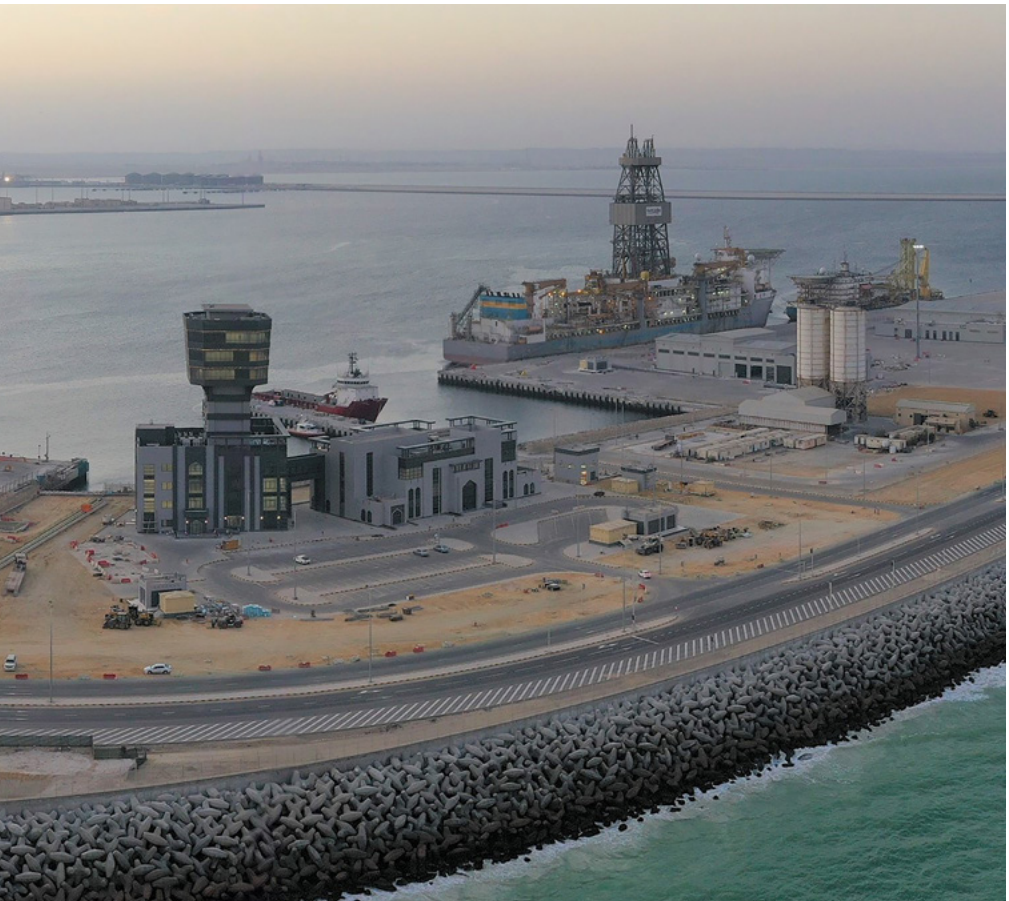
ASIAN INFRASTRUCTURE INVESTMENT BANK

PROJECT LEARNING REVIEW REPORT

# DUQM PORT COMMERCIAL TERMINAL AND OPERATIONAL ZONE DEVELOPMENT PROJECT

MARCH 2025



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# Duqm Port Commercial Terminal and Operational Zone Development Project

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# ABBREVIATIONS

| | |
|---|---|
| **AIIB** | Asian Infrastructure Investment Bank |
| **CEIU** | Complaints-resolution, Evaluation and Integrity Unit |
| **COVID-19** | Coronavirus disease |
| **EIA** | Environmental Impact Assessment |
| **EIRR** | Economic Internal Rate of Return |
| **ELA** | Early Learning Assessment |
| **EMP** | Environmental Management Plan |
| **ESP** | Environmental and Social Policy |
| **E&S** | environmental and social |
| **FIRR** | Financial Internal Rate of Return |
| **FYDP** | Five-Year Development Plan |
| **GDP** | Gross domestic product |
| **GRM** | Grievance Redress Mechanism |
| **HSE** | Health, Social, and Environment |
| **km** | kilometer |
| **MD-CEIU** | Managing Director of the Complaints-resolution, Evaluation and Integrity Unit |
| **OMR** | Oman Rial |
| **OPAZ** | Public Authority for Special Economic Zones and Free Zones |
| **PCN** | Project Completion Note |
| **PD** | Project Document [for the Duqm Port Commercial Terminal and Operational Zone Development Project] |
| **PEIA** | Preliminary Environmental Impact Assessment |
| **PIMR** | Project Implementation Monitoring Report |
| **PIRC** | Project Implementation Review Committee |
| **PIU** | Project Implementation Unit |
| **PLR** | Project Learning Review |
| **POCD** | Port of Duqm Company |
| **PSC** | Project Steering Committee |
| **PMC** | Project Management Consultant |
| **PMD** | Portfolio Monitoring Deparment |
| **RMF** | Result Monitoring Framework |
| **SEZ** | Special Economic Zone |
| **SEZAD** | Special Economic Zone Authority of Duqm |
| **SPB** | Strategy, Policy and Budget Department |
| **USD** | United States Dollar |

# ACKNOWLEDGEMENTS

This Project Learning Review (PLR) was prepared by a team of staff and consultants from the Learning and Evaluation Function of the Complaints-Resolution, Evaluation, and Integrity Unit (CEIU) at the Asian Infrastructure Investment Bank (AIIB).

Led by Eskender Zeleke, Head of the Independent Evaluation Function at CEIU, the core team comprised Joselito Supangco (AIIB Consultant and Port Expert) and Marla Hinkenhuis (CEIU Analyst). Their combined expertise and insights were instrumental in the successful completion of this report. The team was supported by CEIU Executive Assistant Yuan Chang and CEIU Administrative Assistants Yifan Hua and Yuting Wang. The PLR benefited from the valuable insights contributed by Asita De Silva (AIIB Consultant and Evaluation Expert), who served as an external peer reviewer, further enhancing the quality and depth of this report.

This PLR was prepared under the strategic direction of Marvin Taylor-Dormond, Managing Director of CEIU (MD-CEIU) until. Dec. 2024, and Hwee Tin Kng, Acting MD-CEIU since Dec. 2024. The PLR benefitted from the AIIB Board of Director's ongoing commitment to transparency and accountability and the generous support of AIIB staff, the Government of Oman, and various stakeholders during the on-site visit.

# KEY DATA: SULTANATE OF OMAN: DUQM PORT COMMERCIAL TERMINAL AND OPERATIONAL ZONE DEVELOPMENT PROJECT

| | | | |
|---|---|---|---|
| **Project ID:** | 000013 | **Investment No:** | L0013A |
| **Member:** | Oman | **Region:** | Western Asia |
| **Sector:** | Transport | **Sub-sector:** | Port |
| **Financing Type:** | Loan | **Co-financier(s):** | none |
| **Environmental and Social (E&S) category:** | B | **Project Risk:** | Medium |
| **Borrower:** | Public Authority for Special Economic Zones & Free Zones of Oman (OPAZ, formerly SEZAD) | **Implementing agency:** | Project Implementation Unit (PIU) of OPAZ |
| **Project Team Leader(s):** | Shakeel Khan (Principal Investment Operations Specialist)<br>Roberto Salgado (Investment Specialist)<br>Edwin Yuen (Senior Private Sector Operations Specialist, at completion) | | |

## PROJECT SUMMARY AND OBJECTIVE

| | |
|---|---|
| **Project objective:** | The objective of the Project is to help Duqm Port capture its full economic potential through improved transport efficiency, strengthened logistics services, facilitated mineral exports, and reduced supply chain delivery time and costs for the wide spectrum of industries in the new Duqm Special Economic Zone and its broader port hinterland. |
| **Component 1:** | Construction of Port-Related Infrastructure |
| **Component 2:** | Construction Supervision |
| **Component 3:** | Project Management |

| KEY PROJECT DATA | At appraisal | At completion |
|---|---|---|
| **Total project cost:** | USD53.33 million | USD292.95 million |
| **AIIB loan (AIIB):** | USD265 million | USD245.56 million |
| **Government (Client):** | USD88.33 million | USD47.4 million |
| **Economic Internal Rate of Return (EIRR):** | 25.5% | Not estimated |

## KEY DATES

| | | | |
|---|---|---|---|
| **Approval:** | December 8, 2016 | **Signing:** | January 16, 2017 |
| **Effective:** | February 24, 2017 | **Restructured (if any):** | None |
| **Original closing:** | June 30, 2021 | **Revised closing (if any):** | March 31, 2022 |
| **Amendment to the loan agreement:** | December 30, 2020 | **AIIB implementation monitoring missions:** | 6 (2017-2019, 2022) |

## DISBURSEMENT DATA

| | | | |
|---|---|---|---|
| **Committed:** | USD265 million | **Cancelled (if any):** | None |
| **Disbursed:** | USD245.55 million | **Undisbursed:** | 19.45 |
| **First disbursement:** | March 28, 2017 | **Last disbursement:** | USD29.61 million / June 30, 2022 |
| **Disbursement ratio:**[1] | 92.6% | | |

1 Disbursement Ratio is defined as the volume (i.e., the dollar amount) of total disbursed amount as a percentage of the net committed volume, i.e., f = c / (a – b).

# Executive Summary

## PURPOSE AND PROCESS

This Project Learning Review (PLR) report presents the findings of an independent assessment of the Duqm Port Commercial Terminal and Operational Zone Development Project (the Project) in Oman, supported by the Asian Infrastructure Investment Bank (AIIB). The PLR team conducted a comprehensive review, including a desk review of relevant documents, discussions with AIIB staff, and a visit to Muscat and Duqm for site visits and interviews with project stakeholders in September 2024.

## PROJECT SUMMARY

The Project was approved in December 2016 and was AIIB's second stand-alone financing and its first financing of a port development project. AIIB provided a loan of USD265 million to the Public Authority for Special Economic Zones and Free Zones (OPAZ) of Oman for the development of the Project. The loan aimed to cover 75% of the total project cost. The quay and berth of the commercial terminal were already constructed prior to AIIB's involvement. The Project comprised the construction of necessary infrastructure for the commercial terminal including: (1) port access roads, (2) cargo storage, (3) terminal buildings, and (4) operational zone facilities and buildings.

## PROJECT OBJECTIVES

The objective of the Project was to enhance the potential economic benefits from developing Duqm Port through improved transport efficiency, strengthened logistics, facilitated mineral exports, and reduced supply chain delivery time and costs for the industries in the new Duqm Special Economic Zone (SEZ) and its broader hinterland.

## OVERALL PROJECT ASSESSMENT

The Project is rated **Successful**. The Project demonstrated **High Relevance** by aligning its objectives with the development priorities of Oman and AIIB's mandate. Early indications suggest that the Project is catalyzing transformational change in the Al Wusta region and the economy of Oman, particularly through the development of the Duqm SEZ and its focus on green hydrogen production. The Project was **Effective**, achieving its output targets, thereby establishing a crucial element of the broader strategy for economic growth and diversification. However, achieving the broader economic outcomes will require the successful integration of additional components beyond the Project's direct control, such as railway development, the establishment of new industries in the SEZ, and the engagement of mining companies in mineral-rich areas. The realization of these components is essential for the Project's long-term success. The Project was delayed, and cargo throughput was significantly below estimates at the time of the PLR, leading to a **Less than Efficient** rating. The Project is assessed **Likely Sustainable**, evidenced by the capacity of the Client and the positive trends in the Port of Duqm Company's (PODC) financial performance. Despite this, there remains potential for improvement as the port continues its ramp-up to profitable operations. Both **AIIB** and the **Client** demonstrated **Satisfactory Work Quality** throughout the Project, contributing to its successful output delivery. It is important to recognize that definitive conclusions regarding the Project's long-term impacts may be premature. The port is still in its early operational years, with the Project Document (PD) projecting outcomes to be achieved over a 20-year period extending to 2040. Continued monitoring will be critical to assess the port's progress in establishing a reliable revenue stream and operational track record.

## RELEVANCE

The Project is rated **Highly Relevant**, as it aligns with Oman's economic development strategy and the priorities outlined in the 9th and 10th Five-Year Development Plans (FYDP) and Vision 2040. The Project aligns with AIIB's mission of "Financing Infrastructure for Tomorrow" and its Corporate Strategy and Transport Strategy. As AIIB's second stand-alone financing and the first in the port sector, the Project was important for AIIB's strategic approach and institutional development. By addressing critical infrastructure gaps, Duqm Port plays a significant role in promoting economic diversification away from oil exports, improving access to international markets, and supporting investor confidence in the economy of Oman. It is also important for attracting private sector investments across key industries within the Duqm SEZ. The Project's comprehensive design aims to enhance operational efficiency, which is essential for fostering a competitive port environment. Duqm Port is positioned to facilitate the Duqm SEZ's development as a hub for green hydrogen and green steel production. While the Result Monitoring Framework (RMF) could benefit from improved outcome measurement and the PD may not have fully addressed key market risks, the Project's logical results chain illustrates its strategic importance. Given its alignment with national development objectives and its potential to contribute to changes in the economy of Oman, the Duqm Port Project is rated Highly Relevant.

## EFFECTIVENESS

The Project is rated **Effective**, reflecting the successful transformation of a port that only had basic berths and quays into a fully operational facility equipped with state-of-the-art cargo handling equipment. The Project achieved all planned outputs, as well as its intended outcomes of operationalizing Duqm Port, strengthening transport efficiency, providing logistics services, and reducing the supply chain delivery time for industries in the Duqm SEZ. However, growth in port traffic has been slow because (1) mineral production exports and the mineral rail in the Al Wusta region have not been developed as planned and (2) the number of locators in the Duqm SEZ has remained low and has not yet picked up as projected. The Project has the potential of achieving its expected impact of contributing to economic growth, diversification, and trade in the region but as a "greenfield" initiative, it will take time for cargo traffic to fully develop, particularly since the port depends exclusively on cargo traffic generated by the Duqm SEZ. Thus, while the Project laid the groundwork for potentially transforming the Duqm SEZ into a hub for green hydrogen and green steel production, the potential remains unrealized until the locator industries are in place.

## EFFICIENCY

The Project is rated **Less Than Efficient**, and this assessment is based on several key factors. Notably, the Project experienced an 18-month delay in implementation, which was partially avoidable and had a negative impact on overall efficiency. Additionally, the economic analysis conducted at the appraisal stage did not provide sufficient detail regarding the methods and inputs used to calculate the economic internal rate of return (EIRR). This limited level of detail makes it difficult to verify the EIRR and raises questions about its accuracy.

During the PLR, a reassessment of actual costs and benefits revealed a significant overestimation of cargo throughput forecasts made during the appraisal phase. Consequently, if the necessary

data had been available for recalculation, it is likely that the EIRR would be considerably lower than initially anticipated, potentially falling below the opportunity cost of capital. It is noted that the Project demonstrated effective cost management and resource allocation, leading to actual costs being lower than initial estimates, partially due to the unused contingency. However, these cost savings would have a small effect on the EIRR compared to the significantly lower actual cargo throughput compared to the inflated estimates. Overall, the combination of implementation delays, lack of accurate data on the EIRR calculation, and the substantial discrepancy between actual performance and initial projections of cargo throughput led to the "Less than Efficient" rating.

The current rating reflects the information and conditions available at the time of the PLR. Looking ahead, there remains strong potential for improvement, as an anticipated increase in cargo traffic in the coming years could enhance the Project's operational efficiency and overall evaluation, potentially leading to a more favorable assessment.

## SUSTAINABILITY

The Project is rated **Likely Sustainable**, with benefits expected to endure in the future and a low probability of material risks. Although Duqm Port has not yet achieved its forecast cargo throughput or target revenue, it is successfully operated and managed by the PODC, which possesses significant expertise in global port operations and marine infrastructure. This expertise ensures that the port adheres to international standards. By 2020, Duqm Port began generating profits, supported by streamlined operations, cost reductions, and steady growth in cargo throughput. While cargo throughput and revenues have not met forecast levels, the improved profitability—albeit modest—provides financial support for ongoing operations and maintenance. Looking ahead, it is anticipated that the Duqm SEZ and its surrounding areas will experience substantial economic development, particularly due to the promising potential for green hydrogen and green steel production, with secured investments already in place.

From an environmental and social (E&S) perspective, the Project adhered to AIIB's Environmental and Social Policy (ESP) and Omani regulations. The identified E&S impacts were confined to the construction phase and localized to the existing port area. However, to enhance long-term sustainability, it is essential to continue monitoring and adapting operational practices in line with evolving industry standards and stakeholder expectations. Implementing robust feedback mechanisms and strengthening oversight will further ensure that E&S considerations remain a priority as the Project matures.

