

Memorandum 2

To: Dr. Naqaa Abbas

From: Group 2 (Yousif Ahmed, Kholoud Darwish, Al-Anoud Al-Kubaisi, Faisal Bustami)

Date: 03/10/2025

Subject: Potential Engineering Problems for Project 1

Introduction

The purpose of this memo is to present three possible engineering problems for Project 1. Each problem links to Qatar National Vision 2030 (QNV 2030), which talks about protecting the environment, improving daily life, and using resources in smart ways (General Secretariat for Development Planning, 2008). The three problems are scarcity of EV charging stations, air pollution, and underuse of World Cup stadiums. These problems have an impact on Qatar now and relate to its long-term objectives. To assist us in deciding which problem to pursue further, a decision matrix has been submitted separately and is also attached here for reference. ([Table 1](#))

Option A: Scarcity of EV Charging Stations in Qatar

There are still very few charging stations for electric cars in Qatar. In January 2025, only about 200 stations were available, with plans to reach 600 later in the year (The Peninsula, 2025). Many areas do not have stations nearby, so people may not feel comfortable buying electric cars. This slows down the move away from fuel cars and makes it harder to reduce emissions. QNV 2030 stresses the need to protect the environment and lower pollution (General Secretariat for Development Planning, 2008). Without more stations, Qatar will face problems in meeting these clean transport goals. This makes it an engineering issue of infrastructure and design.

Option B: Air Pollution

Air pollution is a serious concern in Qatar, and it emanates from vehicular traffic, industry, and construction. In 2023, Qatar amounted to approximately 154.4 million tons of greenhouse gases (World Population Review, 2025). PM2.5 levels in Doha are more than six

times higher than recommended by WHO (IQAir, 2023). According to the World Bank (2022), air pollution in the region manifests to a hazard to health and an obstacle in progress. In Qatar, this spells more respiratory health problems, poor visibility, and reduced standards of urban living. Stay high on the QNV 2030 eye is a safeguard of the balance between development and environment (General Secretariat for Development Planning, 2008). This makes air pollution one of the must-list problems of today. It is an engineering problem of transport, energy, and industry.

Option C: Underuse of World Cup Stadiums

After the 2022 FIFA World Cup, many stadiums in Qatar are lying unused. Research shows they barely face underuse over the long term, which entails high costs and wasted resources (Stockhusen et al., 2024). As the demand for such large venues diminishes after the event, the edifices are not serving the very purpose. There are also issues linked to QNV 2030, which emphasizes the wise use of resources and plans for sustainable growth (General Secretariat for Development Planning, 2008). Unless the stadiums are maintained with some use, they will be a burden rather than an asset to the community. This is the engineering issue of sustainable building use.

Conclusion

The three problems are important problems for Qatar today and are tightly linked to the goals of the QNV 2030 (General Secretariat for Development Planning, 2008). In fact, if these problems are left unattended, they can pose hindrances toward sustainability and thus hamper Qatar's efforts to meet its national objectives. For example, without increased installation of EV chargers, owners would hesitate to have clean transport; lastly, without cleaner air, public health remains at risk; and without better planning, poorly planned large stadiums can continue to go underused and drain resources. These concerns are what make engineering solutions and proper planning necessary for the coming age. Our team will use the decision matrix to determine which among the three problems would provide the best return for effort opportunity for Project 1.

Decision Matrix:

Table 1. Decision Matrix evaluating potential engineering problems

| Problem | Relevance to QNV 2030 | Engineering Focus | Feasibility | Impact | Total Score |
|---------------------------------------|-----------------------|-------------------|-------------|------------|-------------|
| EV Charging Station Scarcity | High (5) | High (5) | High (4) | High (5) | 19 |
| Air Pollution | High (5) | Medium (3) | Medium (3) | High (5) | 16 |
| Underuse of World Cup Stadiums | Medium (3) | Medium (3) | Low (2) | Medium (3) | 11 |

As shown in Table 1, our decision matrix scores each problem based on relevance to QNV 2030, engineering focus, feasibility, and impact. The results show that EV charging station scarcity received the highest score (19), followed by air pollution (16), and underuse of World Cup stadiums (11). This suggests that the EV charging station issue is the strongest candidate for Project 1. While the final choice will be confirmed as we move forward, the decision matrix gives clear evidence that expanding EV infrastructure best matches QNV 2030 goals and offers the most practical engineering challenge for our team.

References:

General Secretariat for Development Planning. (2008). *Qatar National Vision 2030*. Doha, Qatar. https://www.npc.qa/en/QNV/Documents/QNV2030_English_v2.pdf

IQAIR. (2023). *Air quality in Doha, Qatar*. IQAIR. <https://www.iqair.com/qatar/baladiyat-ad-dawhah/doha>

Stockhusen, K., & colleagues. (2024). *The engineering legacy of the FIFA World Cup Qatar: Challenges of stadium underuse*.

<https://qspace.qu.edu.qa/bitstream/handle/10576/57434/stockhusen-et-al-2024-the-engineering-legacy-of-the-fifa-world-cup-qatar-2022tm-al-bayt-stadium.pdf?sequence=1&isAllowed=y>

The Peninsula. (2025, January 14). *Qatar expands EV charging infrastructure with 200 stations*. The Peninsula Qatar. <https://thepeninsulaqatar.com/article/21/09/2025/qatar-expands-ev-charging-infrastructure-with-200-stations-app>

World Bank. (2022). *Air pollution in MENA: Challenges*. World Bank Group. <https://openknowledge.worldbank.org/server/api/core/bitstreams/9125cb69-90b8-53b0-b645-800b33e9d1ee/content>

World Population Review. (2025). *Pollution by country in 2025*. <https://worldpopulationreview.com/country-rankings/pollution-by-country>