



## Improvement in Environmental Management Performance in Ashghal Projects

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### Abstract

The Public Works Authority (Ashghal) of Qatar is responsible for countrywide infrastructure and public building projects starting from their planning stages and through design, procurement, construction, operation, and maintenance stages. This includes highways, local roads, surface water drainage networks, foul sewers, treated sewage effluent systems, schools and hospitals. Considering the large number of projects with construction activities ongoing at the same time, it is a challenge to develop a unique and standardized tool for monitoring of environmental management performance of each project, each department or Ashghal wide. Being a supportive department to all other Ashghal departments, with a main role of ensuring the conformity of projects to environmental regulations and standards, Quality and Safety Department (QSD) of Ashghal has started several initiatives to improve environmental management performance of projects. This paper provides a brief information about some of those initiatives, such as a portal for monthly reporting of environmental management performance (EPMS), a unique annual award which was developed to increase awareness for sustainable practices in construction and assist in guiding minimization and/or reduction of adverse environmental impacts caused by construction projects (Ashghal Green Award); and a list of Ashghal approved third-party environmental service providers which will be used as a vendor list in all Ashghal projects. In addition, Ashghal QSD chemical and microbiological laboratories as well as mobile noise and air quality monitoring trucks serve to support projects departments to improve environmental impacts resulted from construction activities on the environmental sensitive receptors located within or nearby the project.

**Keywords:** Ashghal (Public Works Authority of Qatar); Environmental Management Performance; Monthly reports; Green award; Third Party Environmental Management Services

### 1 Introduction

In 2004, the Public Works Authority Ashghal in Qatar was given the responsibility of planning, design, procurement, construction, delivery, and asset management of all infrastructure projects and public buildings in the country. This scope includes roads, parks, cycling lanes, infrastructure such as storm water collection and groundwater lowering systems, foul sewer network, treated sewage

effluent (TSE) network as well as buildings such as public buildings, schools, and health centres. In this regard, Ashghal's Expressway Programme has developed and currently constructing some of the largest expressways in Qatar. Similarly, Ashghal's Local Areas Infrastructure Programme has a scope of delivering many roads and integrated infrastructure projects in local areas. Ashghal developed its corporate strategies in parallel with the Qatar National Vision 2030 with a vision of excellence in delivery and efficient sustainable infrastructure management. In this regard,

Ashghal is not only designs, constructs, delivers all its projects, but it is also responsible for operating and maintaining of roads and drainage networks including wastewater treatment plants, pump stations and outfalls. Effective execution of its operations and customer satisfaction are vital to Ashghal's mission.

Quality and Safety Department (QSD) of Ashghal has been developed to ensure the conformity of the projects to the specifications and technical standards as well as to develop an integrated system for environmental management and coordination between its departments.

## **2 Current Status and Initiatives**

Ashghal is comprised of the following departments that manage several construction projects:

- *Highway Projects Department:* This department is responsible for the implementation of Expressways Programme, which is planned to complete the construction of approximately 800 km of roads with more than 40 contracts. Scope of the contract includes not only construction and development of an infrastructure network with underground utilities, but also surface water networks and intelligent transportation systems. The programme also includes beautification schemes to deliver cycling paths, and assets for pedestrians (i.e., pedestrian tunnels and bridges).
- *Road Projects Department:* This department is responsible for the implementation of Local Roads and Drainage Programme, which includes development of specifically local roads and overall infrastructure, i.e., surface water networks, foul systems, treated sewage effluent networks of Qatar. This programme aims to raise the standard of living for all citizens and residents.
- *Drainage Networks Projects Department:* This department aims to develop and upgrade the drainage system in various areas of Qatar as well as to construct an infrastructure network in newly developed areas.
- *Buildings Projects Department:* This department of Ashghal manages and constructs public buildings for multiple sectors in Qatar and hands over those to the end-users. The building projects include educational projects, health centres, mosques, and endowments, etc.
- *The Supervisory Committee for Beautification of Roads and Public Places in Qatar:* Ashghal aims to provide a sustainable environment for the community through its Beautification Committee projects. These projects include beautification schemes all around Qatar such as public parks and beaches, street furniture, decorative lighting as well as pedestrian crossings and cycling paths.

