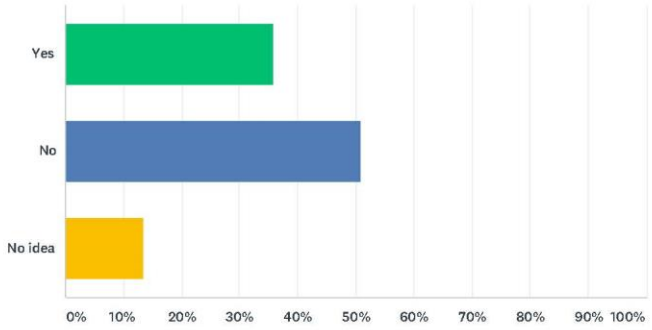
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	25.40%	32
No	63.49%	80
No idea	11.11%	14
TOTAL		126

Q12 Do you think that snow and ice removal works are carried out efficiently for highway in winter season ?

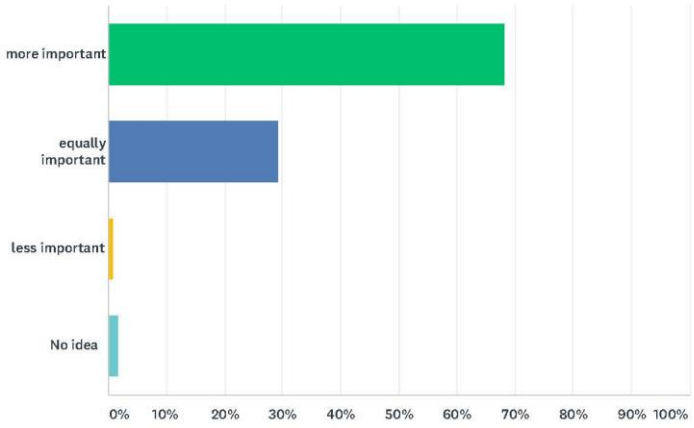
Answered: 126 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	35.71%	45
No	50.79%	64
No idea	13.49%	17
TOTAL		126

Q13 If we kindly request to compare the importance given to road maintenance with the construction of new roads, road maintenance should be

