

**High Speed Train Maintenance Profession Defined and Recognized  
(High-Speed MAPDaR)**

**IMPACT ANALYSIS**

**Development of Vocational Training of High-Speed Train Maintenance Project  
(High-Speed TrainING)**

**NEEDS ANALYSIS**

**NEEDS AND IMPACT ANALYSIS**

**GOAL:**

With the **High-Speed MAPDaR project**, it is aimed to measure the effect of the certification system developed for the Rail System Vehicle Maintenance and Repairer profession and the complementary intellectual outputs. It is aimed to determine the need of the **High-Speed TrainING project**.

**IMPACT ANALYSIS INPUT:**

1- Survey data

**NEEDS ANALYSIS INPUT:**

- 1- Survey data
- 2- MYK exam preparation mobile application data (MYKS)
- 3- MYK exam integrated exam system data

**TARGET GROUP:**

The target audience of the survey:

- Those who carry out the profession of Rail System Vehicles Maintenance and Repairer and are certified
- Candidates for the Rail System Vehicles Maintenance and Repairer profession
- Professionals working as trainers in formal education institutions that train staff for the railway sector,
- Students of institutions that train personnel for the railway sector,

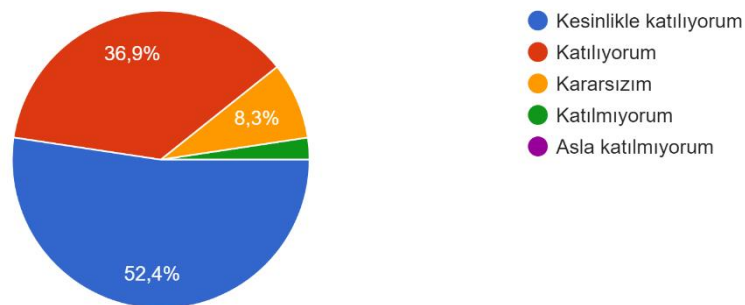
**SURVEY METHOD:**

The survey has been prepared to obtain quantitative results regarding the target group. In the preparation of the survey, Google survey service was used, and the link to the survey was delivered to the target audience by e-mail and shared in the relevant WhatsApp groups.

**SURVEY**

High-Speed MAPDaR Projesinin ne olduğunu biliyorum.

84 yanıt

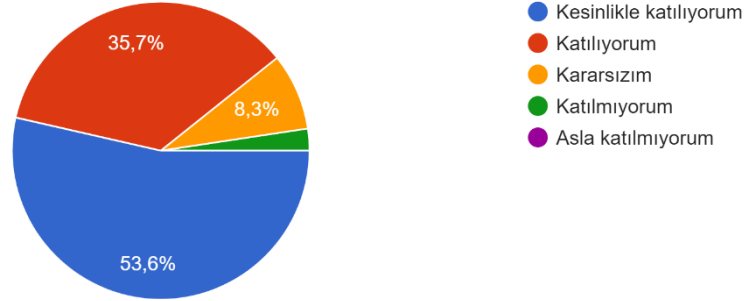


52.4% + 36.9% = 89.3% of the participants who participated in the survey answered the sentence "I know what

the High-Speed MAPDaR project is" as I strongly agree or agree. When this result is interpreted; knows the target audience's High-Speed MAPDaR project.

High-Speed MAPDaR Projesinin ürettiği çıktıların faydalı olduğunu düşünüyorum.

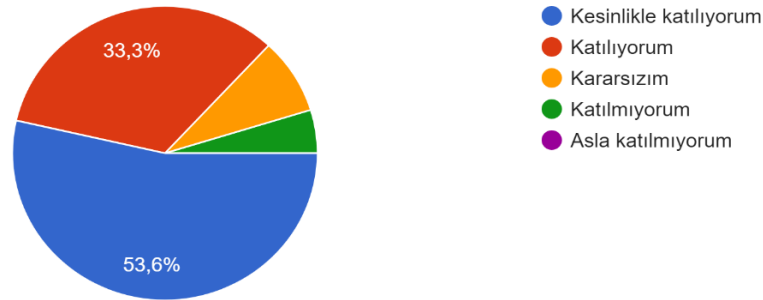
84 yanıt



53.6%+35.7%=89.3% of the respondents who participated in the survey said, "I think the outputs produced by the High-Speed MAPDaR Project are useful." He replied that I strongly agree or I agree. Here the following deduction can be made. Majority of the participants are of the opinion that the High-Speed MAPDaR Project is beneficial.

