



1. Project Data

Project ID P124848	Project Name CN-Fujian Meizhou Bay Navigation	
Country China	Practice Area(Lead) Transport	
L/C/TF Number(s) IBRD-82270	Closing Date (Original) 30-Jun-2018	Total Project Cost (USD) 49,566,277.00
Bank Approval Date 28-Feb-2013	Closing Date (Actual) 30-Jun-2019	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	50,000,000.00	0.00
Revised Commitment	49,566,277.00	0.00
Actual	49,566,277.00	0.00

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2. Project Objectives and Components

a. Objectives

The project development objectives (PDOs) were "***to improve the capacity of the main navigation channel in Meizhou Bay and enhance the management capacity of Meizhou Bay Harbor Administration Bureau (MBHAB)***" (PAD para 15 and Loan Agreement page 5).

No changes were made to the PDOs throughout the project lifecycle.



b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

29-Jan-2018

c. Will a split evaluation be undertaken?

No

d. Components

The Project consisted of two components, as described below.

Component 1: Improvement of main navigation channel (appraisal estimate US\$128.0 million (excluding contingencies); actual cost US\$94.4 million). This component intended to upgrade the 51.2 km long main navigation channel in Meizhou Bay to a 300,000 Deadweight Tons (DWT) standard to allow for unidirectional tide-independent navigation of Q-MAX LNG ships, as well as unidirectional tide-dependent navigation for 400,000 DWT bulk cargo vessels. The construction and installation works included: (i) deepening and widening of the navigation channel by dredging and rock blasting; (ii) installation of navigation buoys; and (iii) sand/gravel clearing and disposal by out-dumping and landfilling for berths under construction in Meizhou Bay.

Component 2: Capacity building to enhance management capacity (appraisal estimate US\$1.4 million (excluding contingencies); actual cost US\$1.2 million). This component would finance two technical studies: (a) Strengthening Comprehensive Competitiveness of Meizhou Bay Harbor, and (b) Establishment of Modern Logistics System for Meizhou Bay Harbor. In addition, this component would also provide training to build the management capacity of MBHAB. Training would also include domestic/overseas study tours covering aspects of modern port construction and operation, modern logistics and supply chains, and project management.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost. The actual total project cost was US\$97.8 million, significantly lower than the appraisal estimate of US\$138.2 million. This was due to (a) exchange rate variations (the value of the RMB vis-a-vis US dollar changed from 6.33 at project appraisal to 6.89 at project completion; and (b) lower contract prices due to international competitive bidding and optimized design of civil works. The project team explained that the ICB contributed to around 16% of total cost savings, and optimized design saved around 4% (see section 5 for details).

Financing. At appraisal, the IBRD commitment was US\$50 million. The actual disbursement was US\$49.6 million.

Co-financing. There was no co-financing.



Borrower contribution: The actual Borrower contribution was US\$48.2 million, roughly half the appraisal commitment of US\$88.2 million.

Dates. The project was approved on February 28, 2013 and became effective on June 13, 2013. The mid-term review was carried out very late on June 4, 2018, one year prior to the project closing. The project closed on June 30, 2019, after a delay of one year due to intermittent construction delays caused by factors such as typhoons, government ban on explosives during national holidays, and important state events (ICR para 12).

Restructuring and Split Rating. The project was restructured on Jan 29, 2018 to (b) change the loan closing date, (b) reallocate funds between disbursement categories, and (c) revise the results framework. The loan disbursement percentage for the category of 'Works, non-consulting services and goods under Part A of the Project' was increased from 60% to 100%, with retroactive application from November 1, 2016. During the first half of the implementation, Fujian had prioritized the use of co-finance and subsidies from the central and provincial government, resulting in slow disbursement of the loan. The increase in loan disbursement percentage was to ensure smooth completion of project activities when counterpart funds from national and provincial sources came under stress during the second half of implementation (ICR para 11).