Following the execution of above-stated programmes and projects, Ashghal completed more than 1,800 km of roads, 207 bridges and 143 tunnels in the past years. Similarly, construction of approximately 2,130 km of pedestrian and cycling paths, 16 pedestrian bridges and five pedestrian tunnels started serving the community. In order to promote environment, more than 900,000 trees were planted, and 11 parks and green places were developed.

Briefly, there are several projects managed by different departments simultaneously, which has different contractors and construction supervision consultants. In order to achieve the best practice environmental management applications and to improve environmental management performances,

the following initiatives have been developed by QSD:

- Environmental Management Performance Monitoring System (EPMS);
- Third Party Environmental Consultancy Services;
- Ashghal Green Award Programme; and
- Laboratories.

### **2.1 Environmental Management Performance Monitoring System (EPMS)**

EPMS is a monthly questionnaire related to environmental management which includes the information (categories) to be provided about staffing, permitting, monitoring, reporting, non-conformances, waste management, recycling of construction waste, carbon footprint related to energy consumption, etc. specific to each project. Each category has its own specific question to be responded with necessary evidence. EPMS is being submitted monthly for review and approval. EPMS is available and accessible by Ashghal President, Department Managers, Project Engineers and Consultant Environment Team. As EPMS is linked to a scoring system, it allows projects to focus on the areas for improvement where the scores are low. Enhancing the performance helps in raising awareness in environment compliance, commitment to apply the best environmental practices as well as implementation of environmental control plans and mitigation measures.

### **2.2 Third Party Environmental Consultancy Services**

Selecting the right company/service provider for a project reduces the risks associated environmental permitting and management, which will result in improved performance as well as better acceptance by the communities experiencing the project.

QSD of Ashghal started to establish a list of companies/service providers to work in environmental management and sustainability in Qatar (specifically in Ashghal projects). The eligible competent companies/service providers would be able to provide services in any Ashghal projects.

The approved list of company/service providers required for Ashghal projects will be published periodically and will be reached through Ashghal internet page. Any services related to environmental management and sustainability required for Ashghal projects will be limited with the service providers included in this list.

Purpose of this initiative is to set a level for third party qualifications, to achieve consistency in the level of service and to expediate the submissions for timely delivery of projects.

### **2.3 Ashghal Green Award Programme**

Ashghal has developed the Ashghal Green Award Programme to promote and assess environment and sustainability management in design and construction, as well as recognize best practices and outstanding performances on an annual basis. The Green Award is a unique initiative created to increase awareness for sustainable practices in construction and assist in guiding Qatar's engineering industry to eliminate and/or reduce adverse impacts caused by construction projects. Accordingly, the Green Award is developed to directly achieve Ashghal's Strategic Objectives, Qatar's National Development Strategy 2018-2022 & 2023-2030 and accelerate the realisation of Qatar's National Vision 2030 (QNV 2030).

Core principles of the Green Award that promote the sustainable development of Qatar are Continual Improvement as well as Environmental, Economic, Social and Human Development. The purpose of the Green Award is multifaceted and encourages various sustainability objectives detailed at national, institutional, and programmatic levels.

The effort to achieve the above-mentioned objectives will be used as a mechanism to identify and tackle the various challenges encountered with all PWA's projects and achieve sustainability goals that will continually improve the industry model.

The Green Award was initiated in 2018 with applicant under Road Project Department only. In 2019 and 2020, the applicants were extended to wider Ashghal departments and finally Green Award 2022 was made open to all projects managed by Ashghal (i.e., projects in design, construction as well as operation and maintenance). The criteria of assessment included the following:

- Environmental benefit (including carbon footprint);
- Socio-economic benefit;
- Cost saving;
- Support of top management;
- Innovation;
- Possible adoption by others; and
- Submission presentation.