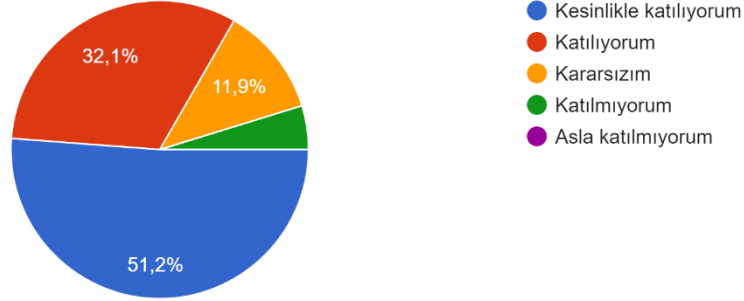
High-Speed MAPDaR Projesi ile ortaya çıkan "Raylı Sistem Bakım Onarımcısı (Mekanik, Elektrik, Elektronik) Ulusal Meslek Standardı (Mekanik, Elektrik, Elektronik) ihtiyacı karşılayacak nitelikte hazırlanmıştır.

84 yanıt



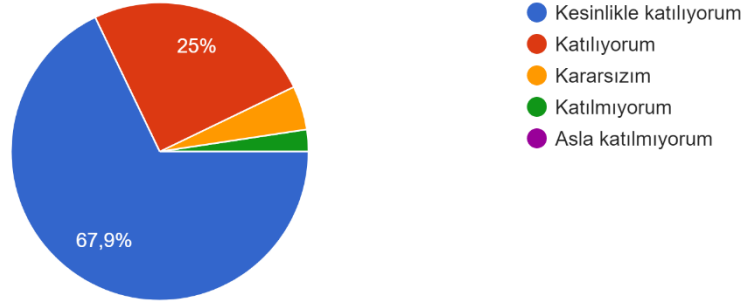
53.6%+33.3%=86.9% of the participants were prepared to meet the "Rail System Maintenance Repairer (Mechanical, Electrical, Electronic) National Occupational Standard (Mechanical, Electrical, Electronic) needs." They answered either I strongly agree or I agree.

High-Speed MAPDaR Projesi ile ortaya çıkan "Raylı Sistem Bakım Onarımcısı (Mekanik, Elektrik, Elektronik) Yeterliliği (Mekanik, Elektrik, Elektronik) ihtiyacı karşılayacak nitelikte hazırlanmıştır.  
84 yanıt



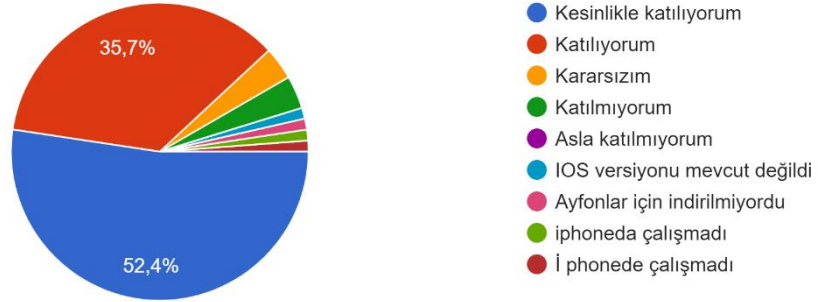
51.2%+31.2%=82.4% of the participants were prepared to meet the "Rail System Maintenance Repairer (Mechanical, Electrical, Electronic) Qualification (Mechanical, Electrical, Electronic) requirement." They answered the question as "I strongly agree" or "I agree".

High-Speed MAPDaR Projesi ile ortaya çıkan Eskişehir Demiryolu Eğitim ve Sınav Merkezinin yetkilendirilmesi ile birlikte mesleki yeterlilik belgesi sınavına başvuru kolay ve erişilebilirdi.  
84 yanıt



67.9%+25%=92.9% of the participants said, "Application for the vocational qualification certificate exam was easy and accessible with the authorization of Eskişehir Railway Training and Exam Center." They answered the question as "I totally agree" and "I agree". The following conclusion can be drawn from here. The certification system is designed to be easy and user-friendly.

