Transforming Road Safety in Saudi Arabia: Application of iRAP Methodology for Vision 2030

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Abstract

Saudi Arabia is leading a national transformation in road safety through the adoption of the International Road Assessment Programme (iRAP) under Vision 2030, which targets a reduction in traffic fatalities to fewer than 8 per 100,000 people. iRAP offers a standardized, evidence-based methodology to assess infrastructure risk and guide cost-effective safety improvements using tools such as Star Ratings and Safer Roads Investment Plans (SRIPs).

At the heart of this effort is the Kingdom of Saudi Arabia Road Assessment Programme (KSARAP), the largest iRAP initiative globally. The program is led by Euro Group for Engineering Consultancy, a certified iRAP supplier with extensive experience managing large-scale road safety projects across the Gulf region. Euro Group's role includes conducting assessments, training local engineers, and developing digital safety platforms. Their expertise has positioned them as a trusted regional partner capable of delivering complex iRAP initiatives and supporting the Kingdom's long-term vision for safer roads.

1. Introduction

The Kingdom of Saudi Arabia has set a bold and visionary target under its national transformation strategy, Vision 2030: to reduce road traffic fatalities to fewer than 8 deaths per 100,000 people . As part of this strategic commitment to safeguarding lives, the International Road Assessment Programme (iRAP) has been adopted as a cornerstone methodology to elevate the safety performance of the Kingdom's road infrastructure Figure 1. iRAP, a globally recognized initiative active in over 160 countries and supported by institutions such as the World Bank and the United Nations, offers governments a standardized, data-driven framework for identifying road safety risks and prioritizing interventions with the highest impact Figure 2. Its integration into Saudi Arabia's national transport policies represents a transformative shift toward evidence-based planning and proactive safety governance, helping to pave the way toward a vision of zero fatalities.

Figure 1 Saudi Arabia's National Road Sector Strategy

Figure 2 IRAP Organization

Saudi Arabia's strong foundation—rooted in its diverse geography, rich cultural heritage, dynamic society, and robust economic resources—positions it uniquely among the world's leading nations. The Kingdom's influential standing in the Arab and Islamic worlds underscores its strategic role as a unifying force in regional and global affairs. Moreover, its geographic location at the crossroads of Asia, Africa, and Europe enables it to function as a pivotal hub for global trade, logistics, and cultural exchange.

Recognizing the importance of building on these national strengths, the Kingdom launched the National Transformation Program (NTP) to address the most pressing challenges facing public sector institutions responsible for economic growth and sustainable development. NTP sets out clear strategic objectives to accelerate the realization of Vision 2030, focusing on fostering innovation, enhancing

infrastructure, and embedding good governance practices. Within this framework, the prioritization of road safety—through partnerships, training, and advanced assessment tools like iRAP—embodies Saudi Arabia's long-term commitment to protecting lives while enabling inclusive and resilient mobility for all.

2. Importance and Impact of iRAP Projects

Each year, road crashes lead to over 1.3 million deaths globally, disproportionately impacting low- and middle-income countries. iRAP plays a pivotal role in changing how infrastructure is evaluated and improved by introducing Star Rating systems and Safer Roads Investment Plans (SRIPs). These tools are proven to save lives by identifying design shortcomings and recommending engineering treatments tailored to risk profiles.

In Saudi Arabia, the iRAP model underpins the National Transport and Logistics Strategy, contributing to safer mobility systems through the integration of high-standard design principles. With the world's largest road safety project by length — KSARAP — the Kingdom has surveyed over 73,000 km of roads and established a dedicated national account with iRAP.

3. Project Goals and Methodology

The main objectives of iRAP projects include:

- Identifying high-risk road segments through crash data and georeferenced road surveys.
- Rating road segments using the iRAP Star Rating system.
- Developing Safer Roads Investment Plans to prioritize interventions with the highest cost-benefit in reducing fatalities.

These steps are executed using standardized manuals and processed in the ViDA platform.

4. Euro Group's Strategic Role and Accreditation

Euro Group for Engineering Consultancy has led road safety improvement in Saudi Arabia. As a certified iRAP partner, it has executed safety assessments and infrastructure audits across the Kingdom. Its exclusive iRAP partnership allows it to conduct training, essential for national workforce development and long-term sustainability.