## AIIB WORK QUALITY

AIIB Work Quality is rated **Satisfactory**. Despite the advanced stage of project preparation, AIIB made substantial contributions to the final Construction Environmental Management Plan (CEMP) and to ensuring adequate stakeholder consultations. The Client indicated a high degree of satisfaction in working with AIIB and particularly appreciated AIIB's close engagement, flexible approach, and high degree of confidence in the Government of Oman and the Special Economic Zone Authority of Duqm (SEZAD) team. The supervision structure that AIIB helped establish functioned well in ensuring adequate communication and monitoring during implementation.

However, E&S supervision would benefit from more consistent project visits for annual monitoring to ensure adherence to E&S standards and practices. Additionally, the Project could have benefited more from earlier AIIB participation in the technical assessment and due diligence at appraisal, which would have further enhanced its overall effectiveness.

## CLIENT WORK QUALITY

Client Work Quality is rated **Satisfactory**. The capabilities of SEZAD/OPAZ staff and consultants were demonstrated by their preparedness for implementation, which included international experience, technical skills, and commercial expertise, as well as their efficiency and responsiveness. The Project benefitted from the Client's readiness at the time of AIIB's entry, providing a level of confidence necessary to manage the associated financing risks. The phased construction approach allowed port operations to continue during construction, and the ability to maintain progress during the coronavirus disease (COVID-19) pandemic illustrated the functional capacity of SEZAD/OPAZ's management. While the forecast cargo throughput did not materialize as expected, OPAZ is actively seeking new business opportunities for Duqm Port, particularly in green hydrogen and green steel.

## ISSUES

### Issue 1: Insufficient Technical Analysis Leading to Challenges in Project Implementation

The Project faced implementation challenges attributed to insufficient technical analysis during the project appraisal phase. As AIIB got involved when the Project was already at the contracting stage, the technical analysis was not reviewed in detail by AIIB. The initial appraisal lacked comprehensive geotechnical studies, leading to unforeseen issues such as sinkholes, which contributed to construction delays and hindered accurate project cost estimations.

### Issue 2: Outdated and Inadequate Market Forecasts Present Challenges in Project Operation

The cargo throughput forecasts relied on a market study conducted in 2011-2012, failing to incorporate significant changes in the regional port and shipping landscape by 2016, including the emergence of major shipping alliances. A major weakness of the cargo demand forecast was the focus on the increase of mineral exports that would be brought by the proposed mineral railway line of which the Project had no control of, and certainty of implementation had not been established. Focusing on the mineral exports did not recognize that the demand for port services was actually derived from Duqm SEZ industry locators generating demand for the shipment of their inputs and products.

As a result of the dated market study and the assumption of the establishment of a mineral railway line, the financial projections overestimated cargo traffic and revenues. The inadequate demand forecast and the delay in the implementation of the railway line impacted the financial performance of the Project due to the unrealized cargo throughput projected. An updated market

analysis could have resulted in more realistic cargo forecasts, facilitating improved planning and resource allocation throughout the project life cycle. By preparing different scenarios—base case (medium), low case and high case—the forecasts could have considered sensitivities to economic growth, cargo growth trends, and other factors.

### Issue 3: Inadequate Monitoring of Outcomes

The RMF is crucial for effective project monitoring and evaluation. In the case of the Duqm Port project, the RMF aimed to capture anticipated outcomes but fell short of defining appropriate performance indicators. The existing indicators focused primarily on the growth of mineral exports and the efficiency of port cargo space usage, specifically measured by cargo consignment dwell time in port. These indicators are inadequate for several reasons. First, the growth of mineral exports is contingent upon the development of a mineral railway line to Duqm Port, an aspect over which the project has no control. Second, given the greenfield nature of Duqm Port, a broader perspective on potential cargo markets is necessary instead of relying on a single cargo type. Lastly, targeting short cargo dwell times is not a meaningful performance indicator during the initial operational years, as the port has substantial excess capacity until it reaches maximum utilization and cargo volumes.

To enhance the RMF, it would be beneficial to include additional performance indicators, such as annual total cargo throughput volumes, the number of vessel calls, and the number of containers handled (including full containers, less than full containers, and empties). Incorporating these indicators would provide a more comprehensive assessment of the port's performance and ensure better monitoring of outcomes.

The RMF includes indicators for monitoring beyond project closure, which will allow the assessment of the port's progress in establishing a reliable revenue stream. While the Client is liable to provide the required information to AIIB, it is not clear who is responsible for following up and monitoring from the AIIB side.

### Issue 4: Data Deficiencies in Effectiveness and Efficiency Measurement

The Duqm Port project faced data deficiencies that impacted the effectiveness and efficiency measurement. Although the EIRR and FIRR were estimated during the AIIB appraisal, the absence of recalculations at project completion limited the understanding of the project's performance. Specifically, updated data on project costs, operations and maintenance expenses, and cargo throughput volumes were necessary to accurately assess the project's efficiency and return on investment.

The Project Completion Note (PCN) could have provided the updated baseline data on project costs and cargo volumes/ship calls, which are essential for estimating project benefits. However, a reliable traffic forecast was lacking, highlighting the need for development based on current market conditions, as the existing forecast relied on outdated market studies. Furthermore, the PD lacked sufficient details regarding the methodologies and inputs used in calculating the EIRR and financial internal rate of return (FIRR), raising concerns about the validity of these estimates.

## LESSONS

### Lesson 1: Proactively Managing Market Risks in Greenfield Projects Helps Ensure Long-Term Viability

Greenfield projects, like Duqm Port, face higher market risks due to undeveloped infrastructure and uncertain demand. Although Duqm Port began operations in 2015, it lacked key facilities and had low cargo volumes, which kept it in the greenfield stage.

A key lesson is that greenfield projects require targeted strategies to manage market risks. In the case of Duqm Port, the government provided critical financial support through subsidies to the PODC, helping to offset risks and attract international operators. For similar projects, early recognition of market risks and a clear plan to manage them—such as government support, subsidies, or guarantees—are essential. This ensures that the project remains viable and attractive to investors, enabling long-term success.

### Lesson 2: A More Comprehensive RMF Supports Capturing Project Results

The RMF of the Project focused too narrowly on mineral exports and port efficiency. Developing other relevant performance indicators, such as total cargo throughput and number of vessel calls, would allow to capture the Project's results more adequately.

For future projects, it is important to design a more comprehensive RMF to support results measurement. The preparation of the RMF requires a well-prepared and comprehensive pre-feasibility and feasibility study as well as strong sector expertise in the Project Team.

### Lesson 3: Flexibility and Close Engagement Supports Project Success

The Duqm Port project demonstrates that flexibility and close engagement with Clients significantly improve the chances of successful project implementation. AIIB's adaptable approach and hands-on support were key factors in addressing challenges promptly. The Client expressed strong appreciation for AIIB's responsiveness, which contributed to smoother project execution.

For future projects, maintaining a flexible approach—where project teams are ready to adjust to evolving circumstances—and fostering close communication with Clients can greatly enhance implementation. This "lean" approach, which emphasizes quick decision-making and proactive problem-solving, can be applied to other projects to improve responsiveness and increase the likelihood of success.

### Lesson 4: Proactive E&S Involvement Can Enhance Compliance

Proactive E&S involvement is essential for compliance in projects at advanced processing stages. In the Duqm Port Project, AIIB's engagement strengthened the CEMP even after implementation began. By facilitating stakeholder consultations and collaborative improvements, AIIB addressed the Client's concerns and ensured robust E&S safeguards.

For future projects, integrating E&S considerations early and maintaining active engagement can enhance compliance and project outcomes. This proactive approach fosters collaboration and mitigates risks, ultimately contributing to more sustainable project development.

### Lesson 5: Identifying Green Transformation Potential Early in Project Appraisal Helps Maximize Long-Term Economic and Environmental Benefits

The green energy transition can create valuable opportunities for economic development that may not be apparent during initial project appraisal. In the case of the Duqm SEZ, while industries like green hydrogen and green steel were not yet developed at appraisal, the SEZAD's large land area, renewable energy potential, and strong infrastructure make it a future hub for these emerging sectors.

The key lesson is the importance of identifying potential avenues for green transformation at the project appraisal stage. Even if industries are still evolving, early recognition of strategic advantages—such as available land, resources, and infrastructure—can position projects to capitalize on future opportunities. This approach ensures that projects remain flexible and ready to attract green investment as new technologies mature. This lesson applies to projects in regions with the potential to support green energy industries and highlights the value of forward-looking planning in maximizing long-term economic and environmental benefits.

## RECOMMENDATIONS

### Recommendation 1: Address Insufficiencies in Technical Analysis during Project Appraisals to Strengthen Project Planning and Risk Assessment

A lesson learned from the Duqm Port Project regarding insufficient technical analysis is that AIIB should strengthen geotechnical and market assessments during the project appraisal stage for future projects. Ensuring comprehensive technical analysis will help mitigate construction delays, address risks, and ensure accurate cost estimates, particularly for infrastructure investments that require significant foundational work. Conducting thorough and up-to-date market studies is crucial to aligning investment decisions with realistic market conditions, as demonstrated by the challenges faced in Duqm. AIIB should ensure that market studies are comprehensive and up-to-date and that forecasts of benefits consider different demand scenarios.

Furthermore, AIIB should enhance the technical capacity of project teams by strengthening the role industry specialists in the appraisal process to facilitate comprehensive technical assessments. Assigning dedicated engineers with relevant expertise for major infrastructure investments would allow AIIB to improve screening, assessments, and project design, ultimately leading to better project outcomes and minimizing risks in future endeavors.

### Recommendation 2: Enhance the Outcome Measurement in the RMF

In the case of the Duqm Port project, the RMF aimed to capture anticipated outcomes but fell short of defining appropriate performance indicators. CEIU recognizes that improvements in the guidance on RMFs and its consideration during appraisal have been made and welcomes efforts of Portfolio Monitoring Deparment (PMD) and Strategy, Policy and Budget Department (SPB) to improve the RMF for better monitoring of project outcomes and capturing broader project benefits.

AIIB should ensure that the RMF for future projects uses indicators that adequately capture intended outcomes and align with industry standards. In case of future port investments, AIIB should expand performance indicators to include metrics such as annual total cargo throughput, the number of vessel calls, and the handling of containers (both full, less-than-full and empties).

Particularly for greenfield projects, AIIB should ensure that the RMF considers external dependencies that can influence project outcomes, such as the development of critical supporting infrastructure. AIIB should always develop a comprehensive monitoring plan that details the data collection methods for each performance indicator and sets clear timelines for data gathering and reporting. AIIB should conduct regular reviews of the RMF at significant project milestones to assess performance and facilitate necessary adjustments, thereby promoting ongoing improvement in project monitoring and evaluations.

### Recommendation 3: Define Responsibilities for Monitoring and Impact Assessment after Project Closure

The Client is required to provide information on key RMF indicators beyond Project closure, which allows AIIB to assess the port's progress in establishing a reliable revenue stream. AIIB should clearly define who is responsible for this long-term monitoring after project closure and should ensure reliable provisions for follow up with the Client. To comprehensively assess the outcomes and impact of this Project, AIIB should consider conducting an economic impact assessment at the end of the monitoring period. This would facilitate capturing outcomes and impacts that take time to materialize.

### Recommendation 4: Strengthen EIRR and FIRR Estimates and Recalculations to Ensure Accurate Financial and Economic Assessments Throughout the Project Life Cycle

AIIB should implement the systematic practice of recalculating the EIRR and FIRR at project completion and at least once thereafter, e.g., after five years of project operation. This practice would allow for the accurate assessment of project efficiency by comparing estimated costs and benefits with actual outcomes.

AIIB should ensure that the methodologies and assumptions used for calculating the EIRR and FIRR during appraisal are thoroughly documented in the PD or in separate supplementary documentation. This documentation should include the economic and financial models employed. By maintaining comprehensive records, AIIB will facilitate the recalculation process, ensuring continuity and clarity in economic and financial assessments even in the event of staff changes.

# Management Response

Management welcomes the Project Learning Review (PLR) Report for the Sultanate of Oman: Duqm Port Commercial Terminal and Operational Zone Development project (the Project) prepared by the Complaints-Resolution, Evaluation, and Integrity Unit (CEIU) in accordance with the AIIB Learning and Evaluation Policy (LEP). This Management Response is prepared in accordance with LEP para. 13(f).

The Project sought to help Duqm Port capture its full economic potential through improved transport efficiency, strengthened logistics services, facilitated mineral exports, and reduced supply chain delivery time and costs for the wide spectrum of industries in the new Duqm Special Economic Zone and its broader port hinterland. The PLR rates the Project as highly relevant, effective, and likely sustainable; the efficiency rating is however less than efficient. Management acknowledges that CEIU assessed the Project as overall **Successful**.

Since the Project was approved in 2016, the Asian Infrastructure Investment Bank (AIIB or the Bank) has adopted a Corporate Strategy and a Transport Sector Strategy and enhanced its policies, guidance, systems, and practices, including the Results Monitoring Framework (RMF) and environmental and social safeguards. Management urges PLR reports to offer lessons learned and recommendations that are explicitly additional to the standards of the Bank at the time of publication, in this case in 2025, or limit the lessons and recommendations to the project subject to the PLR review without extending the lessons and recommendations to the Bank's portfolio.

Going forward, Management encourages CEIU to select the most recent stand-alone financings with disclosed Project Completion Notes for PLR to enhance timeliness and relevance. Management would also welcome PLRs be more succinct and avoid repetition and overlaps between issues, lessons and recommendations to maximize reader engagement and ensure that all points requiring feedback are adequately addressed in the recommendations as part of the Management Response.

Management extends its appreciation for the technical robustness of the PLR, the collaborative approach used, and the constructive engagement of the Evaluators with the project team, the Client, stakeholders, and Management, which have yielded novel insights and lessons learnt. We look forward to future reports.

Management is pleased to share the following response to the recommendations included in the PLR report.

### Recommendation 1: Address insufficiencies in technical analysis during project appraisals to strengthen project planning and risk assessment.

Management agrees with the recommendation and acknowledges the lack of comprehensive geotechnical studies in the initial appraisal. Management also acknowledges Project's reliance on inadequate economic forecasts, which were not re-assessed independently at a later stage to confirm their reliability. Those included overly optimistic cargo throughput, traffic and revenue projections, and the assumption of the establishment of a mineral railway line. Sensitivities to

external factors that materialized during the implementation period (COVID-19 pandemic and extreme weather events) were also overlooked. Management will assess how to incorporate this lesson and address concerns of a similar nature in future project appraisals.

Management also recognizes the importance of ensuring expert engagement at appraisal (e.g., through independent consultancies), particularly for technical and market assessments and upstream work on green transformation investments. The updated investment process introduced by the Bank in 2023 offers a more robust framework for enhanced project appraisal, enabling the Bank to challenge assumptions more effectively and ultimately elevate the technical quality of its investments. Management recognizes CEIU's recommendation as a valuable lesson learned and intends to leverage the updated investment process accordingly.

### Recommendation 2: Enhance the outcome measurement in the RMF.

Management agrees and recognizes the importance of measuring project outcomes indicating direct changes in access or level of services of infrastructure and has already strengthened guidance, tools, training, and quality assurance to this end. Management has made the adequacy of the RMF a major consideration during project appraisal, including the development of a monitoring plan covering data collection sources, responsibilities, and timelines, as well as the inclusion of both output and outcome indicators. The latter may include the indicators suggested by CEIU for the port sub-sector, if deemed suitable during project preparation and appraisal.

CEIU additionally recommends conducting regular reviews of the RMF at key project milestones to evaluate performance and make necessary adjustments. As part of Management's routine project implementation monitoring, the RMF is reviewed and reported on during the preparation of each Project Implementation Monitoring Report (PIMR), which is typically conducted semi-annually. This process ensures that Management and the Board are consistently informed about implementation progress, including any delays or challenges, enabling adaptive management and, if needed, revisions to the RMF.

### Recommendation 3: Define responsibilities for monitoring and impact assessment after project closure.

Management agrees and concurs that the RMF for this Project fell short in defining appropriate reporting timelines compatible with the timeline for the Project Completion Note (PCN) preparation (six months after project closing). Such alignment would have ensured that results data (including outcome data) were available for inclusion in the PCN. This limitation reflects the context in which the Project was designed, during AIIB's early days and in the absence of specific guidance on RMF preparation.

As a result, the indicators included in the RMF for this project call for monitoring and reporting after project closure. As mentioned in the PCN, the client is committed to inform AIIB on results achieved after project closure at two time points identified in the RMF: 2025 and 2030.

Moreover, Management agrees to an Economics Department assessment of the evaluability and potential for learning and knowledge sharing of the Project, with a view to selecting it for a future impact study if deemed suitable.

### Recommendation 4: Strengthen EIRR and FIRR estimates and recalculations to ensure accurate financial and economic assessments throughout the project lifecycle.