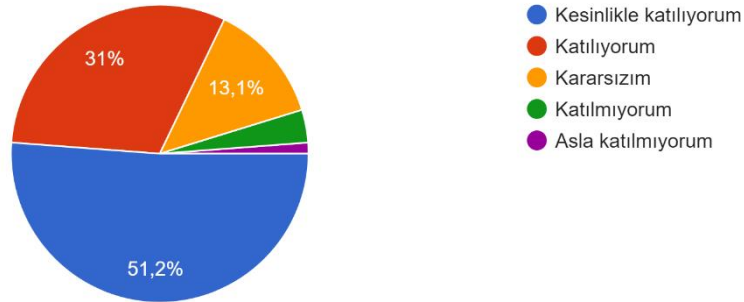
High-Speed MAPDaR Projesi ile ortaya çıkan MAPDaR Mobil uygulamasını telefonuma indirdim.  
84 yanıt



It is understood that  $52.4\%+35.7\%=88.1\%$  of the participants downloaded the MAPDaR Mobile application, which emerged with the High-Speed MAPDaR Project, on their phones. However, it is seen that the necessity of developing the android application is also emphasized.

Mobil uygulama benim çok faydalı oldu.

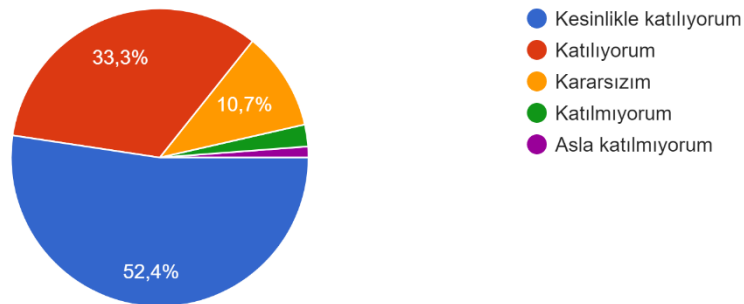
84 yanıt



$51.2\%+31\%=82.2\%$  of the participants found the mobile application useful.

Örnek sınav soru setlerinin de yer aldığı uygulamada karşıma çıkan sorular sınava hazırlanmamda yararlı oldu.

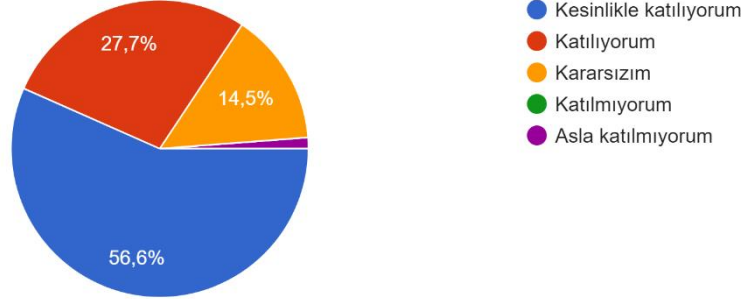
84 yanıt



52.4%+33.3%=85.7% of the participants stated that the question sets they encountered with the practice were useful in preparing for the exam.

Mobil Uygulamanın geliştirilebileceğini düşünüyorum.

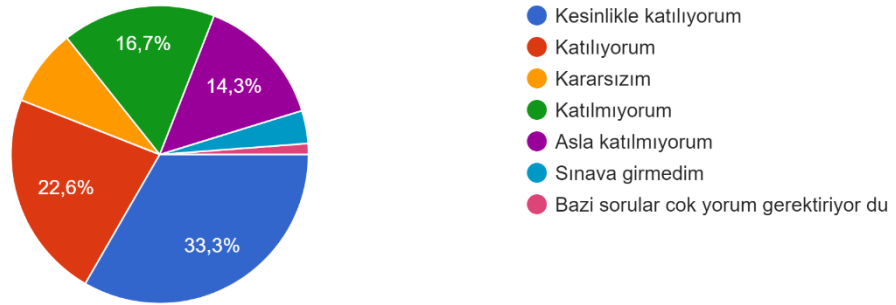
83 yanıt



56.6%+27.7%=84.3% of the participants think that the mobile application can be developed.

High-Speed MAPDaR Projesi kapsamında kurulan belgelendirme sistemi içerisinde yapılan sınavlarda yer alan soruları çözmekte zorlandım.