The targets for the two PDO indicators (a) annual traffic throughput of Meizhou Bay Port (total tons loaded and unloaded); and (b) use of the port by large vessels (movements of vessels of 100,000 DWT and above) were revised downwards. The target value was determined by the historical demand. With the unanticipated global economic slowdown and a change in China's growth strategy, the targets proved unrealistic and were revised through a restructuring (dated January 29, 2018). A split rating would not be carried out as the project's scope/ambition did not decrease with the downward revision of targets.

3. Relevance of Objectives

Rationale

Country and Development Context

Between 1990 to 2009 (at the time of appraisal), China's overseas trade had increased in value by over eighteen times. The total tonnage handled by China's seaports increased by almost ten times from 483 million tons in 1990 to 4.8 billion tons in 2009. The role of China's waterway transport had become crucial in three main ways: (i) in facilitating inter-regional shipping movements of bulk raw materials such as timber, grain and building materials, and coal from northern to southern China; (ii) in the import of internationally-sourced raw materials such as crude oil and iron ore to fuel China's heavy industries; and (iii) in the international export of industrial and consumer goods to overseas markets (PAD para 1). Therefore, the expansion of port navigation capacity was a prominent economic development and environmental challenge for China.

Transport Context

Meizhou Bay Port was one of the three main integrated seaport groups in Fujian Province. It transported substantial bulk cargo "to and from" industries in Fujian, Jiangxi and Hunan provinces. At appraisal,



Meizhou Bay had a throughput of 40 million tons of freight. The National Seaport Plan, and the Regional Development Plan for the Strait West Economic Zone (the 'SWEZ Regional Plan') included development of Meizhou Bay as a hub port for southeast China.

Alignment with Borrower and Bank Strategy.

The PDOs remained aligned with China's 13th Five-Year Plan (2016-20) that emphasized on creating a less energy-intensive transport system by reducing the average length of haul between inland traffic generating activities and their seaports of import/export. The PDOs remained aligned with the National Seaport Plan (2006) which aimed to ensure sufficient port capacity to sustain growth in industrial production and international trade (ICR para 2).

At appraisal, the PDOs were well aligned with the Bank's Country Partnership Strategy (CPS) for China for the period FY2013 -16. Specifically, with the achievement of the PDOs, the project addressed the CPS themes of (a) "*Supporting Green Growth*" by reducing land transport distances needed to serve inland areas and thus reducing GHG emissions from road transport through trucks, and "*Promoting More Inclusive Development*" by improving transport connectivity of the land-locked western Fujian, Jiangxi and Hunan provinces with ports and cities in the more economically dynamic coastal region. At completion, PDOs were aligned with the pillar "*Promoting Greener Growth*" under engagement area "2.5 Promoting low-carbon transport and cities" of the Bank's China CPF for the period FY2020 - 25.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

Improve the capacity of the main navigation channel in Meizhou Bay.

Rationale

The **theory of change** for the first objective was that upgrading of the main navigation channel to a 300,000 DWT standard including widening and deepening, and provision of navigation bays would allow larger carriers and greater traffic throughput. This would be measured through (a) the annual traffic throughput of Meizhou Bay Port; and (b) number of vessels of 100,000 DWT and above using the Meizhou Bay Port. The main assumptions for achieving this objective were: (a) the overseas trade demand on China's seaports would continue to increase; and (b) seaborne transport of bulk cargo would increasingly rely on larger vessels.

One caveat was that the development objective statement was output oriented by limiting itself to the upgrading of the navigation channel.



Outputs

- The 52.1 km of the main navigation channel of Meizhou Bay was upgraded to a 300,000 DWT standard (as targeted). This included upgrading of (a) a 34.6 km long, 500 m wide and 23 m deep section (outside the bay); and (b) a 17.5 km long, 350 m wide, and 21.5 m deep section within the bay.
- Four buoys were installed.