Management disagrees with the recommendation that AIIB should compute a closeout Economic/Financial Internal Rate of Return (EIRR/FIRR) at project completion in addition to the ex-ante metrics used for Investment appraisal. Cost-benefit analysis is an extremely valuable tool for decision-makers, in this case transport planners, to appraise projects and facilitate the allocation of scarce financial resources. A closeout EIRR/FIRR would still rely on forecasts for long-term benefits and would have little added value for decision-makers of the concerned project that is already closed. Management welcomes independently evaluated ex-post EIRRs/FIRRs for learning purposes.

# Introduction

## PROJECT DESCRIPTION

**1. The Complaints-resolution, Evaluation, and Integrity Unit (CEIU)[1] conducts independent evaluations of completed stand-alone projects.** Guided by the Learning and Evaluation Policy of the Asian Infrastructure Investment Bank (AIIB), CEIU conducts Project Learning Reviews (PLRs) for completed stand-alone projects.[2] The PLRs assess the achievement of project objectives and the performance of AIIB and the Client, identify drivers of success, and draw lessons of experience. Following CEIU's approach of being "independent and engaged," the PLRs are prepared by staff and senior sector experts from CEIU in close collaboration with the relevant operating department. PLRs are conducted after AIIB Management submits the Project Completion Note (PCN) to the AIIB Board. After Board discussion, the PLRs are made publicly available on the AIIB website.

**2. The Duqm Port Commercial Terminal and Operational Zone Development (the Project) in Oman was AIIB's first stand-alone port development financing.** In December 2016, AIIB approved a loan of USD265 million to the Public Authority for Special Economic Zones and Free Zones (OPAZ) of Oman for the development of the Project.[3] The Project was one of seven projects approved in AIIB's first year of operation (2016) and AIIB's second stand-alone financing.[4] Duqm Port was AIIB's first port project and Oman was the first high-income Member to receive AIIB support. The loan was closed in March 2022 and the PCN was prepared in November 2023.[5]

**3. The Project aimed to support the full realization of the economic benefits of Duqm Port.** The Project objective was to help Duqm Port realize its full economic potential through improved transport efficiency, strengthened logistics services, facilitated mineral exports, and reduced supply chain delivery time and costs for industries in the new Special Economic Zone (SEZ) at Duqm and its surrounding areas. The quay and berth of the commercial terminal at Duqm Port had already been constructed prior to AIIB's entry. The Project comprised the construction of infrastructure for the commercial terminal (including port access roads, cargo

1 *Introduction to CEIU - Complaints-Resolution, Evaluation and Integrity Unit (CEIU).* (2025). aiib.org. https://www.aiib.org/en/about-aiib/who-we-are/complaints-resolution-evaluation-integrity-unit/introduction/index.html (or **bit.ly/44dQ9OQ**)

2 *AIIB Learning and Evaluation Policy.* (2021, May 19). aiib.org. https://www.aiib.org/en/policies-strategies/_download/Learning-and-Evaluation-Policy/AIIB-Learning-and-Evaluation-Policy-for-Board-approval_190521-FINAL.pdf (or **bit.ly/3G0Mhqo**)

3 The Oman Rial (OMR) is pegged to the United States Dollar (USD). Since the last change in parity in 1986, the fixed peg has remained unchanged at USD2.6008 per OMR. *Source: Central Bank of Oman.* (2025). cbo.gov.om. https://cbo.gov.om/Pages/FixedPeg.aspx (or **bit.ly/4lndEen**)

4 *Oman: Duqm Port Commercial Terminal and Operational Zone Development.* (n.d.). aiib.org. https://aiib.org/en/projects/details/2016/approved/Oman-Duqm-Port-Commercial-Terminal-and-Operational-Zone-Development.html (or **bit.ly/3EcFVnq**)

5 *Project Completion Note.* (2023, November 3). Asian Infrastructure Investment Bank. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf (or **bit.ly/4cnGhUD**)

storage, terminal buildings) and Operational Zone facilities and buildings.[6] The AIIB loan aimed to cover 75% of the total estimated project costs.

## PLR PURPOSE AND PROCESS

**4. The purpose of this PLR is to identify the results achieved under the project, understand their drivers, and derive lessons for continuous improvement in AIIB's processes and project financing.** In accordance with AIIB's Learning and Evaluation Policy, the PLR evaluates the attainment of Project objectives and the performance of the Bank and the Client.[7] The assessment of the attainment of project objectives utilizes the four main criteria outlined in the AIIB Learning and Evaluation Function Guide on Evaluation Criteria: Relevance, Effectiveness, Efficiency, and Sustainability.[8] Each criterion is rated on a four-point scale, and an overall project rating is then derived from these assessments. Additionally, the PLR examines and assesses AIIB and Client Work Quality, using a four-point rating scale. Appendix A shows the detailed Evaluation Framework and rating scales.

**5. The PLR assessment is based on quantitative and qualitative evidence collected by the CEIU team through a field visit, interviews with project stakeholders, and a document review.** The PLR builds on the findings of the Early Learning Assessment (ELA) on the Project that was conducted by CEIU in February 2021.[9] The PLR draws on several sources of information including: (1) site visits and interviews with project stakeholders in Oman conducted from Sep. 9-13, 2024, (2) discussions and interviews with AIIB staff, and (3) desk reviews of AIIB and Client project and sector documents, government strategy and policy documents, and official socioeconomic indicators. The evaluation visit comprised an on-site visit to the commercial terminal of Duqm Port and interviews with the Client (OPAZ), the Special Economic Zone Authority of Duqm (SEZAD) and its logistics arm (Tatweer), the civil works contractor ("the contractor"), the construction supervision consultants, the port operator, and a fish canning company located in the SEZ.

**6. The draft PLR report underwent a comprehensive quality assurance and review process.** This included an internal CEIU peer review and editing process and an external peer review by the project evaluation expert Asita De Silva. Following internal clearance, CEIU requested feedback from the Project Team and Management, prior to issuing the final report. This is the second PLR undertaken by CEIU and therefore pilots CEIU's approach to conducting PLRs, which may be refined in the future.

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6 *Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf pages 1-4 (or **bit.ly/4cnGhUD**)

7 *AIIB Learning and Evaluation Policy.* (2021, May 19). aiib.org. https://www.aiib.org/en/policies-strategies/_download/Learning-and-Evaluation-Policy/AIIB-Learning-and-Evaluation-Policy-for-Board-approval_190521-FINAL.pdf (or **bit.ly/3G0Mhqo**)

8 *AIIB LEF Guide on Evaluation Criteria.* (2021, September). aiib.org. https://www.aiib.org/en/policies-strategies/_download/Learning-and-Evaluation-Policy/AIIB-LEF-Guide-Evaluation-Criteria.pdf (or **bit.ly/3R9O1QC**)

9 The ELA is a non-disclosed document for internal use.

**7. The report is organized into five sections:**

- Chapter One introduces the project by providing its description, purpose, and processes.
- Chapter Two provides a detailed overview of the project's design and implementation.
- Chapter Three evaluates the project's performance across key criteria, including relevance, effectiveness, efficiency, and sustainability, followed by an overall assessment.
- Chapter Four examines and assesses the quality of work by both AIIB and the Client.
- Chapter Five concludes the report with a discussion of the main issues identified, lessons learned, and derived recommendations.

# Project Design and Implementation

## RATIONALE AND OBJECTIVES

**8. A key objective of Oman is to diversify its economy away from crude oil exports.** Oman aims to diversify its economy to reduce its dependence on the export of crude oil, capitalizing on its mineral resources and strategic position relative to the Strait of Hormuz. In 2015, one third of the country's Gross Domestic Product (GDP) and 80% of the public finances of Oman were derived from petroleum-related products. Oman planned to diversify the economy through increased mineral exports, manufacturing, logistic services, warehousing, fisheries, tourism and value-added industries in the oil and gas sector such as downstream refinery, petroleum storage, and petrochemical plants. With five major ports[10] and a strategic geographic location, a particular focus of Oman is to strengthen its logistics services and transform the country into a strategic global logistics hub.[11]

**9. A SEZ in Duqm was established in 2011 to support diversification of the economy.** With a land area of 2,000 square kilometers and a 70-kilometer (km) coastline along the Arabian Sea, it is one of the largest economic zones in the Middle East and North Africa region. The Duqm SEZ is intended to be an economic hub that comprises several zones, including a seaport, an airport, an industrial area, a new town, a fishing harbor, a tourist zone, a logistics center, and an education and training zone. The Duqm SEZ is expected to be the catalyst for the development of the Al Wusta region and an anchor for the overall economic diversification strategy for Oman.[12]

**10. Duqm Port plays a key role in the development of the Duqm SEZ and the economic diversification of Oman.** The rationale for investing in Duqm Port was based on its strategic location in the Arabian Gulf as well as its ability to support and complement the planned development of a mineral railway line. Duqm Port represents one of the most important strategic components of the Duqm SEZ. It was critical to strengthening the logistics sector and enabling the Duqm SEZ to be fully plugged into the global logistics chain. The port would serve the industries in the Duqm SEZ as well as the growing mineral industry sector that was developing rich mineral ore reserves in and near the Al Wusta region. At the time of project appraisal, Oman was also prioritizing the development of a mineral railway line that would facilitate mineral exports by providing railway lines connecting to Omani ports, which would complement the Duqm Port development.[13]

10 The major ports of Oman are: (1) Port of Salalah (Dhufar Governorate), (2) Port of Sultan Qaboos, (3) Port of Duqm (Al Wusta Region), (4) Port of Sohar (Al Batinah Region), and (5) Port of Qalhat (Ash Sharqiyah Region).

11 *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 4 ff (or **bit.ly/42naHBZ**)

12 Ibid, pages 4 ff

13 Ibid, pages 6-7

**11. The Project objective stated in the Project Document (PD) was to help Duqm Port capture its full economic potential through:**[14]

Improved transport efficiency.

Strengthened logistics services.

Facilitated mineral exports.

Reduced supply chain delivery time and costs for the industries in the Duqm SEZ and its broader hinterland.

## DESIGN

**12. AIIB supported the development of the Project with a USD265 million loan to SEZAD (now OPAZ).** At appraisal, the Project was estimated to cost USD353.33 million. On December 8, 2016, AIIB approved the loan of USD265 million, covering 75% of the estimated Project cost. The loan was granted with a 25-year term, a grace period of five years, and at AIIB's standard interest rate for sovereign-backed loans with the same weighted average maturity. The loan was backed by a guarantee from Oman. At appraisal, AIIB planned to finance 85% of Component 1, with the Client financing 100% of Components 2 and 3. AIIB planned to finance 83% of the total estimated base cost of the Project.

**13. AIIB introduced several measures to help strengthen project implementation.** When AIIB was invited to consider the loan, the civil works contractor had already been identified and the terms of the civil works contract had been negotiated and agreed. AIIB included covenants in the Project Loan Agreement for the timely creation of: (1) a Project Implementation Unit (PIU) with an agreed Terms of Reference, (2) a Project Implementation Review Committee (PIRC), and (3) a Project Steering Committee (PSC) to ensure smooth implementation of the Project.[15]

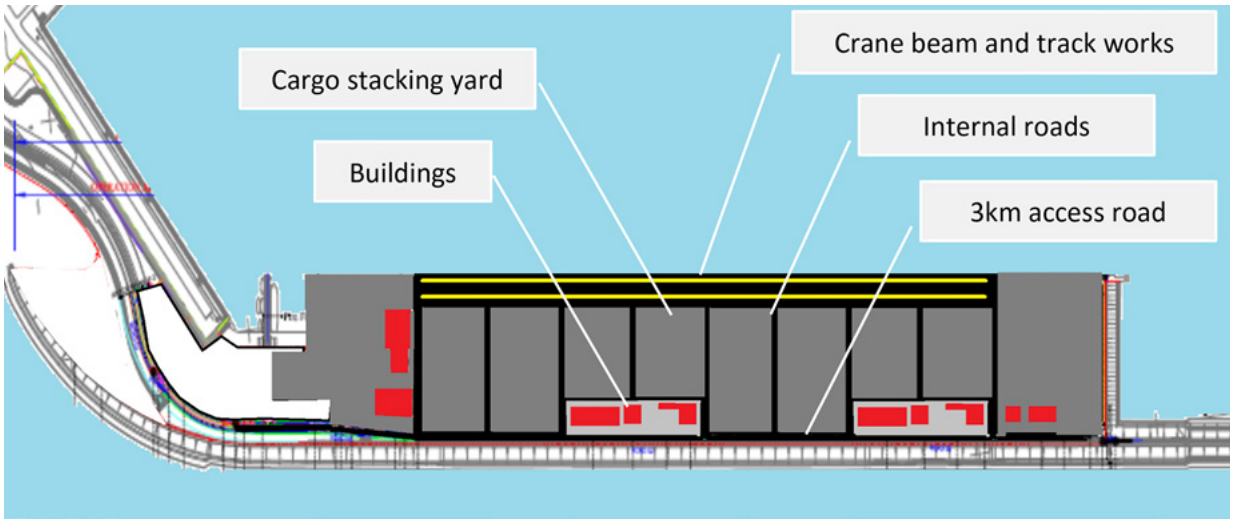
**14. The Project aimed to develop the infrastructure of the commercial terminal and operational zone to enable Duqm Port to become fully operational.** The berth and the commercial

14 *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf page 8 (or **bit.ly/42naHBZ**)

15 *Project Completion Note*. (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf page 4 (or **bit.ly/4cnGhUD**)

quays at Duqm Port, spanning a total 2.2 km long, were already completed at appraisal. The Project comprised the construction of required infrastructure for the operation of the commercial terminal, including: (1) port access roads, (2) cargo storage, (3) terminal buildings, and (4) the Operational Zone facilities and buildings. Figure 1 shows the schematic representation of the main works. The detailed design of the Project was undertaken by a joint venture of international and national consulting firms. The Project was structured into three components: (1) construction of port-related infrastructure, (2) construction supervision; and (3) project management.

**Figure 1: Schematic Representation of the Main Works of the Project**




Source: *Project Document.* (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf page 22 (or **bit.ly/42naHBZ**)

**15. Component 1 comprised the construction of port-related infrastructure in four main work areas.** These were:

**Road and paving works:** These included the construction of a three-kilometer, two-lane dual carriageway, internal roads connecting all terminal buildings and parking areas, construction of container and cargo stacking yard and parking areas, and a helipad.

**Other infrastructure works:** These comprised the construction of: (1) a potable water network to service the commercial berth buildings and ships, (2) a firefighting network, (3) stormwater and sewage network, (4) installation of electrical, telecommunications, street and yard lighting facilities and (5) construction of fencing and gates.

**Terminal building and operational zone:** This included the construction of an administration building, training and amenities centers, an emergency and firefighting center, electrical service buildings, a multipurpose terminal, a container terminal, a dry bulk terminal, a workshop and maintenance building, a gate house, and an electrical service building.

**Crane beam and track works:** These comprised the installation of a crane beam supported on piles, and its tracks.

**16. Component 2 comprised construction supervision.** An international consulting firm was engaged to oversee and supervise construction of works and to assist SEZAD in the timely completion of the Project with the desired quality. The consultant assisted the SEZAD team to ensure that the quality of the executed works complied with contractual specifications, were within budget, and were implemented on time.