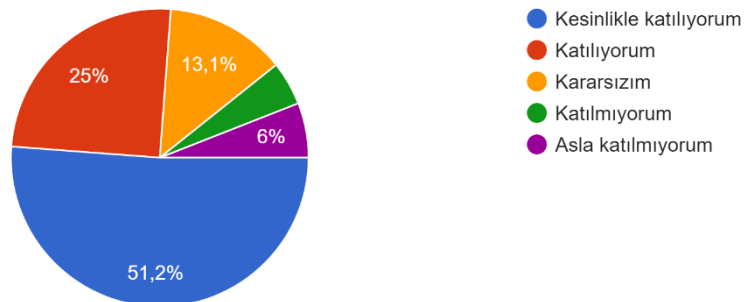
84 yanıt



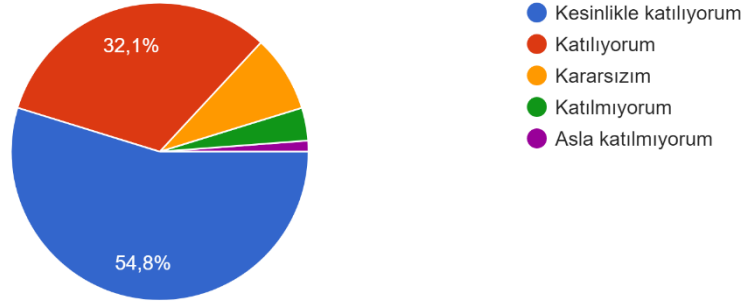
"I had difficulty in solving the questions in the exams held within the certification system established within the scope of the High-Speed MAPDaR Project." 33.3% of the participants strongly agree, 22.6% agree and 20.1% disagree. This result clearly shows that; The participants had difficulty in solving the questions.

High-Speed MAPDaR Projesi gibi projelerde görev almak isterim.

84 yanıt



High-Speed MAPDaR Projesinin etkinliğinin artırılmasının sektöre faydalı olacağını düşünüyorum.  
84 yanıt



In the data above, the participants state that they will support projects such as High-Speed MAPDaR and will be beneficial to the industry.

#### USER COMMENTS: (survey):

High-Speed MAPDaR Projesi sonuçları hakkında başkaca belirtmek istediğiniz konular varsa lütfen yazınız.

16 yanıt

- Sınav sorularının yanında, eğitim notları gerekli idi.
- belgelendirme öncesi bir eğitime grmek iyi olurdu
- Eğitim yönü de ele alınmalı
- Bal sorular zordu
- meslektaşlarım uygulamadan faydalandı, benim telefonumda çalışmadı
- Litfen eğitimi de olsun. Hersey guzel sınav falan ama eğitim almadan sinava hazırlanmak

High-Speed MAPDaR Projesi sonuçları hakkında başkaca belirtmek istediğiniz konular varsa lütfen yazınız.

16 yanıt

- Raylı Sistem Bakım Onarımcısı (Mekanik, Elektrik, Elektronik) Standart ve Yeterliliği (Mekanik, Elektrik, Elektronik) birleştirilerek tek bir standart ve yeterliliğe dönüştürülebilir. Mekanik, Elektrik, Elektronik ve yüksek hızlı tren seçmeli birimler olmalıdır.
- Örnek sorular yeterli değil, sınav zorlu ve sınav öncesi eğitim almalı
- uygulamaya çalışma notları eklenmeli

High-Speed MAPDaR Projesi sonuçları hakkında başkaca belirtmek istediğiniz konular varsa lütfen yazınız.

16 yanıt

High-Speed MAPDaR projesi sonucu "Raylı Sistem Bakım Onarımcısı" belge zorunlu meslek haline gelmesi, mesleğimin değerini artırdı. Her ne kadar mesleğimde deneyimli olsam da mesleki yeterlilik sınavı öncesi "Eğitim"e ihtiyacım vardı. Mobil uygulama ile en azından karşılaşılabileceğim sorulara dair bir öngörü oluştu. Yetmez ama evet faydalı bir uygulama, geliştirilmeli ve mesleğe dair eğitim yönü de ele alınmalı.

Ama eğitim şart

Ayfona inmedi

yetkinliğimin artması için bir eğitim almak daha iyi olabilirdi

The common point of the comments is the development of the application development to training. In addition, it emerges from the comments that the exam taken without training affects the success rates.

#### PREPARATORY MOBILE APPLICATION (MYKS) DATA:

MYKS Rail Systems Application Number of Downloads	142	
Number of Correct in Solved Questions	68181	%79
Number of Fault in Solved Questions	14522	%21
Number of Tests Solved	1058	

When we look at the data of the mobile application, as seen in the table above, the rate of questions answered correctly is 79%, and the rate of questions answered incorrectly is 21%. It can be thought that the success rate will increase with the addition of the training module to the application.