Outcomes

The performance against the two outcome indicators (a) annual traffic throughput of Meizhou Bay Port (total tons loaded and unloaded), and (b) use of the port by large vessels (movements of vessels of 100,000 DWT and above) was as follows:

- The annual traffic throughput of Meizhou Bay Port increased from 39.1 metric ton (million) baseline (2010) to 104.8 (estimate for 2019), achieving the revised target of 85 (original target was 110). While the increase in port throughput is partially dependent on global trade and demand conditions, it is also attributable to the improved navigational flexibility in the upgraded main channel, as it allows larger carriers to use the Bay: 300,000 DWT in all tide conditions and 400,000 DWT tide-dependent. The ICR (para 21) notes that five railway branch lines are currently in operation connecting the ports inside Meizhou Bay, and four of them were constructed in the last five years to accommodate the greater capacity of the navigation channel. The total transshipment volume of bulk cargo at Meizhou Bay ports has gone up rapidly: from January to September 2019, total sea-rail and sea-inland-waterway transport increased respectively by 73% and 29% year on year.
- The number of vessels of 100,000 DWT and above using the Meizhou Bay Port increased from 110 (baseline in 2010) to 392 (estimate for 2019), achieving the revised target of 350 (original target was 650). At appraisal, the target value was determined by the historical demand. The target was revised to reflect the impacts of the economy slow-down on the freight traffic of the Meizhou Bay ports (Restructuring paper, para 9).

Based on this, while the indicator targets were reduced, the project substantially increased the capacity of the navigation channel as stated by the PDO.

Rating

Substantial

OBJECTIVE 2

Objective

Enhance the management capacity of Meizhou Bay Harbor Administration Bureau.

Rationale



The **theory of change** for the second objective was based on the premise that targeted studies on “strengthening the competitiveness of Meizhou Bay Harbor” and “establishment of modern logistics system for Meizhou Bay Harbor” along with the training of the port staff on modern port management, logistics and supply chain and port management would enhance the capacity of the Meizhou Bay Harbor Administration Bureau (MBHAB). The main assumption for achieving this objective was that the MBHAB would adopt the recommendations from the studies and effectively utilize the learning from training events and study tours.

Outputs

- The technical study on strengthening comprehensive competitiveness of Meizhou Bay Harbor was completed as planned.
- The technical study on the establishment of a modern logistics system in Meizhou Bay Harbor was completed as planned. The study recommended a paradigm shift for Meizhou Bay to transition into a high-productivity and high-quality modern logistics hub and defined a port logistics system that included aligned logistics infrastructure, logistics information platform and institutions (ICR para 23).
- By project closing, a total of 27 training events and domestic/overseas study tours were organized and were attended by 672 persons (no targets were set at appraisal). The ICR indicates (para 26) that the training enhanced knowhow on the following topics: modern port management (including port planning and construction, financing, connectivity and accessibility), logistics, operations and services, and green and smart ports.

Outcomes

No outcome indicators were designed to measure the achievement of this objective except for "submission of deliverables of technical studies" and number of trainees (person months)". The ICR provided evidence that the project led studies and trainings helped to develop a master plan for Meizhou Bay, a comprehensive competitiveness index for self-assessment and comparison with peers on port performance, as well as facilitated MBHAB in transitioning the Meizhou Bay Port into a modern logistics hub..

- The ICR reports (para 24) that in 2014 MBHAB created a new logistics department responsible for the planning, coordination and implementation of the port's logistics development. The project team explained that the two studies on port competitiveness and logistics were started early on during the project implementation and were completed in January 2015. During the TA implementation, the consultants had substantial discussions with MBHAB, and provided good quality analysis, information, and suggestions to MBHAB and all of these contributed to the establishment of the logistics division.
- The technical study on strengthening comprehensive competitiveness of Meizhou Bay Harbor helped MBHAB develop a “Comprehensive Competitiveness Index System” for self-assessment and comparison with peers on port performance.
- A Meizhou Bay Harbor Logistics Development Master Plan was completed in December 2016. The plan is expected to facilitate MBHAB in transitioning the Meizhou Bay Port into a modern logistics hub.



- The feedback from the training events found that the discussions on good practices from other seaports in China and abroad helped the participants consider optimal ways to accelerate Meizhou Bay development.