**17. Component 3 comprised project management.** Management of the project was undertaken by SEZAD's PIU headed by the Project Manager with support from the SEZAD staff, and international and national consultants. Regular meetings were held to monitor Project implementation progress. An international procurement specialist and financial management specialist provided training to PIU and OPAZ on international tendering, auditing, and best financial management practices.[16]

**18. AIIB assigned a risk rating of "Medium" to the Project.** The rating was based on consultations during project preparation where no major risks were identified. The PD describes nine main areas of risk for project implementation, with eight assessed as moderate likelihood and one assessed as negligible or low likelihood. The PD presents relevant mitigation measures as indicated in Table 1.[17]

### Table 1: Summary of Risks and Mitigation Measures

| Risks Identified at Appraisal | Likelihood (H, M, L) | Mitigation Measures Proposed |
|---|---|---|
| **1: Entity-specific risks** | **M** | OPAZ is new to AIIB's Procurement Policy and Directives, and Loan Disbursement Manual and procedures. At the start of project implementation, AIIB will arrange a comprehensive training of PIU/OPAZ on AIIB's procurement and disbursement procedures, financial management, and best implementation practices. Involvement of international procurement/contract management specialist in the PIU will also strengthen OPAZ capacity in contract management. |
| **2: Operations Risks** | **M** | Upon completion of the Project, the Commercial Terminal and Operational Zone will be handed over to the Port of Duqm Company (PODC) to manage and operate. OPAZ's oversight capability in port operations needs strengthening. With the help of the port development consultant under the construction supervision team, OPAZ shall develop an in-house capability to oversee and ensure that the direction of the port is aligned with its goals. The consultant shall assist OPAZ in establishing a set of key performance indicators for the PODC. |

16 *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 8-9 (or **bit.ly/42naHBZ**)

17 Ibid, pages 17; 35

## Table 1: Summary of Risks and Mitigation Measures (continued)

| Risks Identified at Appraisal | Likelihood (H, M, L) | Mitigation Measures Proposed |
|---|---|---|
| **3: Implementing Entity** | **M** | Project implementation support and capacity improvement are provided as a project component through the project management and construction supervision consultants. In addition, AIIB's monitoring of implementation progress and regular fielding of review missions will ensure timely mitigation of any implementation delay and strict compliance to environmental safeguards. OPAZ will disclose project progress and safeguards compliance in its website at least twice a year after six months from loan effectiveness date.<br><br>Since the same AIIB Team is also engaged in the implementation of the Oman Railway System Preparation Project to be implemented by Oman Global Logistics Group and Oman Rail, AIIB will hold regular monthly video/tele-conferences with OGLG, Oman Rail, and OPAZ to closely monitor the progress of the projects and take necessary steps to avoid delays. These measures are in addition to regular review missions to be fielded at least twice per year. |
| **4: Funds Flow** | **M** | Timely availability of counterpart funds will be ensured by implementing the proposed funds flow arrangements. |
| **5: Staffing** | **M** | The project management team shall assist OPAZ to design and implement the training program especially for AIIB financial reporting requirements and their integration into overall national financial reporting requirements. |
| **6: Accounting Policies and Procedures** | **M** | The Accounting Policy shall be drafted considering national accounting standards and AIIB requirements. |
| **7: Internal Audit** | **N** | The capacity of the internal auditor shall be improved by the financial management specialist. |
| **8: External Audit** | **M** | An Audit of the project accounts shall be done in accordance with International Auditing Standards by the Auditor acceptable to AIIB. |
| **9: Reporting and Monitoring** | **M** | OPAZ and PIU shall regularly report on inherent adequate control mechanisms in accordance with AIIB requirements. |

Source: *Project Document.* (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 35-36 (or **bit.ly/42naHBZ**)

## IMPLEMENTATION

**19. The Project was initially intended to be completed over 30 calendar months.** The Contractor entered a civil works contract with SEZAD for the construction of the Project commencing on December 1, 2016, with a completion timeline of 30 calendar months. The Project was split into three phases with a series of sectional completion areas to manage the interface between ongoing operations and construction of the permanent works. SEZAD established an effective PIU and contracted the Project supervision consultant. Both the Project Implementation Review Committee and the Project Steering Committee worked consistently and effectively.[18] Table 2 indicates key features of implementation progress as described in the Project Implementation Monitoring Reports (PIMRs).

### Table 2: Key Features of Project Implementation Progress

| | Physical Progress | E&S Compliance | Procurement |
|---|---|---|---|
| **September 2019** | Approx. 64.07% of physical works completed.<br>Consultants for Component 2 recruited prior to loan approval.<br>Full project management team for Component 3 on-board. | Full compliance with Environmental and Social Safeguards.<br>• CEMP in place and disclosed on OPAZ and AIIB websites.<br>• Daily Health, Social, and Environment (HSE) site visits and monthly HSE Audits carried out. | Physical works contract awarded.<br>Consultants for Component 2 recruited in advance of loan approval. |
| **September 2020** | Approx. 99.28% of physical works completed. | No changes | No changes |
| **November 2021** | Completed | Full compliance | No changes |
| **March 2022** | Completed | No changes | No changes |

Source: *Oman: Duqm Port Commercial Terminal and Operational Zone Development.* (n.d.). aiib.org. https://aiib.org/en/projects/details/2016/approved/Oman-Duqm-Port-Commercial-Terminal-and-Operational-Zone-Development.html All PIMRs (or **bit.ly/3EcFVnq**)

**20. Duqm Port construction was completed 18 months behind its scheduled completion date.** The civil works construction was completed in December 2020, 18 months later than the scheduled completion date. All post-construction quality tests, which were conducted according to international standards, yielded satisfactory results. The PCN reported that the Project was exposed to interface risks from the early stage of construction, with the most significant issue being the "unplanned early operations of the Port of Duqm Company (PODC)" within the

18 *Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf page 4 (or **bit.ly/4cnGhUD**)

construction site that initially delayed the project construction.[19] This was refuted by the SEZAD/PIU staff present during the meeting with the AIIB PLR Team in Duqm, who noted that there was no such cause of delay as there was strong coordination between the Project and PODC on the phasing of the construction works prior to the start of implementation to allow specific port areas to be open to operations during construction and turnover timetable of the completed sections to PODC. In addition, the Duqm Port experienced construction delays for reasons including: (1) occurrence of sinkholes within the reclamation site, (2) issues relating to vibro-compaction works, (3) PODC requested change orders, (4) extension of time requests by the contractor due to the Hikaa Cyclone in September 2019 and Kyarr Cyclone in October 2019, and (5) COVID-19 pandemic and associated lags in works. About six months of delays were attributed to the COVID-19 pandemic.[20]

**21. The loan Closing Date was extended from June 30, 2021, to March 31, 2022, upon OPAZ's request.** AIIB approved the extension under the non-material change procedure. Furthermore, OPAZ requested amendment of Section V, item (b) of the Loan Agreement on the reporting requirements from OPAZ to AIIB. OPAZ requested to change from the required single 10-year business plan to submitting two five-year business plans, which was approved by the Bank. Except for fulfilling a legal undertaking under the Loan Agreement, i.e., the submission of five-year business plans by December 31, 2025, the change did not have any impact on the final-stage realization, completion, or closing of the Project. The first five-year business plan was duly submitted to AIIB.[21]

**22. During project implementation, AIIB conducted six project supervision visits.** The first visit was in May 2017 and the last in September 2022. During the COVID-19 pandemic, the AIIB project team conducted two virtual implementation monitoring missions.

## ENVIRONMENTAL AND SOCIAL SAFEGUARDS

**23. The Project was classified as Category "B" under AIIB's Environmental and Social Framework (ESF), indicating a well-defined scope of localized E&S risks limited to the existing port area.** By utilizing reclaimed land, the Project eliminated concerns on land acquisition, resettlement, or marine works, thereby reducing potential negative impacts on local communities and ecosystems. A Preliminary Environmental Impact Assessment (PEIA) was conducted in accordance with the legislation in Oman, laying the groundwork for obtaining the Preliminary Environmental Permit from the Ministry of Environment and Climate Affairs. This PEIA comprised a comprehensive review of the legal framework, as well as environmental, social, and ecological baseline studies. It also evaluated potential impacts during both construction and

19 *Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf pages 1-7 (or **bit.ly/4cnGhUD**)

20 Ibid, pages 1-5

21 Ibid, pages 1-7

operational phases, identifying necessary mitigation and monitoring measures through a general Environmental Management Plan (EMP).[22]

**24. To meet AIIB's environmental and social requirements, a Construction Environmental Management Plan (CEMP) was prepared in September 2017 by a certified environmental consultant.** The CEMP outlined mitigation measures, provided the framework for public consultation, and ensured that the construction phase met AIIB's Environmental and Social Framework (ESF) and regulations in Oman. The CEMP was publicly disclosed on the Client's website and required the contractor to provide SEZAD with quarterly updates on environmental monitoring indicators. The CEMP enumerated the commitment of the contractor to deliver on its stated environmental obligations. Part of the CEMP was a Consultation and Disclosure Plan that was implemented during construction through an "All Stakeholders" meeting on March 21, 2018, attended by 35 participants.[23] The CEMP outlined detailed mitigation measures, provided the framework for public consultation, and ensured that the construction phase met AIIB's ESF regulations in Oman. The contractor established an internal Complaints and Grievance Mechanism (GRM) in line with the labor laws of Oman. An informational meeting was held to introduce this mechanism to the workforce. During the construction phase, no complaints were logged.[24]

22 *Project Document.* (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 17 ff (or **bit.ly/42naHBZ**); *Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf pages 7-9 (or **bit.ly/4cnGhUD**)

23 *Final Construction Environment Management Plan.* (2017). aiib.org. https://aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/final-construction-environmental-management-plan.pdf (or **bit.ly/4iaVRo6**)

24 Minor non-compliances like improper waste management or not maintaining proper documents in file as required by permit conditions observed during inspections were corrected and verified by SEZAD during subsequent visits and were reported in the Project during the entire construction phase. Monthly audits were conducted by the Engineer to keep better control and ensure compliance with all regulatory requirements. *Source: Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf page 8 (or **bit.ly/4cnGhUD**)

# Project Assessment

## RELEVANCE

**25. The Project is fully aligned with Oman's development needs and priorities, particularly as outlined in the 9th Five-Year Development Plan (9th FYDP) for 2016-2020.** This plan aims to achieve economic diversification and sustainable growth by fostering investor confidence in Oman's economy, targeting increases in total investment to 28% of gross domestic product (GDP) and raising the private sector's share of investment to 52%.[25] Duqm Port serves as a critical link in the supply chain, connecting firms in the Duqm SEZ to international markets, thereby playing a vital role in the government's strategy to diversify the economy and expand the production base beyond oil. In the context of Oman's broader port infrastructure, Duqm Port complements existing ports such as Salalah and Muscat, each serving distinct functions within the national logistics framework. While Salalah facilitates transshipment and trade routes, and Muscat caters to local shipping needs, Duqm Port focuses on industrial and logistical services that support the SEZAD's objectives. By enhancing its infrastructure and operational capabilities, Duqm Port aims to optimize throughput and create synergies with other ports, maximizing the effectiveness of Oman's logistics and trade strategy. This integration is essential for attracting both domestic and foreign investments, ultimately realizing the full potential of the Duqm SEZ and contributing to the long-term sustainability of Oman's economy.

**26. The Project remains well-aligned with Oman's long-term priorities as defined in its Vision 2040 and the objectives of its 10th FYDP 2021-2025.** Vision 2040, published in 2021, provides long-term directions for the development of Oman. Duqm Port remains highly relevant for Vision 2040's key objectives of economic diversification, sustainable development, employment opportunity, and infrastructure enhancement (see Figure 2). The 10th FYDP identifies five key sectors for economic diversification: manufacturing, agriculture and fisheries, mining and mineral products, logistic activities, and education. The Duqm SEZ is a crucial factor towards meeting the 10th FYDP targets for strengthening the manufacturing, fisheries, mining, and logistics sectors, and its success depends on improving accessibility to world markets through the Duqm Port. While both the 9th and 10th FYDP do not explicitly identify the specific infrastructure interventions planned

**Figure 2: Pillars of Oman's Vision 2040**


Source: *Oman Vision 2040*. (2021). oman2040.om. https://www.oman2040.om/book-let?lang=en page 9 (or **bit.ly/4jfkBw8**)

25 The Government of Oman, Supreme Council for Planning (2016). The Ninth Five-Year Development Plan (2016–2020) - A Plan Building on Achievements and Laying Foundations for the Future. Muscat.

and implemented, it is implicit that a complete range of infrastructure investments are needed to achieve the 10th FYDP targets.[26]

**27. The Project is aligned with AIIB's mandate and mission of "Financing Infrastructure for Tomorrow" and was of importance for the institutional development of AIIB.**[27] While the Project was approved before AIIB developed its Corporate Strategy (2021-2030) and Transport Sector Strategy, it fits well into AIIB's overall and sector objectives. The Corporate Strategy identifies AIIB's commitment to sustainable infrastructure with an operational focus on: (1) Green Infrastructure, (2) Connectivity and Regional Cooperation, (3) Technology-enabled Infrastructure, and (4) Private Capital Mobilization.[28] The Project directly aligns with AIIB's priority on Connectivity and Regional Cooperation. The port helps firms access raw materials and capital equipment from external sources and provides access to international markets for their products. The Project also aligns with AIIB's thrust on green infrastructure in line with OPAZ's current priority on promoting Duqm SEZ as a major facility for green hydrogen production.[29] The Project is consistent with AIIB's 2018 Transport Strategy, which seeks to finance transport systems that promote trade and economic growth in Asia with a priority on economically viable trunk and strategic infrastructure projects.[30] In addition to the strategic alignment, it needs to be highlighted that the Project was AIIB's second stand-alone financing and its first for a port development. The Project thereby provided AIIB with an important opportunity to develop its expertise and capacity in stand-alone financing of core infrastructure in its early years of operation.

**28. Duqm Port was designed to support the broader development of the Duqm SEZ.** The Project aimed to complete the infrastructure and facilities required to enable Duqm Port to become a fully operational and competitive port, thereby closing an important infrastructure gap in the full development of the Duqm SEZ. Prior to AIIB's entry, Duqm Port comprised quays and berths on reclaimed land and lacked port essentials such as cargo handling equipment, cargo and container storage areas, administration buildings, and other facilities for a secure and functional port. Due to its role in the development of Duqm SEZ, the port was designed to have state-of-the-art port facilities and equipment to serve the needs of the SEZ's industrial and commercial firms. These included an internal road network, large container and cargo stacking

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26 Government of Oman, Ministry of Economy (2020). The Tenth Five-Year Development Plan (2021-2025) - The First Implementation Plan for Oman Vision 2040, Moving Forward with Confidence. Muscat.

27 *Overview - Infrastructure for Tomorrow - AIIB*. (n.d.). aiib.org. https://www.aiib.org/en/about-aiib/who-we-are/infrastructure-for-tomorrow/overview/index.html (or **bit.ly/3FVeCyg**)

28 *AIIB Corporate Strategy*. (2020). aiib.org. https://www.aiib.org/en/policies-strategies/strategies/.content/index/_download/AIIB-Corporate-Strategy.pdf (or **bit.ly/3XR1sIS**)

29 Green hydrogen—also referred to as "clean hydrogen"—is produced by using clean energy from surplus renewable energy sources, such as solar or wind power, to split water into two hydrogen atoms and one oxygen atom through a process called electrolysis. It currently makes up about 0.1% of overall hydrogen production, but this is expected to rise as the cost of renewable energy continues to fall. *Source: Grey, blue, green – why are there so many colours of hydrogen?* (2021, July 27). weforum.org. https://www.weforum.org/stories/2021/07/clean-energy-green-hydrogen/ (or **bit.ly/3YkT7gE**)

30 *AIIB Transport Sector Strategy*. (2018). aiib.org. https://www.aiib.org/en/policies-strategies/_download/strategy/transport-sector-strategy.pdf page 2 (or **bit.ly/4jmMjHl**)

yards, vehicle and equipment parking areas, a potable water network, a water and sewerage system, and telecommunications and lighting facilities to enable 24-hour operation of the port.

**29. It is likely that the Project has laid the foundation for a transformation of the Duqm SEZ into a hub for green hydrogen and green steel production.** Against the background of increased global Climate Action, hydrogen has emerged as a leading option for storing renewables and for potentially transporting energy from regions with abundant renewable energy resources to other areas over long distances. Green hydrogen can support the production of green steel by helping move steel production from coal-fired plants to hydrogen-powered furnaces.[31] Long-term projections suggest considerable growth of global green hydrogen demand and a scale-up of green hydrogen supply will therefore be required.[32] Duqm SEZ appears to be particularly well-placed to become a hub for large-scale green hydrogen and green steel production, as it can provide large land areas, abundant wind and solar resources, and developed transport and electricity infrastructure. Duqm Port provides the facilities for the import of raw materials and the export of green hydrogen and green steel. At present, OPAZ and PODC aim to become the main production, distribution, and trading hub of green hydrogen and its derivatives in the region. At the time of the PLR, several agreements with large producers of green hydrogen and green steel had already been signed, underlying the strategic advantages of Duqm SEZ for these industries.[33] The Project provides an important foundation for this potentially transformational change of the Duqm SEZ and the Omani economy.

**30. While the PD provided a logical results chain, the RMF was weak on the identification and measurement of outcome indicators.** The PD provided a RMF from inputs to impacts. It identified the full operationalization of Duqm Port as the expected outcome and realization of the full economic potential of the port as the desired impact (see Appendix B for the results chain and RMF indicators). However, the RMF focused the measurement of outcomes primarily on the growth of mineral exports and the efficient use of cargo space as measured by cargo consignment dwell time in port. The growth of mineral exports depended on the development of the mineral railway line to Duqm Port from the mineral-rich resource areas in the region, a risky assumption and outside the control of the Project. Also, Duqm Port is intended to serve the logistics requirements of industry locators in the Duqm SEZ, a fact that seemed to have been overlooked in the preparation of Duqm Port's cargo forecast. Given the "greenfield' nature of Duqm Port, the RMF should have endeavored to capture a broader range of potential cargo markets rather than just one cargo type. The market study had identified various potential commodities and their cargo types, but those were not considered in the RMF. The RMF should

31 *What is green hydrogen and why do we need it? An expert explains.* (2021, December 21). weforum.org. https://www.weforum.org/stories/2021/12/what-is-green-hydrogen-expert-explains-benefits/ (or **bit.ly/4lqqety**), *What is green steel and why does the world need more of it?* (2022, Juy 11). weforum.org. https://www.weforum.org/stories/2022/07/green-steel-emissions-net-zero/ (or **bit.ly/4ltQL9d**)

32 Watari, T., & McLellan, B. (2024). Global demand for green hydrogen-based steel: Insights from 28 scenarios. International Journal of Hydrogen Energy, 79, p. 630-635.