5. The KSARAP Milestone

In collaboration with the Ministry of Transport and iRAP, Euro Group helped establish KSARAP — the first national iRAP account in the Arab world. This project received international recognition and has provided the Kingdom with actionable safety intelligence and prioritized investments aligned with Vision 2030.

https://www.youtube.com/watch?v=fqD68Hw-_h4

6. Integration with Vision 2030 and Local Training

KSA's futuristic zero-fatality mobility vision is supported through KSARAP — identifying high-risk areas, crash risk maps, and local training. Euro Group delivers certified, in-person iRAP and RSA training, ensuring alignment with needs and building local engineering expertise.

https://irap.org/2023/11/engineers-trained-for-80000km-saudi-assessment/

7. Regional Success Stories and Recognition

1- Through its partnership with the International Road Assessment Programme (iRAP), Euro Group for Engineering Consultancy has led a series of transformative road safety interventions across Saudi Arabia and the Gulf region. These efforts demonstrate not only the effectiveness of the iRAP methodology, but also the Kingdom's and Euro Group's joint leadership in setting a new benchmark for road safety performance across the GCC.

One of the flagship initiatives, the Kingdom of Saudi Arabia Road Assessment Programme (KSARAP), represents the largest road assessment program globally covering approximately 73,000 km of roads. Through KSARAP, Euro Group and iRAP trained over 120 Saudi engineers in 2023 to undertake detailed risk assessments, Star Rating analyses, and Safer Roads Investment Plans using Vida. These local professionals were equipped to support the national effort to ensure 90% of highways achieve a minimum 3-star safety rating by 2030.

2- King Fahd Causeway iRAP Star Rating Achievement

As part of its commitment to advancing regional road safety, Euro Group contributed to the successful iRAP assessment of the King Fahd Causeway, one of the world's longest water-crossing bridges linking Saudi Arabia and Bahrain. In 2024, the 50 km, four-lane corridor achieved an official 4-star iRAP Star Rating Certification for vehicle occupant safety—a testament to its high engineering and safety standards. The Causeway, which serves nearly 180,000 passengers and over 63,000 vehicles in a single day, is now internationally recognized for its safety performance.

https://irap.org/2024/07/king-fahd-causeway-achieves-4-star-safety-certification/

3- In 2025, the Eastern Province Municipality became the first urban center in Saudi Arabia to receive official iRAP certification, after achieving 3-star ratings or better on over 85% of 700 km of assessed urban roads in Dammam. Euro Group conducted the technical assessments and provided training and analysis in alignment with the KSARAP framework.

https://www.youtube.com/watch?v=UFfWyx99GKk

4- The Roads General Authority (RGA) has also earned global recognition, winning the prestigious iRAP Gary Liddle Memorial Trophy in 2025 for its proactive leadership and commitment to reducing road risk. With Euro Group's technical support, the RGA's national program is projected to prevent approximately 80 deaths and serious injuries annually through targeted road upgrades, based on iRAP's evidence-based tools.

5- These milestones reinforce Saudi Arabia's Vision 2030 commitment and demonstrate how iRAP's proven methodologies—when paired with local engineering capacity and high-level government commitment—can catalyze significant reductions in road trauma across diverse networks.

https://irap.org/2025/02/saudi-arabias-roads-general-authority-recognised-as-a-shining-star-in-coveted-international-gary-liddle-memorial-award-program/

In addition to the national and urban road safety assessments, a comprehensive safety dashboard has been developed to visualize and monitor all safety-related elements on the Ministry of Transport's Road network. This digital platform provides real-time access to Star Rating classifications, particularly highlighting 1-star and 2-star segments that require urgent intervention. The dashboard includes an

exhaustive inventory of safety features such as roadside barriers, curbs, utility poles, hazardous trees, and other critical infrastructure elements.

The dashboard has been deployed via a mobile-enabled application, enabling decision-makers to track and evaluate road safety conditions directly from their mobile devices. This innovation eliminates the need for outdated paper-based documentation and greatly accelerates the decision-making process for safety upgrades and maintenance prioritization. The interactive platform ensures that high-risk segments are not only identified but are actively managed within a modern, digital governance framework Figure 3.