Rating

Substantial

OVERALL EFFICACY

Rationale

The project substantially upgraded the standard of the main navigation channel in Meizhou Bay to a 300,000 DWT, thereby allowing larger carriers to use the Bay: 300,000 DWT in all tide conditions and 400,000 DWT tide-dependent. The training and technical studies substantially contributed to the enhancement of the management capacity of the MBHAB. A Meizhou Bay Harbor Logistics Development Master Plan was completed in December 2016 and the plan is expected to facilitate MBHAB in transitioning the Meizhou Bay Port into a modern logistics hub.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic Efficiency

The project prepared an economic analysis both at appraisal and at closing. The benefits quantified included: (a) increased waterway traffic volume and improved transport efficiency due to the increased carrying capacity of the main navigation channel and the use of larger vessels (the TTL explained that the traffic volume used in the analysis reflected the actual figures during the implementation period, and the future traffic volume was estimated based on the current trend); and (b) savings in vessel operating costs by reducing waiting time outside the port. Economic costs of the project were identified as capital investments and operation and maintenance (O&M) costs during project operation. The ICR used the discount rate of 12%.

The ex-post ERR at completion was 16.4%, compared to the ex-ante ERR of 13.2%. The Net Present Value (NPV) at completion and appraisal were RMB 428.1 million and RMB 500.6 million, respectively. The reason for the lower NPV at completion is explained by the project team stating that "this was due to the use of 2013 as the baseline year and the one-year extension of the loan closing date". However, since the figures for one of the main benefit streams - "increased waterway traffic volume" - were much lower at closing than the estimated figures at appraisal, this should have an effect to lower both the ERR and NPV figures.



The ICR also conducted a sensitivity analysis which assumed a 5% increase in total cost, a 15% decrease in total benefits, and the two of them combined. The ERR decreased from 16.4% (baseline) to 14.3%, 13.9% and 12.0% respectively. The NPV also decreased from RMB 428.1 million (baseline) to RMB 354.1 million, 289.7 million and RMB 220.8 million respectively (ICR page 31).

Administrative Efficiency

The ICR (para 32) notes that the project preparation was administratively efficient because of (a) streamlined design (the project team explained that the PIU communicated smoothly with the design institute, and helped designers for better data collection and alternative analysis that resulted in efficient project preparation, implementation, and operation); (b) strong client capacity - all contracts were procured in a timely manner and below the appraisal cost; and (c) well-resourced technical and project management support by the Bank.

The project was extended for one year due to intermittent construction delays caused by external factors such as typhoons, government ban on explosives during national holidays and important state events.

The project resulted in a 29% cost saving, which were due to: (a) exchange rate variations (the value of the RMB vis-a-vis US dollar changed from 6.33 at project appraisal to 6.89 at project completion); (b) lower contract prices due to international competitive bidding (from RMB 724 million at appraisal to RMB 608 million at completion); and optimized design of civil works (the initial design was improved through adjustments to scope of dredging, coordination of dredging and rock blasting, utilization of favorable tide conditions, and employment of advanced construction techniques and machinery) (ICR para 33 and 41). The project team explained that the ICB contributed to around 16% of total cost savings and optimized design saved around 4%.

Based on the above assessment of economic and administrative efficiency, the overall efficiency of the project is rated substantial

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	13.20	92.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	16.40	96.50 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.



6. Outcome

The project objectives were substantially relevant to the development context for China and aligned with the Bank and Borrower's strategies at appraisal and closing. The project substantially improved the capacity of the main navigation channel in Meizhou Bay. The training and technical studies substantially contributed to the enhancement of the management capacity of the MBHAB. The project resulted in a 20% cost saving and an ERR of 16.4%, leading to substantial efficiency. The overall outcome of the project is rated as satisfactory

a. Outcome Rating

Satisfactory

7. Risk to Development Outcome

Institutional Risk. The institutional risk is negligible as the project strengthened the MBHAB's knowledge base and management skills for sustained operations of Meizhou Bay Port. The project has also helped to broaden the vision of the harbor administration to respond to the megatrends in the sector with strategic planning and investments that are closely relevant to the project outcomes.