33 For example: Qasim Al Maashani. (2023, October 16). Pacts signed for 6 major projets at Duqm SEZ. *Oman Daily Observer*. https://www.omanobserver.om/article/1144319/business/economy/pacts-signed-for-6-major-projects-at-duqm-sez (or **bit.ly/43Kp6uu**)

ideally have focused the outcome indicator on the three basic types of cargo—bulk, breakbulk and container—with appropriate performance measures. The RMF could have been strengthened with the addition of three additional port performance indicators: annual total cargo volumes, number of vessel calls, and number of containers. In addition, while cargo dwell time is a measure of a port's efficiency, the target of short cargo dwell time in Duqm Port was not a meaningful indicator given that it is a newly developed port. During the initial years of operation of newly built ports, substantial excess port capacity exists before port utilization and cargo volume reached its maximum before congestion occurs. The RMF could have been strengthened with the addition of three additional port performance indicators: annual total cargo volumes, number of vessel calls, and number of containers.

**31. The PD did not adequately recognize key market risks and does not provide mitigation measures.** As described in Chapter 2.2., the PD described nine primary areas of risks, which were limited to risks for implementation and achievement of project output. The PD did not identify risks to the achievement of the overall objective of the port realizing its full economic potential, such as whether the mineral railway line would be completed, whether firms would locate in the SEZ, or whether the mineral fields in the Al Wusta region would be developed. If these risks would materialize, it is possible that Duqm Port always runs below its economic potential. The PD should have included a discussion of main risk areas for outcome achievement and potential mitigation measures.

**32. Overall, the PLR rates the Project "Highly Relevant."** The Project aligns with Oman's economic development strategy and the priorities outlined in the 9th and 10th FYDPs and Vision 2040. The Project aligns with AIIB's mission of "Financing Infrastructure for Tomorrow" and its Corporate Strategy and Transport Strategy. As AIIB's second stand-alone financing and the first in the port sector, the Project was important for AIIB's strategic approach and institutional development. By addressing critical infrastructure gaps, Duqm Port plays a significant role in promoting economic diversification away from oil exports, improving access to international markets, and supporting investor confidence in the Omani economy. It is also important for attracting private sector investments across key industries within the Duqm SEZ. The Project's comprehensive design aimed to enhance operational efficiency, which is essential for fostering a competitive port environment. Duqm Port is positioned to facilitate the Duqm SEZ's development as a hub for green hydrogen and green steel production. While the RMF could benefit from improved outcome measurement and the PD may not have fully addressed key market risks, the Project's logical results chain illustrates its strategic importance. Given its alignment with national development objectives and its potential to contribute to changes in the Omani economy, the Project is rated as Highly Relevant.

## EFFECTIVENESS

**33. The Project completed all its port-related output targets.** By December 2020, physical construction was 99.98% complete. Some items, such as crane rail and track works, could not be commissioned due to the absence of the ship-to-shore cranes that have not been delivered at completion. The main works that were completed under the component included: (1) the road and paving works, comprising construction of three-kilometer of two-lane dual carriageway internal roads and parking areas; a container and cargo stacking yard; parking areas; and a helipad, (2) other infrastructure works, including a potable water network, a storm water and sewerage network, electrical, telecommunications, and street and yard lighting cable installation, and construction of fences and gates, and (3) construction of the terminal building and operational zone, including the administration building, training and amenities centers, an emergency and firefighting center, an electrical services building, a multipurpose terminal, a workshop and maintenance building, and a gatehouse and electrical service building, and (4) installation of a crane beam supported on piles and its tracks (Figure 3). Component 2 for construction supervision was implemented as designed, including the strengthening of OPAZ staff capacity in contract management. While Com-ponent 3 for project management and strengthening of OPAZ staff capacity on procurement was completed, there was no evaluation of the capacity development undertaken including the number of OPAZ staff that benefited from the training.

**34. The Project transformed a port with just berths and quays into a fully equipped facility with new cargo handling equipment and storage facilities.** The installation of two new ship-to-shore cranes and rubber-tired gantry cranes and reach stackers were made possible by the facilities provided under the Project. These equipment and facilities enhance the port's cargo handling capacity and productivity. Adequate storage warehouses, a container back-up area, and cargo stacking areas ensure the capacity to accommodate forecast cargo volumes. These could not have been achieved without first improving port infrastructure designed to accommodate the weight and space requirements of the cargo handling equipment. The primary beneficiaries of the improvements in Duqm Port's cargo handling capacity and increased productivity are the oil refinery and downstream industries, ship drydocking facility, industries located in the Duqm SEZ, and all other users of the port for cargo shipments to/from Duqm.

**Figure 3: Commercial Terminal of Duqm Port**

Photo: OPAZ, 2020

**35. The PLR assesses the achievement of outcomes based on the stated objectives in the PD.** Given that the Project was one of AIIB's first investments and the RMF template had not yet been developed, the PLR assesses the achievement of outcomes based on the broader set

of objectives stated in the PD.[34] As noted earlier, the PLR team finds that the RMF did not adequately capture the expected outcomes of the Project. Its outcome indicators were comprised of growth of mineral exports and lower cargo dwell time. These were inadequate indicators for capturing the potential benefits of a "greenfield" Project. Cargo consignment dwell time was not a relevant early indicator for measuring strengthened logistics services. There is a need to ensure that the available cargo storage and stacking areas are used efficiently. The PLR team takes a theory-based approach and developed a Theory of Change as a tool to detail the envisaged Project outcomes (Appendix C). Based on the PD, the main expected outcomes were to help Duqm Port capture its full economic potential through (1) improved transport efficiency, (2) strengthened logistics services, (3) facilitated mineral exports, and (4) and reduced supply chain delivery time and costs for industries in the new Duqm SEZ.

**36. The Project achieved its primary objective of operationalizing the Duqm Port Commercial Terminal and Operational Zone.** The port construction was completed, and the operation of the terminal was handed over to PODC. The Duqm Port is operational with state-of-the-art cargo handling equipment and a growing number of vessel calls. While the PODC handled 105 vessels and a total of 74,500 freight tons in 2015, the usage of the port had increased to 935 vessels and 8.4 million freight tons by 2023.[35] A dry dock for vessel maintenance that is operated by another company allows the Duqm Port to provide a full range of services to vessels. The Project contributes to direct job creation in the port and indirect job creation within the Duqm SEZ.

**37. The Project contributes to the intended outcomes of improved transport efficiency, strengthened logistics services, and reduced supply chain delivery time and costs for industries in the Duqm SEZ.** With the commercial terminal, the Duqm Port improved connectivity of industries in the Duqm SEZ to foreign markets, offering efficient transportation and logistics services. Before the installation of the commercial terminal and operational zone, the Duqm Port was not fully operational, and industries had to use the port in Salalah. This required goods to be transported in trucks for about 700 km, lowering transport efficiency. The completed commercial terminal allows for an efficient transportation of goods from Duqm SEZ to foreign markets as well as for the importation of materials.

**38. The PD only identified mineral exports specifically in the RMF.** Estimates for containers and breakbulk cargo were conducted and used in the economic analysis, but the majority of the cargo volume was on mineral exports. While the planned cargo mix and volume have not been achieved, this is indicative of "greenfield" port projects, which require a long gestation period before its cargo market matures. This is the case for Duqm Port, where cargo traffic depends on cargo-generation from industries within the Duqm SEZ. On cargo dwell time, achieving the 2025 target of less than five days was not yet due, but there is no urgency in meeting the target

34 *Project Completion Note*. (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf page 9 (or **bit.ly/4cnGhUD**)

35 PODC Port Performance Statement.

as there is substantial port excess capacity at the time of the PLR. The longer the cargo remains at the port, the better for the PODC since this generates revenues for the company. Achieving the target only becomes an imperative if the port nears its design capacity and port congestion occurs.

**39. The Project did not achieve its target of facilitating mineral exports.** The Project did not achieve the RMF target for dry bulk mineral exports. The actual volume of dry bulk mineral exports in 2021 was 0.07 million tons, substantially below the 2021 target of 6.6 million tons (Table 3).[36] Using the forecast traffic by cargo type during appraisal as target, the Project missed the targeted volumes by a substantial amount. The ELA noted that the cargo forecasts were based on a market study completed in 2011-2012 with source data from one or two years earlier. This undermines the cargo forecast as it did not capture changes in the regional port and shipping sector and the development of major shipping alliances, as of at least 2016. Furthermore, the development of Duqm Port was envisaged to be complementary to the development of railway lines from the mineral rich areas of the Al Wusta Region (Theory of Change in Appendix C). The PD noted delays in even commencing construction of the railway line as a risk to realizing the Project's impact but did not include it in the list of risks and mitigation measures. The railway line was expected to reduce transportation costs to Duqm Port and make the export of minerals from the mineral rich areas viable. While the mineral railway was planned in parallel to the Project, the railway has not been developed at the time of PLR preparation. The development and volume of mineral exports remain substantially below appraisal forecasts.

**40. The Project made some initial contributions to economic growth, economic diversification, and trade.** The PLR identified additional outcome indicators that could have been included in the RMF, which are standard industry indicators for port performance. These are: (1) annual cargo volume, (2) annual number of vessel calls, and (3) the annual number of containers handled which are standard industry indicators for port performance. Annual cargo and container volumes were forecast as part of the economic analysis in the PD and these values could have been used as target indicators. Table 3 provides information on these indicators as an expansion of the Project's RMF. Applying these, actual total cargo and container volumes were substantially lower than the target volumes, although these might have shown some growth from 2021 to 2023, the same with annual vessel calls. All three indicators show increases from the baseline values in 2016, but these were well below the targets (see Table 3). While the forecasts at appraisal appear to be high, the annual cargo and container traffic volumes show growth in recent years. This is indicative of the Port's growing business and economic development in the Duqm SEZ, but still well below expectations. The annual gross revenues (Indicator 1 in the RMF, in Table 4) were below the targets. It must be noted that the Port functions as the interchange facility in the supply chain (Duqm Port has no "captive" cargo base at present and undeveloped projects in the SEZ presents a challenge on estimating the future traffic of the port). It is to be expected that for a "greenfield" project like Duqm Port and Duqm SEZ it takes at least 10 years for the full economic impact to unfold.

36 PODC Port Performance Statement.

## Table 3: Results Monitoring Indicators

| Project Objective Indicators | Baseline 2016 | 2021 | | 2022 | | 2023 | | 2025 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Target | Actual | Target | Actual | Target | Actual | Target | Actual |
| **Indicator #1:** Annual gross revenues increased to (USD, million) | 1.82 | 98.8 | 28.52 | - | 22.36 | - | - | 288.6 | - |
| **Indicator #2:** Total dry bulk mineral annual exports (million tons) | 5.5 | 6.6 | 0.07 | 7.77 | 1.18 | 9.20 | 1.11 | 11.13 | |
| **Indicator #3:** Target cargo dwell time to be attained (days in port) | - | - | - | - | - | - | - | < 5 days | - |
| **Further suggested port performance indicators** | | | | | | | | | |
| **Indicator #4:** Target annual cargo volume – bulk & breakbulk (million tons) | 0.34 | 8.18 | 0.35 | 9.68 | 1.44 | 11.63 | 8.45 | 13.73 | - |
| **Indicator #5:** Target annual number of vessel calls | 123 | - | 805 | - | 803 | - | 935 | - | - |
| **Indicator #6:** Target annual number of containers (000 TEUs) | 168 | 567 | 10 | 826 | 10 | 921 | 16 | 1,111 | - |

Sources: *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf Note: For Indicators #1 to #2, target values were taken from the PD. Actual values were taken from PODC reports. For Indicators #4 to #6, target values were taken from the PD. Actual values were taken from PODC reports.

**41. It is likely that the Project laid the foundations for transforming the Duqm SEZ into a hub for green hydrogen and green steel production.** The Duqm Port can potentially provide facilities for the import of raw materials and the export of green hydrogen and green steel with its liquid and commercial terminal. OPAZ and PODC aim to become the main production, distribution, and trading hub of green hydrogen and its derivatives in the region. As of now, several agreements with large producers of green hydrogen and green steel have been signed, underlying the strategic advantages of Duqm SEZ for this industry. If the development of Duqm SEZ materializes as projected, it could see economic diversification towards green industries.

**42. Overall, the PLR rates the Project "Effective."** This rating reflects the successful transformation of a port that had only basic berths and quays into a fully operational facility equipped with state-of-the-art cargo handling equipment. The Project achieved all planned outputs, as well as its intended outcomes of operationalizing Duqm Port, strengthening transport efficiency, providing logistics services, and reducing the supply chain delivery time for industries in the Duqm SEZ. However, growth in port traffic has been because of (1) mineral production exports and the mineral rail in the Al Wusta region have not developed as planned

and (2) the number of locators in the Duqm SEZ has remained low and has not yet picked up as projected. The Project has the potential of achieving its expected impact of contributing to economic growth, diversification, and trade in the region but as a "greenfield" initiative, it will take time for cargo traffic to fully develop, particularly since the port depends exclusively on cargo traffic generated by the industries in the Duqm SEZ. Thus, while the Project laid the groundwork for potentially transforming the Duqm SEZ into a hub for green hydrogen and green steel production, the potential remains unrealized until the locator industries are in place.

## EFFICIENCY

**43. Due to lower project costs than estimated, the full loan amount was not utilized.** Table 4 shows the estimated and actual cost for the three project components. At appraisal, the AIIB loan was to cover 85% of construction works under Component 1, while the Client would cover Components 2 and 3 and the planned contingency fund. The AIIB loan was expected to cover 75% of total Project costs. At completion, Project costs were USD19.44 million below estimates due to the lower successful bid offer. However, the Client did not have any alternative use of the AIIB loan savings, and the surplus was cancelled by AIIB. As the contingency fund was not used, the final AIIB loan amount of USD245.56 million covered 84% of the Project cost.[37]

**44. The phased construction allowed PODC operations during the construction works.** The PCN indicated that "unplanned early operations of the PODC" were responsible for initial delays in project implementation. However, according to the Client and contractor, the operation of the PODC during construction was already ongoing and a phased construction was planned by all concerned parties and implemented to ensure that the port remained operational. It was unclear as to when the delay occurred, but this phased approach allowed PODC to operate during the construction, as mandated by government. The approach reflected successful and well-planned coordination between OPAZ, PODC, and the contractor.

**45. Several other factors contributed to a Project delay of about 18 months, some of which could have been foreseen.** The Project suffered delays due to the occurrence of sinkholes within the reclamation site, issues relating to vibro-compaction works, two cyclones in the autumn of 2019, and the COVID-19 global pandemic. AIIB staff indicated that the occurrence of sinkholes and potential issues relating to vibro-compaction works could have been foreseen if more extensive technical studies have been done at the appraisal stage. The contractor presumably just relied on the results of the consultant's technical site evaluation. Under such circumstances, corrective works for these occurrences should be covered under the Project's physical contingencies' allowance. The delays can largely be attributed to the two cyclones and

37 *Project Completion Note*. (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf page 3 (or **bit.ly/4cnGhUD**)

the COVID-19 global pandemic, which were unforeseeable events. It needs to be noted that the Client and contractor managed to continue the construction works during the early months of the COVID-19 global pandemic and were able to finalize the works in December 2020.[38]

### Table 4: Estimated and Actual Cost of the Project

| Project Components | Cost in USD million | | | | |
|---|---|---|---|---|---|
| | AIIB | Share (%) | Client | Share (%) | Total |
| **Component 1** | | | | | |
| At appraisal: | 244.74 | 85 | 43.19 | 15 | 287.93 |
| Actual: | 229.52 | 85 | 40.50 | 15 | 270.03 |
| **Component 2** | | | | | |
| At appraisal: | 0 | 0 | 4.70 | 100 | 4.70 |
| Actual: | 0 | 0 | 6.31 | 100 | 6.31 |
| **Component 3** | | | | | |
| At appraisal: | 0 | 0 | 2.50 | 100 | 2.50 |
| Actual: | 0 | 0 | 0.59 | 100 | 0.59 |
| **Total Base Cost** | | | | | |
| At appraisal: | 244.74 | 83 | 50.39 | 17 | 295.13 |
| Actual: | 229.53 | 83 | 47.4 | 17 | 276.93 |
| **Contingencies** | | | | | |
| At appraisal: | 0 | 0 | 37.94 | 100 | 37.94 |
| Actual: | 0 | 0 | 0 | 0 | 0 |
| **Fees** | | | | | |
| At appraisal: | 20.26 | 100 | 0 | 0 | 20.26 |
| Actual: | 16.03 | 100 | 0 | 0 | 16.03 |
| Total Estimated cost: | 265.00 | 75 | 88.33 | 25 | 353.33 |
| Total Actual Cost: | 245.56 | 84 | 47.4 | 16 | 292.95 |

Source: *Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf page 3 (or **bit.ly/4cnGhUD**)

38 *Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf pages 5-6 (or **bit.ly/4cnGhUD**), interviews with project stakeholders

**46. An economic analysis of the Project was undertaken at appraisal to determine whether the project was economically viable.** There were two major components to the economic analysis: (1) costs of the project inclusive of investment cost and operating and maintenance cost (assumed at 65% of total revenues), and (2) benefits to be generated by the Project, including: (a) induced benefits—revenue earned by the port from ancillary activities, (b) incremental benefits—revenue earned from port handling charges, and (c) non-incremental benefits—revenue generated from new jobs created by the Project. The analysis period was from 2017 to 2040 and assumed a three-year construction period from 2017 to 2019. Applying the standard method for cost-benefit analysis, the Economic Internal Rate of Return (EIRR) at appraisal was calculated at 25.5%, which exceeded AIIB's recommended opportunity cost of capital of 12%.[39]

**47. The PD did not provide sufficient information on the method and inputs used in the calculation of the EIRR, preventing its re-calculation at the time of PLR.** While the appraisal developed an economic assessment model, this was not available to the PLR team and the validity of the computations could not be verified. For one, the conversion of cost and benefit items from financial to economic prices were not discussed nor were adjustment factors used for shadow pricing indicated.[40] On Project benefits, the procedures and assumptions used in forecasting benefits over the 25-year period were not explained. The economic cost-benefit table provided in the PD showed the computation of the EIRR but the insufficiency of information on how the specific cost and benefit items were estimated precludes the PLR from recomputing the Project EIRR. In addition, the PLR notes that:

1. The market study on which the forecast of cargo traffic was based was prepared in 2011-2012 with the data utilized dating back as far as 2010-2011 . To use this data to forecast cargo traffic is not useful, as has been pointed out already, as significant developments in the shipping and cargo market has already occurred.