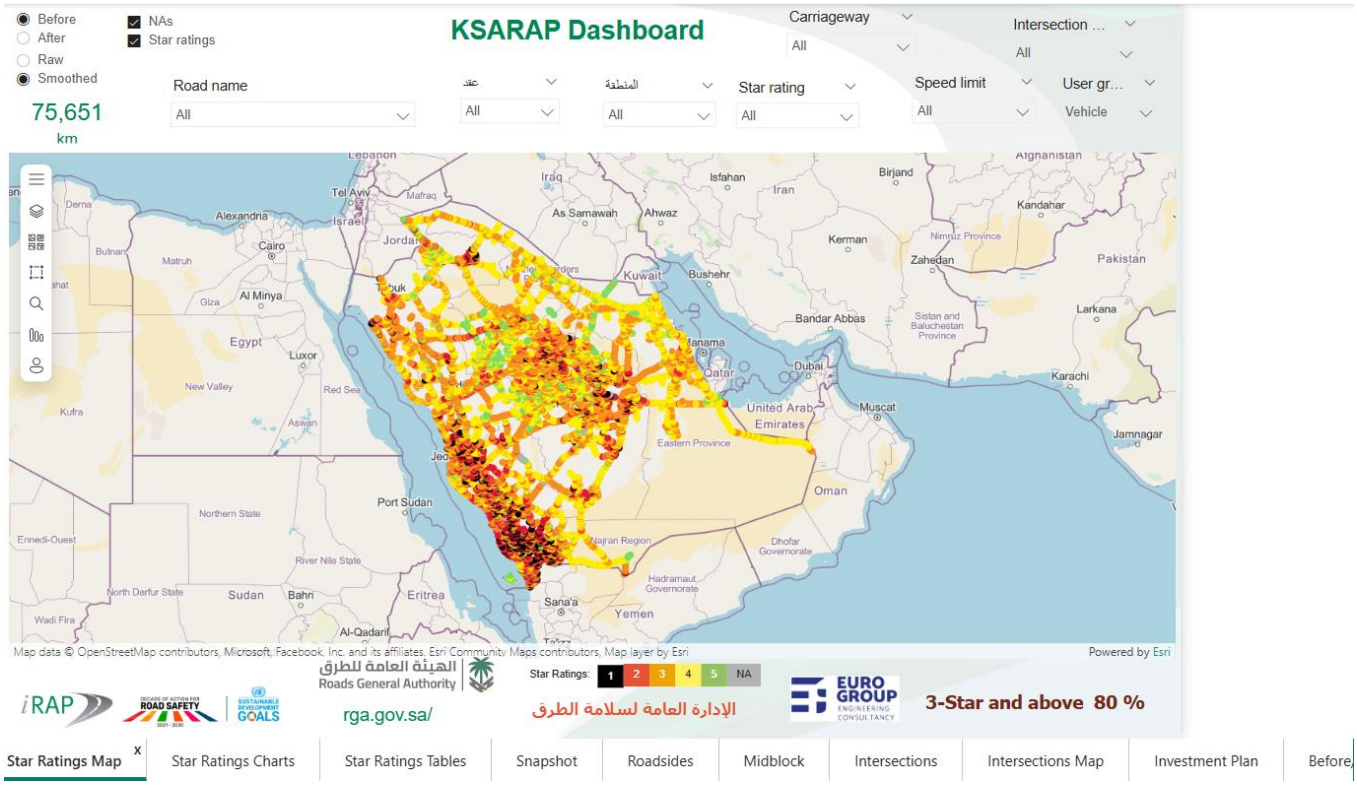

Figure 3 KSARAP Dashboard

Conclusion

The integration of iRAP in Saudi Arabia, led by Euro Group's expert capabilities, marks a paradigm shift in road safety. KSARAP sets a regional benchmark and national training ensures sustainability. Together, these efforts contribute directly to Vision 2030 by advancing road safety through data-driven, proactive governance

Dr. Mohamed Hoseny is a certified Road Safety Team Leader and Traffic Safety Engineer

with over 18 years of specialized experience in road safety auditing, crash analysis, and traffic impact assessment. He holds a Ph.D. in Traffic and Transportation Engineering and is an accredited iRAP supplier, with expertise spanning road surveys, data analysis, and safety reporting.

Dr. Hoseny currently leads several high-impact road safety initiatives in Saudi Arabia under the Kingdom of Saudi Arabia Road Assessment Programme (KSARAP). He has served as Project Manager for strategic projects including the Dammam Metropolitan iRAP Assessment and the King Fahd Causeway Road assessment, both of which are considered milestones in the region's road safety transformation.