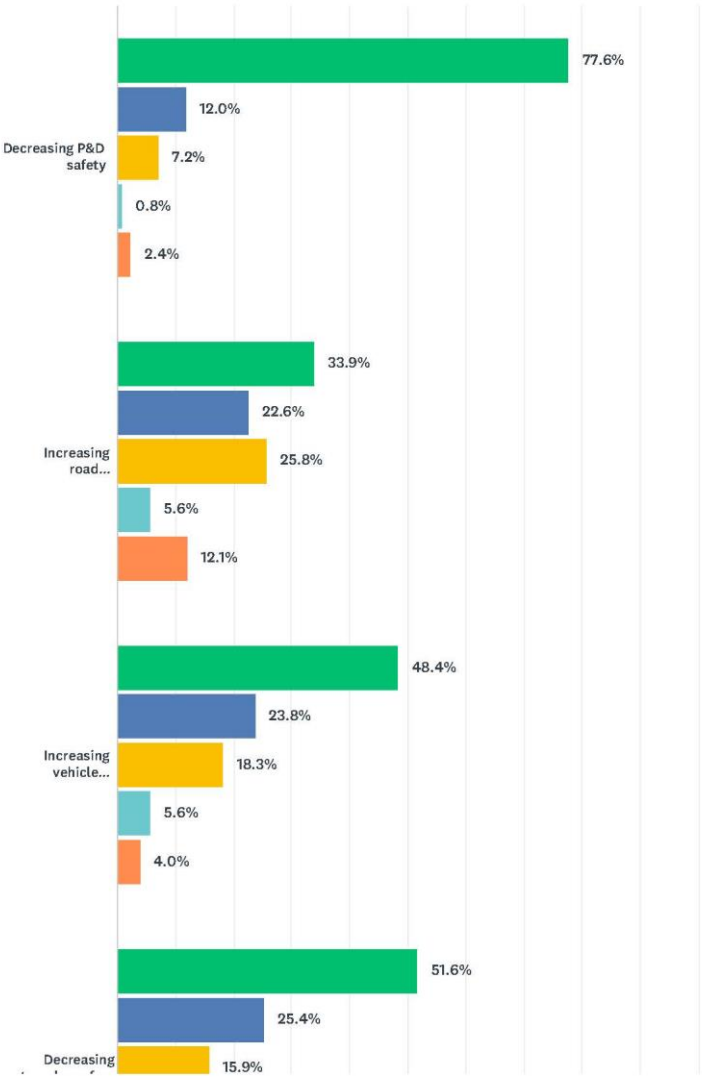
Answered: 126 Skipped: 0



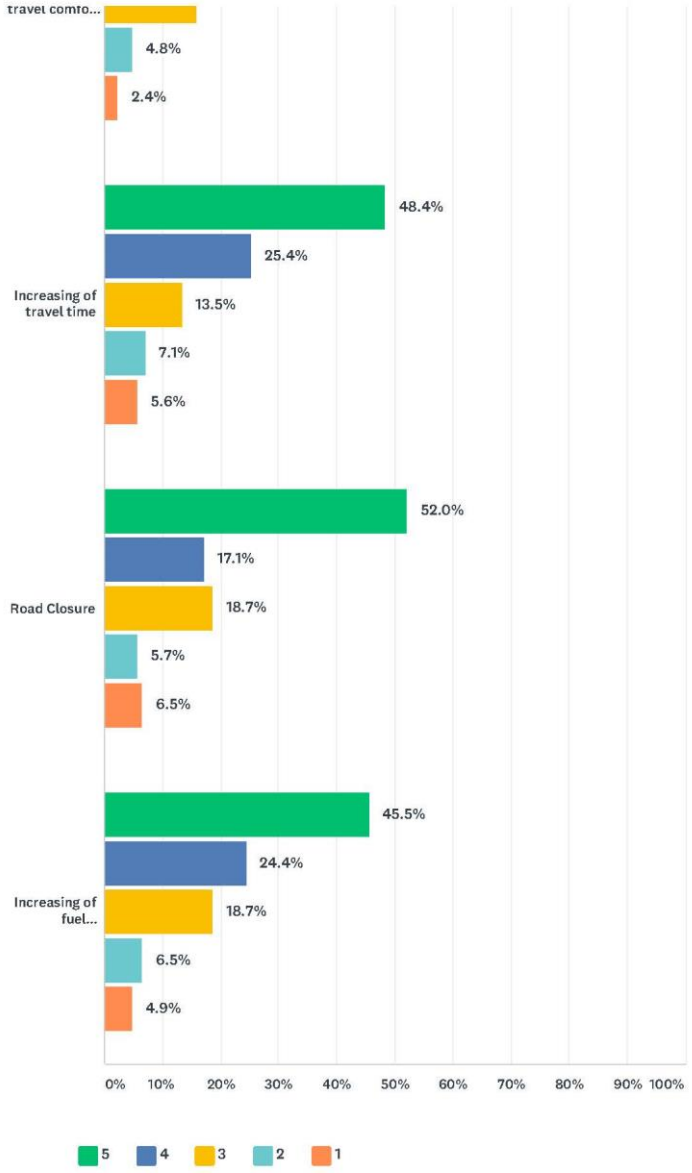
ANSWER CHOICES	RESPONSES	
more important	68.25%	86
equally important	29.37%	37
less important	0.79%	1
No idea	1.59%	2
TOTAL		126

Q14 We kindly request to evaluate following topics when the road maintenance are not carried out regularly and efficiently for highway. (5 most important - 1 less important)