2. Actual cargo traffic at the Duqm Port from Table 5 already shows the inaccuracy of the forecast and unsuitability to be used in the estimation of the Project EIRR.

3. Loan disbursement data during Project implementation was not available. Given this lack of information, the validity of the EIRR computation at appraisal cannot be assessed and a recalculation of the EIRR at PLR would not yield reliable and acceptably accurate results.[41]

39 *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 25-33 (or **bit.ly/42naHBZ**)

40 It is standard practice that financial prices of project cost and benefits are converted to economic prices using estimated parameters such as Shadow Exchange Rate Factor (SERF), Shadow Wage Rate Factor (SWRF) and Standard Conversion Factor (SCF) before the cost-benefit flow is used to compute for the Project EIRR, ENPV and B-C ratio.

41 *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 25-33 (or **bit.ly/42naHBZ**)

**48. The PCN did not rate the efficiency of the project nor was there any recalculation of the Project EIRR at Project completion.** The Project Team did not undertake a recalculation of the EIRR at project completion and did not provide an economic analysis in the PCN. While this is standard practice at AIIB, this results in an analytical gap in determining whether the Project EIRR computed at appraisal was still valid or whether conditions have already substantially changed.

### Table 5: Actual and Projected Cargo Throughput at Duqm Port, by Type of Cargo, 2015-2035

| Year | Dry Bulk (in 1,000 tons) | | Liquid Bulk (in 1,000 tons) | General Cargo (in 1,000 tons) | | Total (in 1,000 tons) | Containers (in 1,000 tons) | |
|---|---|---|---|---|---|---|---|---|
| | Forecast | Actual | Actual | Forecast | Actual | Actual | Forecast | Actual |
| **2015** | - | 0 | 0 | - | 74 | 74 | - | 0.14 |
| **2016** | - | 204 | 0 | - | 137 | 341 | - | 0.2 |
| **2017** | - | 663 | 0 | - | 305 | 968 | - | 1.1 |
| **2018** | - | 849 | 0 | - | 325 | 1,174 | - | 0.5 |
| **2019** | - | 800 | 0 | - | 447 | 1,247 | - | 1.6 |
| **2020** | 6,249 | 273 | 0 | 1,110 | 717 | 990 | 390 | 7.4 |
| **2021** | 6,661 | 80 | 0 | 1,522 | 257 | 338 | 567 | 10.9 |
| **2022** | 7,770 | 1,118 | 0 | 1,977 | 313 | 1,431 | 826 | 10.3 |
| **2023** | 9,199 | 1,109 | 7,084 | 2,435 | 238 | 1,347 | 921 | 16.8 |
| **2024** | 10,119 | - | - | 2,600 | - | - | 1,016 | - |
| **2025** | 11,131 | - | - | 2,600 | - | - | 1,111 | - |
| **2030** | 17,927 | - | - | 2,600 | - | - | 1,585 | - |
| **2035** | 19,720 | - | - | 2,600 | - | - | 2,093 | - |
| **Growth Rate (2020-2023)** | 8.0% | 27.4% | - | 5.84% | 15.72% | 43.72% | 11.9% | 142.6% |

Source: The Projected Cargo Throughput is taken from the Economic and Financial Analysis. *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 25-33 (or **bit.ly/42naHBZ**). The Actual Cargo Throughput is reported as in the PODC Port Performance Reports.

**49. The cargo traffic forecasts used to calculate the EIRR were substantially overestimated.** The cargo traffic forecast used in the project appraisal's calculation of benefits has been verified to be substantially overestimated as shown in Table 5. For the forecast starting year 2020, actual cargo throughput compared to the forecast for the same year were significantly lower for dry bulk (273 thousand tons), general cargo (717 thousand tons) and container cargo (7.4 thousand tons). The comparison shows large discrepancies between actual and forecast cargo

volumes by cargo type although actual cargo throughput at Duqm Port indicates pronounced increases in volume by cargo type. From 2016 to 2023, dry bulk cargo volume increased by an annual average of 27.4%, general cargo volume increased by 15.72% per annum, and container volume in thousand tons increased at 142.6% per annum. While the cargo growth was high, the absolute volumes were very low compared to the PD forecast traffic. While Project investment cost was lower than estimated at appraisal, this would have had a small effect on the EIRR compared to the significantly lower cargo volume. In sum, it can be assumed that if the EIRR was re-calculated at the time of the PLR, it would be significantly lower than the opportunity cost of capital (social discount rate). This reduction in the EIRR is due to benefits not materializing as expected in the PD. Based on the difference between actual cargo throughput and the forecasts, the cargo throughput forecast will not be achieved in the respective years and catch up would be difficult to attain. The recomputed EIRR will always be substantially lower than the PD estimates.

**50. PODC revenues were lower than forecast and it is likely that the Project Financial Internal Rate of Return (FIRR) would be lower than the appraisal estimates at the time of the PLR.** The FIRR at appraisal was calculated at 15.8%, which was within the range of 8% to 18% expected by port investors in the global port industry. The calculation was based on estimates assuming net revenues of USD26.1 million in 2020 growing to USD62.6 million in 2025 and reaching USD137.9 million in 2040.[42] The financial performance of the PODC shows that it incurred losses from 2017-2022 and was supported by grants from the Government of Oman. Based on the audited financial statements, the accumulated loss of PODC from 2017-2022 was USD2.4 million. PODC started showing net profits in 2020: USD7.59 million in 2020, declining to USD3.45 million in 2021 and USD3.78 million in 2022.[43] One reason for the decline in net profits in 2021 was the drop in dry bulk and general cargo traffic likely due to the COVID-19 pandemic (Table 5). The PODC profits are below the estimates used for the FIRR at appraisal. For the period 2017-2022, the total government grants were USD18.9 million, with the grants as high as USD6.5 million in 2017 and declined to USD0.54 million in 2022. The nature of the grant was to support the operations of the PODC during its pre-development and development phases based on its concession agreement. In its 2022 financial statement, it was noted that PODC was in its predevelopment phase.[44]

**51. Overall, the PLR rates the Project "Less than Efficient."** This assessment is based on several key factors. Notably, the Project experienced an 18-month delay in implementation, which was partially avoidable and had a negative impact on overall efficiency. Additionally, the economic analysis conducted at the appraisal stage did not provide sufficient detail regarding the methods and inputs used to calculate the EIRR. This limited level of detail makes it difficult to verify the EIRR and raises questions about its accuracy. During the PLR, a reassessment of actual costs and benefits revealed a significant overestimation of cargo throughput forecasts

42 *Project Document.* (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 25-33 (or **bit.ly/42naHBZ**)

43 Net profits before government grants as indicated in the audited financial statements. Currency conversion by the PLR team.

44 PODC Audited Financial Statements. Conversion from OMR in USD by the PLR team.

made during the appraisal phase. Consequently, if the necessary data had been available for recalculation, it is likely that the EIRR would be considerably lower than initially anticipated, potentially falling below the opportunity cost of capital. It is noted that the Project demonstrated effective cost management and resource allocation, leading to actual costs being lower than initial estimates, partially due to the unused contingency. However, these cost savings would have a small effect on the EIRR compared to the significantly lower actual cargo throughput compared to the inflated estimates. Overall, the combination of implementation delays, lack of accurate data on the EIRR calculation, and the substantial discrepancy between actual performance and initial projections of cargo throughput led to the "Less than Efficient" rating. The current rating reflects the information and conditions available at the time of the PLR. Looking ahead, there remains strong potential for improvement, as an anticipated increase in cargo traffic in the coming years could enhance the Project's operational efficiency and overall evaluation, potentially leading to a more favorable assessment.

## SUSTAINABILITY

**52. Duqm Port is currently managed by an experienced international partnership.** Duqm Port is being operated and maintained by PODC, a joint venture between the Government of Oman (represented by ASYAD Group) and a Belgian Consortium between the Port of Antwerp-Bruges International and DEME Concessions. With more than 300 liner services and 800 destinations, the Port of Antwerp-Bruges is the second largest port in Europe and ranked 13th in the top 20 container ports worldwide in 2022.[45] Meanwhile, DEME specializes in dredging, marine infrastructure, solutions for the offshore energy market, and environmental works and concessions. Together, the Port of Antwerp and DEME are well-qualified to operate and maintain Duqm Port and have extensive experience in the international shipping industry. Since PODC took over operation of Duqm Port, modern cargo handling equipment has been acquired and used in daily port operations. According to PODC management, PODC is considering additional investments to improve port operations.

**53. The concession agreement allows for government lending during Duqm Port's development phase.** The Concession Agreement between the OPAZ and the PODC on the Duqm Port was signed on July 8, 2015. Under the concession agreement, the concession fee is equal to 5% of gross revenue for the first 14 years of the agreement and 7.5% of gross revenue from the 15th to 28th year. Any unpaid concession fee will accumulate and incur interest. Based on PODC's financial statements, PODC has always been on time for payments of the concession fee. The agreement entitles PODC to government grants during its pre-development phase and government loans during its development phase.[46]

45 Port of Antwerp-Bruges climbs to 13th place in world ranking of largest container ports. (2022, September 21). *Belga News Agency*. https://www.belganewsagency.eu/port-of-antwerp-bruges-climbs-to-13th-place-in-world-ranking-of-largest-container-ports (or **bit.ly/4220M5W**)

46 *Royal Decree 28/2015 Promulgating the Law Granting the Concession for the Development, Management and Operation of the Port of Duqm and Approving the Agreements Relating to It*. (2015, July 8). decree.om. https://decree.om/2015/rd20150028/ (or **bit.ly/4jkOj2X**); PODC Audited Financial Statements.

**54. PODC is currently operating profitably.** Although PODC had been incurring losses up to 2019, they have been operating profitably since 2020. Once Duqm Port was completed, PODC's operational outlook improved and there has been an increase in cargo throughput and revenues. After 2020, operating costs began to decline and in 2023, were at their lowest level since 2017. Duqm Port was therefore able to handle increased cargo throughput while reducing its operating cost. While the level of revenues generated by PODC to date is substantially below forecast levels, its lower operating costs have helped ensure that sufficient financial resources are available to adequately fund port operations including the maintenance of facilities and equipment. However, PODC still enjoys government grants for its operations.

**55. It is likely that in the coming years the Duqm SEZ will experience considerable economic development that will ensure the long-term sustainability of Duqm Port.** As mentioned above, OPAZ and PODC are focused on developing Duqm SEZ into a hub for green hydrogen. At the time of the PLR, major investments in green hydrogen and green steel had been secured that will lead to industrial development in the Duqm SEZ and support the viability of Duqm Port in the long-term. PODC reported that given the forecast traffic volumes resulting from green hydrogen and green steel, a further expansion of the commercial terminal is already planned. Furthermore, manufacturing industries are starting operations in the Duqm SEZ and the nearby fishing port that is currently under construction is expected to generate additional traffic for Duqm Port. One example is the tuna canning factory visited by CEIU that started operating in March 2024 and generates traffic for Duqm Port through the import of raw materials and the export of canned tuna. For the development of the mineral exports sector, the railway lines are the crucial missing link to bring down logistics costs that would make Oman's mineral exports competitive. To date, it remains unclear whether the long-standing plans of the government to build these railway lines will be realized.

**56. E&S risks associated with the Project were effectively managed during implementation, minimizing potential impacts on sustainability.** The Project was classified as Category "B" under AIIB's Environmental and Social Policy (ESP), with identified risks primarily arising during the construction phase within the existing port area. A PEIA was conducted, aligning with both the law in Oman and AIIB's Environmental and Social Standard 1, which involved comprehensive legal, environmental, social, and ecological assessments. This assessment included mitigation measures through a general EMP, which was crucial for addressing E&S risks from the project's inception. The absence of resettlement, land acquisition, or marine works further minimized potential disruptions. Following the PEIA, a CEMP was implemented, emphasizing a robust monitoring and reporting system that required quarterly updates on various environmental indicators, thus promoting accountability and environmental stewardship.[47]

47 *Final Construction Environment Management Plan.* (2017). aiib.org. https://aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/final-construction-environmental-management-plan.pdf (or **bit.ly/4iaVRo6**)

**57. Health and safety considerations were also prioritized during project implementation, with the contractor establishing a GRM compliant with Oman's labor laws.** The absence of logged complaints during the construction phase reflects the effectiveness of the GRM and proactive stakeholder engagement efforts. Continuous site monitoring by SEZAD and the Engineering team ensured compliance with health and safety regulations.[48] Overall, the management of E&S risks adhered to AIIB's safeguards and Oman's regulations, validating the Category "B" classification. While these measures effectively mitigated localized impacts, it is critical to sustain best practices and maintain the high standards established during construction as the port transitions into its operational phase.

**58. To enhance the effectiveness of these efforts, AIIB should strengthen its supervision and annual monitoring processes.** This can be achieved by actively reviewing and visiting the project site to assess ongoing compliance, as well as providing feedback on the annual monitoring reports prepared by the Client. Incorporating these comments into AIIB's system will ensure a transparent and collaborative approach to addressing environmental and social risks. This enhanced oversight will not only improve project accountability but also facilitate timely identification of potential issues, thereby promoting better alignment with AIIB's safeguards and ensuring the long-term sustainability of the project.

**59. Overall, the PLR rates this Project "Likely Sustainable".** Benefits are expected to endure in the future and the probability of material risks is low. Although Duqm Port has not yet achieved its forecast cargo throughput or target revenue, it is successfully operated and managed by the PODC, which possesses significant expertise in global port operations and marine infrastructure. This expertise ensures that the port adheres to international standards. By 2020, Duqm Port began generating profits, supported by streamlined operations, cost reductions, and steady growth in cargo throughput. While cargo throughput and revenues have not met forecast levels, the improved profitability—albeit modest—provides financial support for ongoing operations and maintenance. Looking ahead, it is anticipated that the Duqm SEZ and its surrounding areas will experience substantial economic development, particularly due to the promising potential for green hydrogen and green steel production, with secured investments already in place. From an E&S perspective, the Project adhered to AIIB's ESP and the regulations in Oman. The identified E&S impacts were confined to the construction phase and localized to the existing port area. However, to enhance long-term sustainability, it is essential to continue monitoring and adapting operational practices in line with evolving industry standards and stakeholder expectations. Implementing robust feedback mechanisms and strengthening oversight will further ensure that E&S considerations remain a priority as the Project matures.