#### MYK EXAM INTEGRATED EXAM SYSTEM DATA:

##### Rail System Vehicles Electrical Maintenance and Repairer Level 4 Rev.00

##### Success Status Summary Table (Person Based)

Qualification Unit	Successful	Unsuccessful	Unsuccessful Percentage
13UY0184-4/A1 Occupational Health and Safety, Environmental Protection and Quality	46	5	%10
13UY0184-4/A2 Periodic Maintenance in Electrical Systems of Rail System Vehicles	44	19	%43
13UY0184-4/A3 Fault Detection and Repair in Electrical Systems of Rail System Vehicles	45	18	%40

According to VQA exams integrated exam system data, as seen in the table above, there are failures from the Periodic Maintenance in Electrical Systems of Rail System Vehicles at a rate of 43% and from the Fault Detection and Repair in Electrical Systems of Rail System Vehicles at a rate of 40%.

##### Mean Scores Summary Table

Qualification Unit	Successful	Unsuccessful
13UY0184-4/A1 Occupational Health and Safety, Environmental Protection and Quality	88,43	58,00
13UY0184-4/A2 Periodic Maintenance in Electrical Systems of Rail System Vehicles	89,23	57,70

13UY0184-4/A3 Fault Detection and Repair in Electrical Systems of Rail System Vehicles	89,53	57,86
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The average failure score is also very low, as seen in the table above.

#### **Rail System Vehicles Electronic Maintenance and Repairer Level 4 Rev.00**

##### **Success Status Summary Table (Person Based)**

<b>Qualification Unit</b>	<b>Successful</b>	<b>Unsuccessful</b>	<b>Unsuccessful Percentage</b>
13UY0184-4/A1 Occupational Health and Safety, Environmental Protection and Quality	12	0	%0
13UY0184-4/A2 Periodic Maintenance in Electronic Systems of Rail System Vehicles	12	4	%33
13UY0184-4/A3 Fault Detection and Repair in Electronic Systems of Rail System Vehicles	11	4	%36

According to VQA exams integrated exam system data, as seen in the table above, there is a failure rate of 33% from the Periodic Maintenance in Electronic Systems of Rail System Vehicles and 36% from the Failure Detection and Repair in Electronic Systems of Rail System Vehicles.

##### **Mean Scores Summary Table**

<b>Qualification Unit</b>	<b>Successful</b>	<b>Unsuccessful</b>
13UY0184-4/A1 Occupational Health and Safety, Environmental Protection and Quality	89,58	0
13UY0184-4/A2 Periodic Maintenance in Electronic Systems of Rail System Vehicles	85,23	61,75
13UY0184-4/A3 Fault Detection and Repair in Electronic Systems of Rail System Vehicles	86,07	73,25

As can be seen in the table above, the failure score averages are very close to the success scores on the basis of the national qualification of Rail System Vehicles Electronic Maintenance and Repairer.

#### **Rail System Vehicles Mechanic Maintenance and Repairer Level 4 Rev.00**

##### **Success Status Summary Table (Person Based)**

<b>Qualification Unit</b>	<b>Successful</b>	<b>Unsuccessful</b>	<b>Unsuccessful Percentage</b>
13UY0184-4/A1 Occupational Health and Safety, Environmental Protection and Quality	109	13	%11
13UY0186-4/B1 Mechanical Preventive (Periodic) Maintenance in Rail System Vehicles	99	24	%24
13UY0186-4/B2 Detection and Repair of Mechanical Failures in Rail System Vehicles	99	29	%29
13UY0186-4/B3 Diesel Engine Periodic Maintenance in Rail System Vehicles	23	2	%09
13UY0186-4/B4 Detection and Repair of Diesel Engine Faults in Rail System Vehicles	22	1	%05
13UY0186-4/B5 Periodic Maintenance of Hydraulic Systems in Rail System Vehicles	12	0	0

13UY0186-4/B6 Detection and Repair of Hydraulic Systems Faults in Rail System Vehicles	12	1	%08
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According to VQA exams integrated exam system data, as seen in the table above, the failure rate is between 0% and 29%.

Of the 99 candidates who applied for the Mechanical Preventive (Periodic) Maintenance Qualification Unit Exam for Rail System Vehicles, 24 failed.

Out of 99 candidates who applied for the Detection of Mechanical Failures in Rail System Vehicles and Repair qualification unit exam, 29 failed.