Answered: 126 Skipped: 0



17 / 19



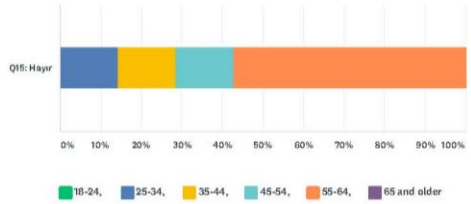
	5	4	3	2	1	TOTAL	WEIGHTED AVERAGE
Decreasing P&D safety	77.6% 97	12.0% 15	7.2% 9	0.8% 1	2.4% 3	125	1.38

Increasing road maintenance cost	33.9% 42	22.6% 28	25.8% 32	5.6% 7	12.1% 15	124	2.40
Increasing vehicle maintenance cost	48.4% 61	23.8% 30	18.3% 23	5.6% 7	4.0% 5	126	1.93
Decreasing travel comfort of P&D	51.6% 65	25.4% 32	15.9% 20	4.8% 6	2.4% 3	126	1.81
Increasing of travel time	48.4% 61	25.4% 32	13.5% 17	7.1% 9	5.6% 7	126	1.96
Road Closure	52.0% 64	17.1% 21	18.7% 23	5.7% 7	6.5% 8	123	1.98
Increasing of fuel consumption	45.5% 56	24.4% 30	18.7% 23	6.5% 8	4.9% 6	123	2.01

Appendix_14 Selection of No for Question_15

Q1 Your Age

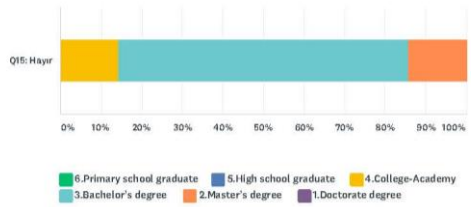
Answered: 7 Skipped: 0



	18-24,	25-34,	35-44,	45-54,	55-64,	65 AND OLDER	TOTAL
Q15: Hayır	0.00% 0	14.29% 1	14.29% 1	14.29% 1	57.14% 4	0.00% 0	100.00% 7
Total Respondents	0	1	1	1	4	0	7

Q2 Education Status

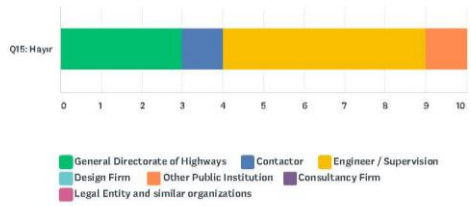
Answered: 7 Skipped: 0



	6.PRIMARY SCHOOL GRADUATE	5.HIGH SCHOOL GRADUATE	4.COLLEGE-ACADEMY	3.BACHELOR'S DEGREE	2.MASTER'S DEGREE	1.DOCTORATE DEGREE	TOTAL
Q15: Hayır	0.00% 0	0.00% 0	14.29% 1	71.43% 5	14.29% 1	0.00% 0	100.00% 7
Total Respondents	0	0	1	5	1	0	7

Q3 Type of institution you work (You can select more than one option)

Answered: 7 Skipped: 0

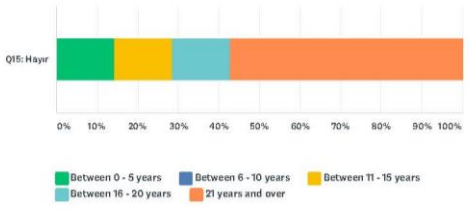


	GENERAL DIRECTORATE OF HIGHWAYS	CONTACTOR	ENGINEER / SUPERVISION	DESIGN FIRM	OTHER PUBLIC INSTITUTION	CONSULTANCY FIRM	LEGAL ENTITY AND SIMILAR ORGANIZATIONS	TOTAL
Q15: Hayır	42.86% 3	14.29% 1	71.43% 5	0.00% 0	14.29% 1	0.00% 0	0.00% 0	142.86% 10
Total Respondents	3	1	5	0	1	0	0	7