48 *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 17 ff (or **bit.ly/42naHBZ**); *Project Completion Note*. (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf pages 7-9 (or **bit.ly/4cnGhUD**)

# Work Quality Assessment

## AIIB WORK QUALITY

**60. While AIIB joined the Project when implementation arrangements were already completed, AIIB made marked contributions in enhancing the CEMP and ensuring public consultation.** AIIB involvement provided Project stakeholders with an opportunity to learn about AIIB's ESP and gain competency in its application. This process entailed filling gaps in the draft CEMP to meet ESP requirements. AIIB support to fill gaps in safeguards included an emphasis on social dimensions, public consultation, and information provision. This is particularly relevant as the 2014 household survey found that residents were unaware of E&S assessments and reported deteriorating air quality and noise conditions. The Client was reluctant to undertake additional stakeholder consultations, but AIIB worked closely with SEZAD to ensure that public consultations took place. According to the Client, this early stakeholder engagements was useful and led, for example, to the creation of a separate location for local fishermen to land their fish catch. AIIB actively engaged with nongovernmental organizations at the project site to understand their concerns on SEZAD arrangements for contract foreign workers and the operation of the GRM.

**61. The Project would have benefited from more extensive technical assessments and due diligence at appraisal.** AIIB approved the Project loan after a six-month processing period. This helped ensure that the well-advanced Project could proceed on schedule, although earlier AIIB participation could have contributed to more in-depth technical assessments and due diligence. AIIB staff and Client representatives stated that it would have been beneficial to have a more extensive review at the appraisal stage to support the efficiency of the Project cycle. One interviewee suggested that some factors that contributed to Project delays, such as the occurrence of sinkholes, could have been foreseen with more detailed geotechnical studies. More attention should have been paid to the reliability of Port traffic forecasts and the market study for a more accurate estimation of the Project FIRR and EIRR. The PD did not adequately discuss market risks for achieving project outcomes and mitigation measures, such as whether the mineral railway lines get developed. Limited RMF indicators did not adequately capture the Project's expected outcomes, which would have benefitted from more in-depth technical expertise to develop port performance indicators.[49]

**62. The supervision structure established by AIIB proved effective in ensuring adequate communication and monitoring during project implementation.** AIIB included covenants in the Project Loan Agreement for the timely creation of the PIU with agreed terms of reference; a Project Implementation Review Committee; and a Project Steering Committee. These supervision committees effectively monitored project progress; resolved issues; kept AIIB updated on Project matters in a timely manner; and provided transparency in the construction process. Clear communication of progress, issues, and remedial actions was evident from the project documentation. The Client emphasized that the Project benefited from the strong supervision structure, and that it was useful to have AIIB attend committee meetings to ensure the flow of information.

49 *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf (or **bit.ly/42naHBZ**)

**63. Overall, the Client valued AIIB's close engagement, flexible approach, and trust in the Government of Oman.** OPAZ expressed high satisfaction with its interactions with AIIB and appreciated AIIB's flexibility and efficiency in dealing with project implementation issues. AIIB was supportive and available to the Project Team. For example, the Client indicated that the extension of the loan closing date was smooth and efficient. The Client emphasized that a main advantage of working with AIIB was AIIB's confidence in the Government of Oman and the work of SEZAD in supporting the investment with advanced implementation arrangements.

**64. Overall, the PLR rates AIIB Work Quality "Satisfactory".** Despite the advanced stage of project preparation, AIIB made substantial contributions to the final CEMP and to ensuring adequate stakeholder consultations. The Client indicated a high degree of satisfaction in working with AIIB and particularly appreciated AIIB's close engagement, flexible approach, and high degree of confidence in the Government of Oman and the SEZAD team. The supervision structure that AIIB helped establish functioned well in ensuring adequate communication and monitoring during implementation. However, E&S supervision would benefit from more consistent project visits for annual monitoring to ensure adherence to E&S standards and practices. Additionally, the Project could have benefited more from earlier AIIB participation in the technical assessment and due diligence at appraisal, which would have further enhanced its overall effectiveness.

## CLIENT WORK QUALITY

**65. The Project was in an advanced state of readiness when AIIB entered the Project, underscoring the high capacity and capabilities of SEZAD/OPAZ.** When AIIB came into the Project, the Client had already completed the Project implementation arrangements and selected the civil works contractor. As noted in the ELA, the involvement of experienced Client staff and development partners familiar with the requirements of multilateral development banks helped ensure efficient due diligence and documentation. Staff experience and institutional readiness resulted in a shortened loan processing for AIIB as well as speedy commencement of civil works and loan disbursements. The advanced state of readiness of the Project permitted AIIB to obtain advanced loan approval, thereby providing certainty to the estimated project cost and loan closing process.

**66. The high capacity and capabilities of the Client provided assurance to AIIB at Project appraisal.** Greenfield projects such as the development of Duqm SEZ and Duqm Port can be exposed to high market risks. The investment in Duqm Port's commercial terminal and operational zone development carried higher risks for AIIB. The high capacity of the Client, particularly the OPAZ/SEZAD staff, assured AIIB that construction would be well-managed, and the investment would be sustainable. OPAZ proved to be a capable agency with a strong plan for the development of the entire Duqm SEZ, which provides the underlying basis for the development of Duqm Port.

**67. The phased construction approach that allowed PODC to operate during construction demonstrated the Clients' high project management capability.** While the PCN identified "unplanned early operation of the PDC" a cause of project delay,[50] both OPAZ and PODC stressed in the interviews with CEIU staff that the phased implementation approach was a deliberate decision to allow the PODC to operate during construction. SEZAD elected to required uninterrupted port operations during construction as requested by firms using the port. Data showed that Duqm Port has been in operation since 2012.[51] All parties, including SEZAD, the consultants, the contractor, and PODC agreed to implement phasing of project construction to allow continuous port operations. An agreed implementation schedule with the division of the project into 3 phases was reached and allowed PODC to continue port operations at areas cleared for operation or where construction has been completed. This demonstrated SEZAD's capability to find and implement solutions to issues that were encountered prior to and during implementation to ensure smooth progress. While some manageable delays occurred during implementation, SEZAD ensured the continuation of construction during the COVID-19 global pandemic, minimizing delays due to the global disruptions and enabling construction to be completed in Dec. 2021.

**68. The Client demonstrated robust management of both E&S and fiduciary requirements throughout the Project.** E&S risks were proactively and effectively addressed during implementation, helping to minimize any potential impacts on sustainability and ensuring alignment with best practices. Fiduciary performance was consistently satisfactory, with the Project maintaining a financial management system that met AIIB's standards. In compliance with all legal covenants, the Client submitted high-quality financial and audit reports each with unmodified audit opinions—on schedule, underscoring the Project's strong commitment to transparency and accountability.

**69. While forecast cargo throughput did not materialize, OPAZ is actively seeking promising areas for development of Duqm SEZ.** As described earlier, the forecast cargo throughput at Duqm Port did not materialize as expected. As the railway line was not developed, the mineral exports have been lower than projected. However, OPAZ is actively developing potential avenues for private sector investment and has identified green hydrogen and green steel as potential major sectors for the Duqm SEZ. At the time of the PLR, major investments in green hydrogen and green steel had been secured to support the viability of Duqm Port in the long-term.

**70. The Client actively facilitated the preparation of the PLR.** AIIB does not have an office in Oman and the PLR team coordinated directly with OPAZ on the information requirements of the PLR. OPAZ assisted in the scheduling and arrangement of meetings with all concerned stakeholders, and site visits to the Duqm Port, fishing port and a fish factory located within the

50 *Project Completion Note.* (2023, November 3). aiib.org. https://www.aiib.org/en/projects/details/2016/approved/_download/Oman/AIIB-PCN_L000013-Oman-Duqm-Port-Project.pdf pages 1-5 (or **bit.ly/4cnGhUD**)

51 *ASYAD | Port of Duqm.* (n.d.). asyad.om. https://asyad.om/ports/duqm-port (or **bit.ly/4j3iU5x**)

SEZ. These activities provided new insights into the Project and crucial information/data for the PLR.

**71. Overall, the PLR rates Client Work Quality "Satisfactory".** The capabilities of SEZAD/OPAZ staff and consultants were demonstrated by their preparedness for implementation, which included international experience, technical skills, and commercial expertise, as well as their efficiency and responsiveness. The Project benefitted from the Client's readiness at the time of AIIB's entry, providing a level of confidence necessary to manage the associated financing risks. The phased construction approach allowed port operations to continue during construction, and the ability to maintain progress during the COVID-19 pandemic illustrated the functional capacity of SEZAD/OPAZ's management. While the forecasted cargo throughput did not materialize as expected, OPAZ is actively seeking new business opportunities for Duqm Port, particularly in green hydrogen and green steel.

# Conclusions

## OVERALL ASSESSMENT

**72. The PLR rates the Project "Successful".** The Project demonstrated **High Relevance** by aligning its objectives with the development priorities of Oman and AIIB's mandate. Early indications suggest that the Project is catalyzing transformational change in the Al Wusta region and Oman's economy, particularly through the development of the Duqm SEZ and its focus on green hydrogen production. The Project was **Effective**, achieving its output targets, thereby establishing a crucial element of the broader strategy for economic growth and diversification. However, achieving the broader economic outcomes will require the successful integration of additional components beyond the Project's direct control, such as railway development, the establishment of new industries in the SEZ, and engagement of mining companies in mineral-rich areas. The realization of these components is essential for the Project's long-term success. It should be noted that the Project was delayed, and cargo throughput was significantly below estimates at the time of the PLR, leading to a **Less than Efficient** rating. The Project is assessed as **Likely Sustainable**, evidenced by the capacity of the Client and the positive trends in the PODC financial performance. Despite this, there remains potential for improvement as the port continues its ramp-up to profitable operations. Both **AIIB** and the **Client** demonstrated **Satisfactory Work Quality** throughout the Project, contributing to its successful output delivery. It is important to recognize that definitive conclusions regarding the Project's long-term impacts may be premature. The port is still in its early operational years, with the PD projecting outcomes to be achieved over a 20-year period extending to 2040. Continued monitoring will be critical to assess the port's progress in establishing a reliable revenue stream and operational track record.

### Table 6: Overall Assessment of Project Performance

| Evaluation Criteria | Project Completion Note | Project Learning Review |
|---|---|---|
| **Relevance** | Not assessed | Highly Relevant |
| **Effectiveness** | Not assessed | Effective |
| **Efficiency** | Not assessed | Less than Efficient |
| **Sustainability** | Not assessed | Likely sustainable |
| **Overall Assessment** | **Not assessed** | **Successful** |
| **AIIB Work Quality** | Not assessed | Satisfactory |
| **Client Work Quality** | Not assessed | Satisfactory |

## ISSUES

**73. The PLR identified four main issues that affected the Project despite its overall success. These are:**

**74. Issue 1: Insufficient technical analysis leading to challenges in project implementation.** The Project faced implementation challenges attributed to insufficient technical analysis during the project appraisal phase. As AIIB got involved when the Project was already at contracting stage, the AIIB team did not review the technical analysis in detail. The initial appraisal lacked comprehensive geotechnical studies, leading to unforeseen issues such as sinkholes, which contributed to construction delays and hindered accurate project cost estimations.

**75. Issue 2: Outdated and inadequate market forecasts present challenges for project operation.** The cargo throughput forecasts relied on a market study conducted in 2011-2012, failing to incorporate significant changes in the regional port and shipping landscape by 2016, including the emergence of major shipping alliances. A major weakness of the cargo demand forecast was the focus on the increase of mineral exports that would be brought by the proposed mineral railway line of which the Project had no control of, and certainty of implementation had not been established. Focusing on the mineral exports did not recognize that the demand for port services was actually derived from Duqm SEZ industry locators generating demand for the shipment of their inputs and products. As a result of the dated market study and the assumption of the establishment of a mineral railway line, the financial projections overestimated cargo traffic and revenues. The inadequate demand forecast and the delay in the implementation of the railway line impact the financial performance of the Project due to the unrealized cargo throughput projected. An updated market analysis could have resulted in more realistic cargo forecasts, facilitating improved planning and resource allocation throughout the project life cycle. By preparing different scenarios—base case (medium), low case and high case—the forecasts could have considered sensitivities to economic growth, cargo growth trends, and other factors.

**76. Issue 3: Inadequate monitoring of outcomes.** The RMF is crucial for effective project monitoring and evaluation. In the case of the Duqm Port project, the RMF aimed to capture anticipated outcomes but fell short of defining appropriate performance indicators. The existing indicators focused primarily on the growth of mineral exports and the efficiency of port cargo space usage, specifically measured by cargo consignment dwell time in the port. These indicators are inadequate for several reasons. First, the growth of mineral exports is contingent upon the development of a mineral railway line to Duqm Port, an aspect over which the project has no control. Second, given the greenfield nature of Duqm Port, a broader perspective on potential cargo markets is necessary instead of relying on a single cargo type. Lastly, targeting short cargo dwell times is not a meaningful performance indicator during the initial operational years, as the port has substantial excess capacity until it reaches maximum utilization and cargo volumes. To enhance the RMF, it would be beneficial to include additional performance indicators, such as annual total cargo throughput volumes, the number of vessel calls, and the number of containers handled (including full containers, less than full containers, and empties). Incorporating these indicators would provide a more comprehensive assessment of the port's performance and ensure better monitoring of outcomes. The RMF includes indicators for monitoring beyond project closure,

which will allow to assess the port's progress in establishing a reliable revenue stream. While the Client is liable to provide the required information to AIIB, it is not clear who is responsible for following up and monitoring from the AIIB side.

**77.** **Issue 4: Data deficiencies in effectiveness and efficiency measurement.** The Duqm Port project faced data deficiencies that impacted the effectiveness and efficiency measurement. Although the EIRR and FIRR were estimated during the AIIB appraisal, the absence of recalculations at project completion limited the understanding of the project's performance. Specifically, updated data on project costs, operations and maintenance expenses, and cargo throughput volumes were necessary to accurately assess the project's efficiency and return on investment. The PCN could have provided the updated baseline data on project costs and cargo/ship calls, which are essential for estimating project benefits. However, a reliable traffic forecast was lacking, highlighting the need for development based on current market conditions, as the existing forecast relied on outdated market studies. Furthermore, the PD lacked sufficient details regarding the methodologies and inputs used in calculating the EIRR and FIRR, raising concerns about the validity of these estimates.

## LESSONS

**78.** **The PLR identified the following five lessons:**

**79.** **Lesson 1: Proactively managing market risks in greenfield projects helps ensure long-term viability.** Greenfield projects, like Duqm Port, face higher market risks due to undeveloped infrastructure and uncertain demand. Although Duqm Port began operations in 2015, it lacked key facilities and had low cargo volumes, which kept it in the greenfield stage. A key lesson is that greenfield projects require targeted strategies to manage market risks. In the case of Duqm Port, the government provided critical financial support through subsidies to the PODC, helping to offset risks and attract international operators. For similar projects, early recognition of market risks and a clear plan to manage them—such as government support, subsidies, or guarantees—are essential. This ensures that the project remains viable and attractive to investors, enabling long-term success.

**80.** **Lesson 2: A more comprehensive RMF supports capturing project results.** The RMF of the Project focused too narrowly on mineral exports and port efficiency. Developing other relevant performance indicators, such as total cargo throughput and number of vessel calls, would allow to capture the Project's results more adequately. For future Project's, it is important to design a more comprehensive RMF to support results measurement. The development of the RMF requires a well-prepared and comprehensive pre-feasibility and feasibility study as well as strong sector expertise in the Project Team.

**81.** **Lesson 3: Flexibility and close engagement support project success.** The Duqm Port project demonstrates that flexibility and close engagement with clients significantly improve the chances of successful project implementation. AIIB's adaptable approach and hands-on support were key factors in addressing challenges promptly. The Client expressed strong appreciation for AIIB's responsiveness, which contributed to smoother project execution. For

future projects, maintaining a flexible approach—where project teams are ready to adjust to evolving circumstances—and fostering close communication with clients can greatly enhance implementation. This "lean" approach, which emphasizes quick decision-making and proactive problem-solving, can be applied to other projects to improve responsiveness and increase the likelihood of success.

**82.** **Lesson 4: Proactive E&S involvement can enhance compliance.** Proactive E&S involvement is essential for compliance in projects at advanced processing stages. In the Duqm Port Project, AIIB's engagement strengthened the CEMP even after implementation began. By facilitating stakeholder consultations and collaborative improvements, AIIB addressed the Client's concerns and ensured robust E&S safeguards. For future projects, integrating E&S considerations early and maintaining active engagement can enhance compliance and project outcomes. This proactive approach fosters collaboration and mitigates risks, ultimately contributing to more sustainable project development.

**83.** **Lesson 5: Identifying green transformation potential early in project appraisal helps maximize long-term economic and environmental benefits.** The green energy transition can create valuable opportunities for economic development that may not be apparent during initial project appraisal. In the case of the SEZAD, while industries like green hydrogen and green steel were not yet developed at appraisal, the SEZAD's large land area, renewable energy potential, and strong infrastructure make it a future hub for these emerging sectors. The key lesson is the importance of identifying potential avenues for green transformation at the project appraisal stage. Even if industries are still evolving, early recognition of strategic advantages—such as available land, resources, and infrastructure—can position projects to capitalize on future opportunities. This approach ensures that projects remain flexible and ready to attract green investment as new technologies mature. This lesson applies to projects in regions with the potential to support green energy industries and highlights the value of forward-looking planning in maximizing long-term economic and environmental benefits.