Competition Risk. There is a modest risk that Meizhou Bay Port may face potential competition from other ports in Fujian province. The implementation of the recommendations of the Competitiveness would help mitigate the risks from competing ports in China.

Environmental Risk. The environmental risk is negligible as the Green Port concept was fully adopted in port planning, design and operation for energy efficiency and disaster resilience.

8. Assessment of Bank Performance

a. Quality-at-Entry

The project was developed and prepared with a straightforward design to support Meizhou Bay's development through infrastructure investments and forward-looking institutional strengthening. The PAD (para 32) notes that overall implementation risk was moderate. All the risk categories were rated either moderate or low, except social and environmental, which were rated substantial. To mitigate this risk, a comprehensive EIA and EMP were prepared including arrangements for implementation, including external monitoring by independent social and environmental monitoring agencies. The project was appropriately assigned environmental category "A" under the Bank's environmental and social safeguard policies, given the scale and nature of construction. When the project was prepared, Fujian Provincial



Transport Department (FPTD) had already established the Project Management Office (FPMO) with designated staff for safeguards, financial management, and procurement. The PAD indicated that the project would incorporate lessons learned and best practices on planning and operational models from China and the world, which can be adopted for Meizhou Bay. The M&E design had some weaknesses in terms of the lack of an outcome-level results indicator for the institutional strengthening element of the PDO.

Quality-at-Entry Rating Satisfactory

b. Quality of supervision

The ICR notes (para 64) that the Bank provided proactive and effective implementation support to the project through eight field missions, four desk reviews, five training events, and as needed guidance to the PMO on Bank policies and standards. Each Bank supervision mission included technical, fiduciary and safeguard specialists.

The safeguards supervision was satisfactory. The Bank organized four training workshops on environmental safeguards and sustainability for stakeholder agencies in Fujian from 2013 through 2018, and seven study tours in/outside China with port environmental protection as a key topic (ICR para 66).

There were some minor shortcomings: (a) the mid-term review was carried out quite late (just one year before project closing), and (b) M&E was not revised to include better indicators to measure the capacity building component results.

Quality of Supervision Rating Satisfactory

Overall Bank Performance Rating Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The two PDO indicators (a) annual traffic throughput of Meizhou Bay Port (total tons loaded and unloaded); and (b) use of the port by large vessels (movements of vessels of 100,000 DWT and above) were



not strong indicators to measure the first part of the objective “improved capacity of the main navigation channel in Meizhou Bay”, as these indicators were also dependent on the global demand that was beyond the control of the project. At appraisal, the target value was determined by the historical demand. With the unanticipated global economic slowdown and a change in China’s growth strategy, the targets proved unrealistic and were revised through a restructuring (dated January 29, 2018) (ICR para 10 and 49).

For the second part of the objective “enhance the management capacity of MBHAB”, the results framework included only an intermediate indicator for the delivery of TA activities and the person-months of training. The lack of outcome indicator for the second objective is a major weakness of the M&E design.

The M&E design included appropriate arrangements for data collection, compilation, analysis and reporting.

b. M&E Implementation

As discussed above, the target values of two PDO indicators were revised. The ICR reports (para 52) that the Project Management Office provided good quality reports to the Bank on a regular basis as per the agreed schedule. The supplementary data for 2019 was collected from the operational records of the Meizhou Bay Port.

c. M&E Utilization

The ICR (para 53) indicates that the M&E data was used by both Fujian Provincial authorities and the Bank to assess progress and make appropriate adjustment such as carrying out project restructuring.

M&E Quality Rating

Modest

10. Other Issues

a. Safeguards

The project was classified as category "A" under the Bank’s environmental and social safeguards policies, given the nature and scale of project activities and anticipated environmental and social impacts, particularly during construction. Accordingly, three Bank safeguards policies were triggered: Environmental Assessment (OP/BP 4.01); Natural Habitats (OP/BP 4.04); and Involuntary Resettlement (OP/BP 4.12). There was no ethnic minority presence in the project area, so the Indigenous Peoples (OP 4.10) was not triggered.