### Mean Scores Summary Table

Qualification Unit	Successful	Unsuccessful
13UY0184-4/A1 Occupational Health and Safety, Environmental Protection and Quality	89,37	58,08
13UY0186-4/B1 Mechanical Preventive (Periodic) Maintenance in Rail System Vehicles	90,13	53,75
13UY0186-4/B2 Detection and Repair of Mechanical Failures in Rail System Vehicles	90,04	56,31
13UY0186-4/B3 Diesel Engine Periodic Maintenance in Rail System Vehicles	93,12	41,50
13UY0186-4/B4 Detection and Repair of Diesel Engine Faults in Rail System Vehicles	92,87	30,25
13UY0186-4/B5 Periodic Maintenance of Hydraulic Systems in Rail System Vehicles	90,42	0
13UY0186-4/B6 Detection and Repair of Hydraulic Systems Faults in Rail System Vehicles	92,85	78,00

The average failure score is also very low, as seen in the table above.

### CONCLUSION:

**If we consider the above data in this analysis, in which the impact of the High Speed MAPDAR project and the needs of the High Speed TrainING project we applied for will be determined;**

- ✓ 84 participants participated in the survey.
- ✓ There are 142 participants who use the mobile application and take the VQA exam by preparing with this application.
- ✓ There are 109 participants who took the Rail System Vehicles Mechanical Maintenance and Repairer Level 4 Rev.00 National Competency exam.
- ✓ Rail System Vehicles Electronic Maintenance and Repairer Level 4 Rev.00 There are 12 participants who took the National Competency exam.
- ✓ Rail System Vehicles Electrical Maintenance and Repairer Level 4 Rev.00 There are 46 participants who took the National Competency exam.

The following conclusions have been reached.

- 1-  $53.6\% + 35.7\% = 89.3\%$  of the participants participating in the survey think that the outputs produced by the High-Speed MAPDaR Project are useful. This shows that the impact of our project is strong.

- 2-  $53.6\%+33.3\%=86.9\%$  of the participants stated that “Rail System Maintenance Repairer (Mechanical, Electrical, Electronic) National Occupational Standard (Mechanical, Electrical, Electronic) was prepared in a way that would meet the need,  $51.2\%+31.2\%=82.4\%$  think that “Rail System Maintenance Repairer (Mechanical, Electrical, Electronic) Competence (Mechanical, Electrical, Electronic) has been prepared to meet the need.  
This shows that the outputs produced by our project are successful.
- 3-  $67.9\%+25\%=92.9\%$  of the participants think that it is easy and accessible to apply for the vocational qualification certificate exam with the authorization of Eskişehir Railway Training and Exam Center.
- 4- Participants found the mobile application successful and emphasized that it should be developed.
- 5- Participants state that the question sets are difficult to solve, but these question sets are useful in preparing for the VQA exam. The fact that the rate of correctly answered questions is 79% and the rate of wrongly answered questions is 21% confirms the survey.
- 6- Participants emphasized that the training module for the mobile application should be developed.

**These inferences clearly show that the impact of the High-Speed MAPDaR project is strong and that the outputs to be produced by our High-Speed TrainING project, and especially the training module, are needed.**

**Apart from the applied survey;**

**In EU in 2020;**

- Strengthening the links between education, business world, research and innovation sectors in the field of innovation,
- Increasing the employment opportunities of young people with the “youth on the move” initiative in the field of education, vocational education and lifelong learning,
- Increasing productivity by providing new skills that will make it easier for them to adapt to global transformations in order to increase employment opportunities within the Union with the “new skills and jobs agenda” initiative in the field of employment and skills,

Are highlighted.

**When looking at the strategic goals of the sector;**

The phrases;

- In the Eleventh Development Plan covering the Presidency 2019-2023, “Maintenance and repair activities on railway infrastructure and railway vehicles will be improved, and a management system based on the concept of preventive maintenance will be established”
- In the 2019-2023 Strategic Plan of the Ministry of Transport and Infrastructure;  
“To expand the rail network and urban rail systems to a high standard, safe and to meet the needs of the country.” and "Increasing the competence of staff."
- In the TCDD Strategic Plan for the 2019-2023 period;  
“In order to increase the qualifications of the employees; To ensure that employees working in safety critical titles are certified by applying vocational and technical training programs. ” and “Quality Management System will be established in our Organization and the certification process will be initiated during the plan period.”
- In the TCDD Strategic Plan for the 2019-2023 period;  
“To improve the identity / qualification of the company as a technical maintenance services provider by turning the railway vehicles maintenance unit into an important technical maintenance base in its region.” and “To undertake the railway train management, vehicle maintenance, training, consultancy and similar works being done or to be done in Turkey or abroad as a first or second contractor, alone or in partnership.”

**Phrases are available. These plans clearly reveal the needs of our project and strengthen our needs analysis.**