## RECOMMENDATIONS

**84.** **The PLR presents the following four recommendations:**

**85.** **Recommendation 1: Address insufficiencies in technical analysis during project appraisals to strengthen project planning and risk assessment.** A lesson learned from the Project regarding insufficient technical analysis, is that AIIB should strengthen geotechnical and market assessments during the project appraisal stage for future projects. Ensuring comprehensive technical analysis will help mitigate construction delays, address risks, and ensure accurate cost estimates, particularly for infrastructure investments that require significant foundational work. Conducting thorough and up-to-date market studies is crucial to aligning investment decisions with realistic market conditions, as demonstrated by the challenges faced in Duqm. AIIB should ensure that market studies are comprehensive and up-to-date and that forecasts of benefits consider different demand scenarios. Furthermore, AIIB should enhance the technical capacity of project teams by strengthening the role industry specialists in the appraisal process to facilitate comprehensive technical assessments. Assigning dedicated engineers with relevant expertise for

major infrastructure investments would allow AIIB to improve screening, assessments, and project design, ultimately leading to better project outcomes and minimizing risks in future projects.

**86.** **Recommendation 2: Enhance the outcome measurement in the RMF.** In the case of the Duqm Port project, the RMF aimed to capture anticipated outcomes but fell short of defining appropriate performance indicators. CEIU recognizes that improvements in the guidance on RMFs and its consideration during appraisal have been made and welcomes efforts of PMD and SPB to improve the RMF for better monitoring of project outcomes and capturing broader project benefits. AIIB should ensure that the RMF for future projects uses indicators that adequately capture intended outcomes and align with industry standards. In case of future port investments, AIIB should expand performance indicators to include metrics such as annual total cargo throughput volumes, the number of vessel calls, and the handling of containers (both full, less-than-full, and empties). Particularly for greenfield projects, AIIB should ensure that the RMF considers external dependencies that can influence project outcomes, such as the development of critical supporting infrastructure. AIIB should always develop a comprehensive monitoring plan that details the data collection methods for each performance indicator and sets clear timelines for data gathering and reporting. AIIB should conduct regular reviews of the RMF at significant project milestones to assess performance and facilitate necessary adjustments, thereby promoting ongoing improvement in project monitoring and evaluation.

**87.** **Recommendation 3: Define responsibilities for monitoring and impact assessment after project closure.** The Client is required to provide information on key RMF indicators beyond Project closure, which allows AIIB to assess the port's progress in establishing a reliable revenue stream. AIIB should clearly define who is responsible for this long-term monitoring after project closure and should ensure reliable provisions for follow up with the Client. To comprehensively assess the outcomes and impact of this Project, AIIB should consider conducting an economic impact assessment at the end of the monitoring period. This would capture the outcomes and impacts that take time to materialize.

**88.** **Recommendation 4: Strengthen EIRR and FIRR estimates and recalculations to ensure accurate financial and economic assessments throughout the project life cycle.** AIIB should implement the systematic practice of recalculating the EIRR and FIRR at project completion and at least once thereafter, e.g., five years after Project operation. This practice would allow for accurately assessing project efficiency by comparing estimated costs and benefits with actual outcomes. AIIB should ensure that the methodologies and assumptions used for calculating the EIRR and FIRR during appraisal are thoroughly documented in the PD or in separate supplementary documentation. This documentation should include the economic and financial models employed. By maintaining comprehensive records, AIIB will facilitate the recalculation process, ensuring continuity and clarity in economic and financial assessments even in the event of staff changes.

# Appendices

## A. EVALUATION FRAMEWORK

| Evaluation Criteria | Rating Scale | Evaluation Questions | Indicators/ Information Required | Source of Information | Methods/ Analysis |
|---|---|---|---|---|---|
| **Relevance** | Highly Relevant<br>Relevant<br>Less than Relevant<br>Irrelevant | Was the Project aligned to national development priorities/strategies/plan?<br>Was the Project aligned with AIIB's policies and strategies?<br>Was the design appropriate in addressing the envisaged impact, outcome, and outputs?<br>Did the project inputs, outputs, and outcomes follow the results chain to achieve the project's objective? | Government policies and strategies/plans<br>AIIB's corporate and sector strategies<br>Project design and monitoring framework | Project Document, PCN, Government documents, ELA, Minutes of Board meetings, Project Committee meetings<br>Discussions with project staff, government officials, and other key stakeholders | Desk review<br>Key informant interviews<br>Analysis of project results indicators |
| **Effectiveness** | Highly effective<br>Effective<br>Less than effective<br>Ineffective | To what extent were the project's stated outputs and outcomes achieved?<br>What are the socio-economic results of the Project?<br>Were there any unintended or adverse results on local society and economy?<br>Did the Project comply with safeguard requirements? Are there residual or new issues post-completion?<br>What factors contributed to achievement/ non- achievement of expected outputs and outcomes? | Realized project outputs and outcomes in relation to targets<br>Project monitoring framework implementation process<br>Issues and challenges related to achieving outputs and outcomes | PCN, BTORs, PIMRs, E&S management reports<br>Discussions with project staff, government officials, and other key stakeholders | Desk review<br>Key informant interviews<br>Analysis of program design indicators<br>Direct observation through field visit |
| **Efficiency** | Highly efficient<br>Efficient<br>Less than efficient<br>Inefficient | How well were project resources used in achieving the expected outcomes?<br>What were reasons for delayed project activities and changes in project scope?<br>What were the reasons for the project cost savings? | Loan disbursement and fund utilization<br>Implementation and procurement arrangements<br>Monitoring data on inputs and outputs<br>EIRR | Project documents<br>Discussions with project staff, government officials, and AIIB procurement staff<br>Statistics on port traffic (Cargo/Vessel/ Passenger) Number of locators in the SEZ/ Imports-Exports of SEZ | Desk review<br>Key informant interviews<br>Cost-benefit analysis |

## A. EVALUATION FRAMEWORK (CONTINUED)

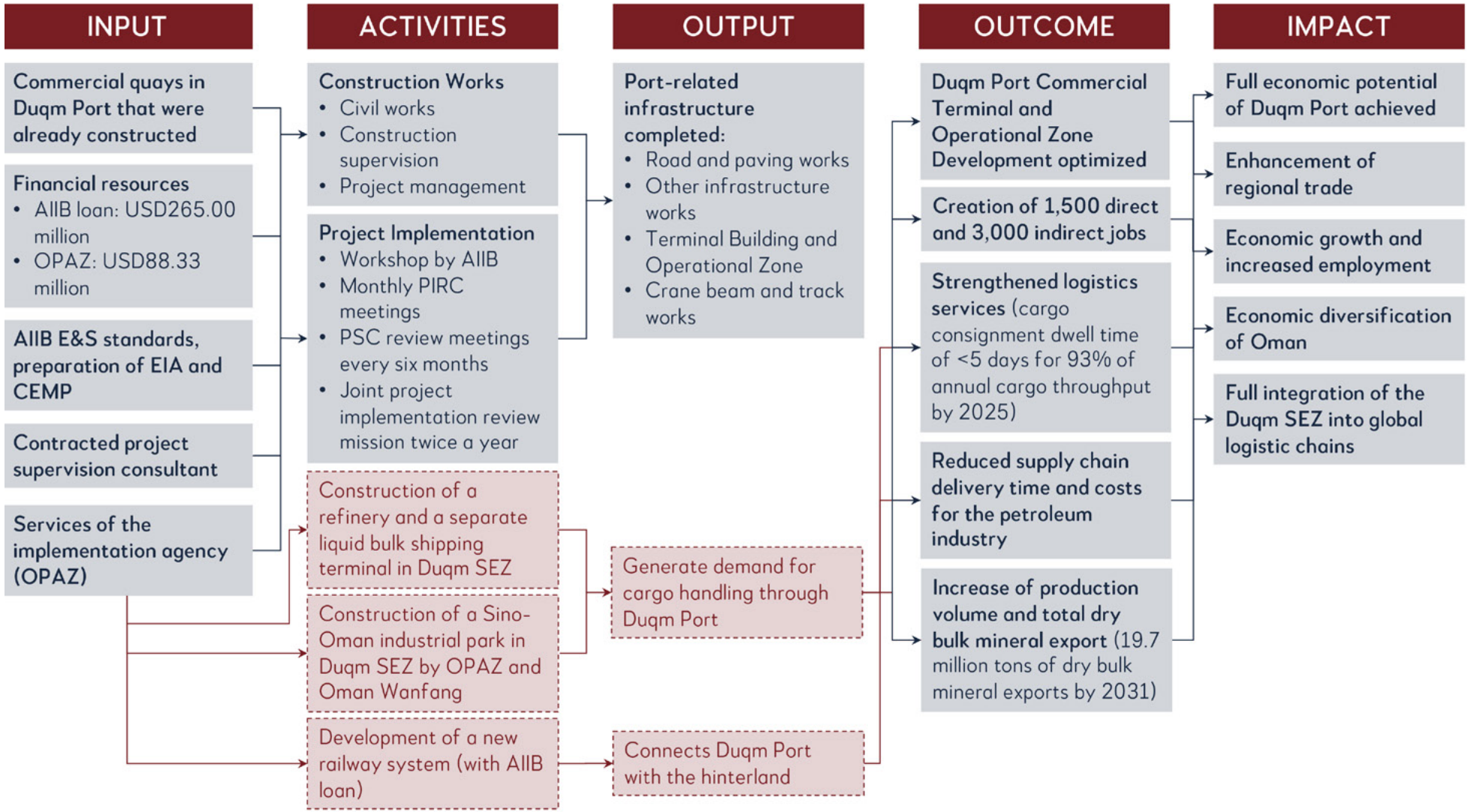
| Evaluation Criteria | Rating Scale | Evaluation Questions | Indicators/ Information Required | Source of Information | Methods/ Analysis |
|---|---|---|---|---|---|
| **Sustainability** | Most likely sustainable<br>Likely sustainable<br>Less than likely sustainable<br>Unlikely sustainable | What is the likelihood that project benefits will be sustained beyond the life of the project?<br>Are there any institutional issues that affect the sustainability of the project?<br>Are there any risks that affect the sustainability? | Assessment of revenue generating capacity and activities/FIRR<br>Information on beneficiaries<br>Monitoring data | Discussions with project staff, government officials, and other key stakeholders<br>Government reports and statistics<br>Financial statements of Port Operator/ Management<br>Port Charges<br>Annual O&M Cost of the Port facilities<br>Organizational structure of relevant agencies | Desk review<br>Key informant interviews<br>Direct observation through field visits |
| **AIIB Work Quality** | Highly satisfactory<br>Satisfactory<br>Less than satisfactory<br>Unsatisfactory | Was the project design, its theory of change and RMF realistic and evaluable?<br>Were Bank due diligence assessments and identified lessons adequate for preparing the financing and did they influence design?<br>Was Bank monitoring, feedback, adaptive management, and derivation of lessons timely and adequate in implementation oversight? | Complete set of E&S consultant site assessments and gap closing arrangements<br>Stakeholder consultation records, GRM registry information | Project design and monitoring documents<br>E&S consultant reports and GRM records<br>Discussions with project staff, government officials, and other key stakeholders | Desk review<br>Key informant interviews |
| **Client Work Quality** | Highly satisfactory<br>Satisfactory<br>Less than satisfactory<br>Unsatisfactory | Was the quality of project preparation and project implementation by the Client adequate?<br>To what extent did the Client comply with loan covenants, E&S requirements, and other requirements?<br>Was there sufficient high-level support and stakeholder engagement for the project? | Project design and RMF<br>Monitoring data<br>Complete set of E&S consultant site assessments and gap closing arrangements<br>Stakeholder consultation records | Project design and monitoring documents<br>E&S consultant reports and GRM records<br>Discussions with project staff, government officials, stakeholders<br>Project/Loan documents/ Loan & Project Covenants | Desk review<br>Key informant interviews |

## B. SUMMARY OF THE RESULT MONITORING FRAMEWORK (RMF)

| INPUTS | ACTIVITIES | OUTPUTS | OUTCOME | IMPACT |
|---|---|---|---|---|
| **Financing (in USD million):**<br>**AIIB loan: 265.00**<br>**OPAZ: 88.33**<br>**Total: 353.33** | **Construction Works:**<br>1. Civil works contractor mobilized, and construction commenced by March 15, 2017.<br>2. Construction supervision consultant submits monthly progress report.<br>3. Environmental Management Reports with detailed implementation status submitted by construction supervision consultant to PIU, OPAZ, and AIIB every quarter from the commencement of civil works contract.<br>4. Civil works contract completed by Dec. 2020.<br>**Project implementation:**<br>1. AIIB-organized workshop on effective project implementation, Bank's procurement policy and contract management, and good practices for quick disbursement at the inception mission.<br>2. PIU regularly organize monthly committee meeting and share the minutes with OPAZ and AIIB.<br>3. Project implementation review mission fielded at least twice a year. | **Port-related infrastructure completed at the terminals on the Commercial Quay.**<br>a. Road and paving works:<br>• 3 km of 2-lane dual carriageway internal roads connect all terminal buildings and parking areas,<br>• construction of container and cargo stacking yard, parking areas, and helipad.<br>b. Other infrastructure works:<br>• potable water network to serve the commercial berth buildings and ships,<br>• firefighting network, storm water and sewerage network installed,<br>• electrical, telecommunications, and street and yard lighting installed, and fencing and gates completed.<br>c. Terminal building and Operational Zone:<br>• administration building, training and amenities centers, emergency and firefighting center completed,<br>• multipurpose terminal, container terminal, and dry bulk terminal completed and operational,<br>• workshop and maintenance building, gate house, and electrical service building completed.<br>d. Crane beam and track works:<br>• crane beam supported on piles and tracks completed and operational.<br>**Project implementation (see Activities).** | **Duqm Port Commercial Terminal and Operational Zone Development operationalized.**<br>a. Increase in dry bulk mineral export.<br>• 5.5 million tons in 2016<br>• 6.6. million tons by 2021<br>• 19.7 million tons by 2031<br>b. Cargo consignment dwell time in port. Target dwell time to be attained and sustained from 2025 onwards:<br>• 93% of annual cargo throughput with <5 days dwell time in port<br>• 6% of annual cargo throughput with ≤9 days dwell time in port<br>• 1% of annual cargo throughput with >10 days dwell time in port | **Full economic potential of Duqm Port achieved.**<br>Increase of annual gross revenues:<br>• 1.82 million USD in 2016<br>• 98.8 million USD by 2021<br>• 288.6 million USD by 2025<br>• 356.2 million USD by 2030 |
| **Underlying assumptions:** | | | | |
| | | PIU functions efficiently with the presence of experienced international and national staff. PIU and OPAZ regularly hold PIRC and PSC meetings and timely resolve project implementation issues. | PODC is committed to optimize terminal capacities; reduce cost; and improve port productivity. | PODC is committed to maximize terminal capacities.<br>The rail is implemented and operated by 2021. |
| **Risks associated with the step in the results chain:** | | | | |
| | | Poor efficiency of contractor in executing civil works contract. | OPAZ's limited port oversight experience. | Delay in completion of connecting rail line. |

Source: *Project Document*. (2016, December 8). aiib.org. https://www.aiib.org/en/projects/approved/2016/_download/duqm-port-commercial/document/20161213051938915.pdf pages 17-19 (or **bit.ly/42naHBZ**). CEIU analysis.

## C. THEORY OF CHANGE




**Note:** The activities and outputs in red are separate projects that are interconnected with the Duqm Port Commercial Terminal and Operational Zone Development.

**Source:** AIIB CEIU (based on project documentation).

This Project Learning Review (PLR) report presents the findings of an independent assessment of the Duqm Port Commercial Terminal and Operational Zone Development Project in Oman, supported by the Asian Infrastructure Investment Bank (AIIB). Approved in December 2016, the Project was AIIB's second stand-alone financing and its first financing of a port development project, making it a unique operation for AIIB. The Project comprised the construction of necessary infrastructure for the commercial terminal at Duqm Port, including port access roads, cargo storage, terminal buildings, and operational zone facilities and buildings. The objective of the Project was to enhance the potential economic benefits from developing Duqm Port through improved transport efficiency, strengthened logistics, facilitated mineral exports, and reduced supply chain delivery time and costs for the industries in and around the new Duqm Special Economic Zone (SEZ). This PLR was conducted by Complaints-Resolution, Evaluation and Integrity Unit (CEIU) of AIIB and is based on evidence on the preparation and implementation of the Duqm Port Commercial Terminal and Operational Zone Development Project. The PLR evaluates the project performance, identifies issues and lessons learned, and presents recommendations for continuous improvement in AIIB's processes and project financing.

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