A full environmental assessment was conducted and all relevant Environmental Assessment (EA) documents (including an Environmental Impact Assessment (EIA) Report and an EA Executive Summary) were prepared. An Environmental Management Plan (EMP) was developed based on the findings of the EIA report. The EMP provided details on the organizations responsible for environmental management and



supervision and their responsibilities, mitigation measures for construction and operational impacts, capacity training plan, monitoring plan, and budget estimates for EMP implementation (PAD para 53).

During the EA process, the negative impacts of the project on marine ecology and habitats were identified and quantified, and an offset plan was designed as part of the EMP to compensate for the anticipated ecological loss, namely, the fish breeding and release program and the mangrove restoration program.

The project was not expected to cause any physical relocation of households, and the direct resettlement impacts were to be minor (dismantling of an aqua farm on which a household with 9 persons relied). An overall Resettlement Plan (RP) was prepared.

Environmental Safeguards. The ICR (para 55) reports that the EMP was implemented satisfactorily. The project was recognized as Best Practice by the Bank's regional safeguards team in the application of environmental and social safeguards policies, particularly in relation to the design and implementation of the ecological offset program (Natural Habitats safeguards). During the project implementation (2015-2019), six rounds of fish fry were released for a total of 266.3 million fish/shrimp fries, 31% beyond the planned number. Mangrove restoration was successfully implemented over a total surface of 40.84 ha, 9.8% beyond the original target (ICR para 56).

The ICR (para 55) notes that no Occupational Health and Safety incidents were reported.

Social Safeguards. The ICR (para 57) reports that the project did not require any resettlement but affected the livelihoods of 98 households (506 persons). The project complied with the Resettlement Plan and the affected households/people were fully compensated. Internal and external monitoring was used to collect information on resettlement implementation, to improve policies, and to resolve any issues. The resettlement activities also provided the affected people with employment opportunities and vocational training (ICR para 59).

b. Fiduciary Compliance

Financial management (FM). The ICR reports (para 61) that the FM performance was satisfactory. All audit reports were issued on time and were unqualified. The minor FM related issues identified in the audit reports were addressed in a timely manner. There were delays in the interim financial reports and these were quickly resolved by the project agencies.

Procurement. The ICR reports (para 60) that the procurement performance was satisfactory. All contracts were procured in a timely manner and below the appraisal cost and in accordance with the Bank's procurement guidelines.



c. Unintended impacts (Positive or Negative)

d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Modest	Modest	
Quality of ICR	---	Substantial	

12. Lessons

The following lessons are adapted from the ICR:

Embedding strategic institutional strengthening support in infrastructure lending projects can be a good way to address institutional gaps in infrastructure development and service delivery. The design and timing of institutional strengthening and capacity building interventions, even if accounting for a relatively small amount of loan financing, can generate significant impact beyond the physical infrastructure and the project lifecycle. For this, TA design needs to take a diagnostic approach to help client identify institutional and capacity gaps, and an analytical tool to inform upper-stream design and enforcement in a systematic and effective way.

Appropriate indicators need to be developed for measuring results from institutional and capacity building activities. This project shared the common challenge facing Bank projects on measuring results from institutional strengthening and capacity building activities beyond the output level, due to the absence of appropriate indicators, including corporate indicators.

Supporting best practice for environmental sustainability in ports and logistics projects can lead to mainstreaming the development of green ports. The project supported Meizhou Bay’s development as a green hub port. With the successful adoption of two biological compensation programs, the project demonstrated best ESIA practice and went beyond China’s EA standards and Bank compliance requirements for environmental safeguards. This good practice can be mainstreamed.

13. Assessment Recommended?

No



14. Comments on Quality of ICR

The ICR is results-oriented, clearly written, and is largely consistent with the guidelines except for the length. The safeguards discussion in the ICR is good. The lessons were derived from the project's experience.

a. Quality of ICR Rating Substantial