## **2.4 Laboratories**

QSD has chemistry and microbiology laboratory units where water and soil tests are conducted as well as mobile air quality and noise monitoring stations. QSD uses these facilities to support engineers and projects where required. Dewatering discharge samples are being tested in chemistry and microbiology laboratory units where public complaints related to air quality and noise emissions will be assessed further with air quality and noise monitoring stations.

## **3 Benefits, Business Impact and Future Applications**

Regarding EPMS application, centralization and standardization of environmental data and developing a database is a critical step in Ashghal since more than 150 projects are currently under construction with various scopes. Receiving environmental data in a standardized system is a critical step to develop a baseline and plan for improvements with a high number of infrastructure projects on going simultaneously. Since the establishment of EPMS in May 2022, high commitment from Ashghal's projects was evident, i.e., more than 90% of the projects were involved within three months after launching. In addition, EPMS has become one of the conditions of Construction Environment Management Plan (CEMP) approvals, i.e., acceptance of a CEMP is mandatory for all Ashghal projects before the commencement of construction activities.

EPMS will change the business culture from working as part of an insular team/department to working as one team/organization. EPMS will help project teams not only monitor their projects' environmental management performance, but also review existing resources in advance and share resources, where available. It will improve project planning in general, but it will be a great support specifically during mobilization. Database will also be used for future analysis and improvement in environmental management as well as for corporate reporting related to environmental management and sustainability.

A future improvement plan is to link the EPMS database to Ashghal's Geographic Information System (GIS). This plan will assess overcoming the challenge that Qatar is limited with its resources (e.g., site offices, water discharge locations, material storage areas, etc.). Another challenge that the GIS will simplify is the high number of infrastructure projects (i.e. more than 150) on going simultaneously. Linking EPMS to the GIS database will help to oversee existing facilities in the vicinity of projects, which

will enhance sharing of information among all Ashghal departments about the current and previous site facilities. In this regard, project departments will be able to consider utilizing the existing facilities for their projects, which will save time and resources, as well as reduce transportation costs and carbon emissions associated with transportation and construction activities.

QSD has not yet developed a list for third party service providers in environmental management and sustainability. However, the process started and it is currently on going. It was planned to have an initial list in the first half of 2023.

Ashghal Green Award was initiated in 2018, with 13 participants only from Ashghal's Road Projects Department project contractors, but it has been evolving since. In 2022, the competitiveness was enhanced, and the award was open to all Ashghal projects, which are in design and construction phases. Green Award 2022 categorized the competition entry, unlike the previous, i.e., Green Design, Green Project, Excellence in Waste Management, Excellence in Construction Materials, and Excellence in Energy Efficiency (Carbon Footprint Reduction).

Green Award Programme creates a friendly environment where a professional competition takes place. Others are promoting the best practices for adoption and lessons learnt are being shared for improvement and for a better environmental management performance. Contactors are also positive with this initiative since it is a platform for the winners to present themselves in front of the community and regional construction market.

QSD's chemistry and microbiology laboratory units as well as air quality and noise monitoring stations are being used to support Ashghal projects when required. However, QSD's plan for Year 2023 is to develop a monitoring plan to include random testing dewatering discharges and conducting air quality and noise monitoring campaigns based on the public complaints and/or departments requirements. The outcome of these studies together with QSD's recommendations for a better environmental management performance are planned to be shared with the project engineers for continuous improvement.

#### **4 Conclusion**

Ashghal has its own environmental objectives which are effectively included and implemented in its corporate strategies, i.e., to ensure on-time delivery without compromising on the quality of deliverables and improve the on-time delivery performance across the complete asset lifecycle; and to enhance sustainability, recycling, and its supply chain's resilience and environmental credentials through increased use of recycled materials. In doing so, the environmental aspect of the business is prioritized and monitored.

Improvement in environmental management performance is an on-going process and Ashghal wants to show all its support to the stakeholders through implementing several initiatives, which are developed from lessons learnt throughout years and feedback, received from project partners (engineers, consultants, contractors, and stakeholders).

#### **References**

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