	DİĞER (LÜTFEN BELİRTİN)	TOTAL
Q15: Hayır	0	0

Q6 Total experience

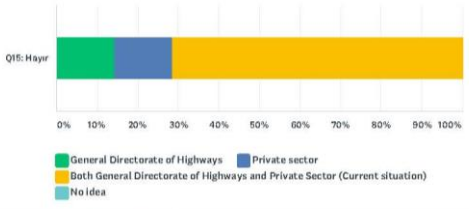
Answered: 7 Skipped: 0



	BETWEEN 0 - 5 YEARS	BETWEEN 6 - 10 YEARS	BETWEEN 11 - 15 YEARS	BETWEEN 16 - 20 YEARS	21 YEARS AND OVER	TOTAL
Q15: Hayır	14.29% 1	0.00% 0	14.29% 1	14.29% 1	57.14% 4	100.00% 7
Total Respondents	1	0	1	1	4	7

Q8 Which institution should carry out road maintenance services?

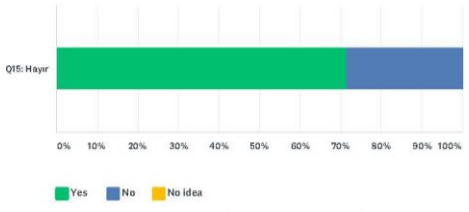
Answered: 7 Skipped: 0



	GENERAL DIRECTORATE OF HIGHWAYS	PRIVATE SECTOR	BOTH GENERAL DIRECTORATE OF HIGHWAYS AND PRIVATE SECTOR (CURRENT SITUATION)	NO IDEA	TOTAL
Q15: Hayır	14.29% 1	14.29% 1	71.43% 5	0.00% 0	100.00% 7
Total Respondents	1	1	5	0	7

Q9 Do you think that it is necessary to change to different type of contract, considering the existing state of road maintenance services?

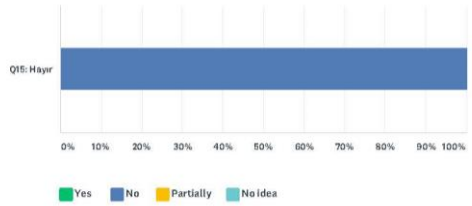
Answered: 7 Skipped: 0



	YES	NO	NO IDEA	TOTAL
Q15: Hayır	71.43% 5	28.57% 2	0.00% 0	100.00% 7
Total Respondents	5	2	0	7

Q15 Do you think that using Performance Based Contracts in road maintenance services will eliminate the current problems?

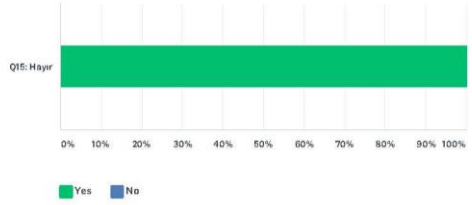
Answered: 7 Skipped: 0



	YES	NO	PARTIALLY	NO IDEA	TOTAL
Q15: Hayır	0.00% 0	100.00% 7	0.00% 0	0.00% 0	100.00% 7
Total Respondents	0	7	0	0	7

Q16 Do you think that the existing road maintenance services need to be developed in Turkey?

Answered: 7 Skipped: 0



	YES	NO	TOTAL
Q15: Hayır	100.00% 7	0.00% 0	100.00% 7
Total Respondents	7	0	7

	EVET ISE HANGI AÇIDAN VE GÖRÜŞLERINIZ BELIRTIR MISINIZ ?	TOTAL
Q15: Hayır	0	0

Appendix_15 Answers of 23 GDH Employees for Question_11

Q11 What do you think about the meeting of performance criteria by contractor for road maintenance services that are determined before the tender stage when PBC is implemented? (IRI, slip resistance, wheel track, passive protection devices, snow-ice removal, lighting systems, AUS, accident response, environment-landscape etc.) (This system gives the contractor freedom of methods, materials, equipment and labor provided that it meets the performance criteria.)