Indonesia: Securing shipping routes

Ex Post Evaluation (Final evaluation)

OECD sector	21040 / Water transport	
BMZ project number	1999 65 450	
Project executing agency	Directorate General of Sea Communication<>	
Consultant	Lackner&Partner GmbH & Co.; HPC Hamburg Port Consulting GmbH	
Year of ex post evaluation	**2008**	
	Project appraisal (plan)	**Ex Post Evaluation Report (actual)**
Start of implementation	2nd quarter 2000	2nd quarter 2000
Period of implementation	27 months	38 months
Investment costs	EUR 26.0 million	EUR 16.1 million
Counterpart contribution	EUR 4.4 million	EUR 1.7 million
Financing, of which with FC funds	EUR 21.5 million	EUR 14.4 million
Other institutions/donors involved	<>	<>
Performance (overall) rating	2	
• Relevance	2	
• Effectiveness	2	
• Efficiency	3	
• Overarching developmental impact	2	
• Sustainability	2	

Brief description, overall objective and project objectives with indicators

In order to secure shipping movements through the three marine shipping routes of primary importance for international sea transport and Indonesian foreign trade as well as through other waters in the Indonesian archipelago, the project aimed to install 34 lights and beacons and set 119 light buoys. Further project components included the delivery of spare parts and workshop equipment as well as training measures for the operative personnel responsible for maintenance and spare parts/logistics. The objective of the project was to secure the sustainable operation of the navigation signs. This was to contribute to increasing traffic safety in Indonesian waters (overall objective). Indicators for the achievement of the project objective were the average technical availability of the installations (99.7 % one year after the conclusion of the measure), regular maintenance and upkeep work, as well as the complete and punctual installation of the navigation signs. No indicators were defined for the overall objective at the time of the project appraisal. In the final evaluation, the reduction in the number of accidents and the decrease in black areas (i.e. the number of non-secured sections of the shipping routes in which there is an increased risk of accidents) were therefore adopted as proxy indicators.

Project design / major deviations from the original project planning and their main causes

Essentially, the project measures comprised the construction of 34 new lighthouses and beacons along the three shipping routes, the construction and setting of 15 light buoys along the shipping routes and 104 units in other sea areas, the delivery of technical lighting equipment and buoy mooring systems for stocking spare parts, and the delivery of technical lighting equipment for the continual modernisation of the Indonesian navigation signs (primarily for light buoys). The project executing agency is the Directorate General of Sea Communication (SEACOM), a department of the Transport Ministry. Within SEACOM, the Directorate of Navigation together with the Subdirectorate of Aid to Navigation were responsible for planning and implementing the project. The Districts of Navigation (DisNavs), which are part of the Directorate General of Sea Transportation (DGST), are responsible for operation and maintenance. Management staff are highly qualified. Employees receive extensive training to international standards, primarily in or financed by Japan. The working conditions and salaries are in line with general levels in the Indonesian ministries.

The navigation signs are inspected and serviced every three to four months. Minor upkeep work (changing batteries, lamps and solar panels) is also carried out during these visits. The repair ship also visits the buoys every six months and carries out major maintenance work in which the buoys have to be taken out of the water or replaced. There are two critical bottlenecks here. Firstly, the majority of supply ships are old, slow and unreliable, with the result that the frequency of maintenance visits cannot be increased. Secondly, there are not enough replacement buoys to allow major repair work to be carried out on shore, which would ensure greater sustainability. New buoy housings are purchased from Indonesian suppliers. The technical equipment (lamps, flashers, batteries, solar cells) is imported, primarily from Singapore. The supply of new buoys and spare parts is considered secure.

The introduction of lighthouse dues (user charges for navigation signs) in 2000, 60 % of which are passed on to the DisNavs and 40 % to DGST and the port authorities, has greatly improved the formerly critical financial situation of the DisNavs. Allocations from the national budget have been considerably increased too. In short, the financial situation of the DGST has improved markedly since the project appraisal.

Key results of the impact analysis and performance rating

The date for assessing the achievement of the project objective indicator (average technical availability) should not have been set one year after completion of the measure, but instead at least three and preferably five years after completion. This period is necessary to reflect the impacts of maintenance services on the level of technical availability. An availability rating of 99.7% for lighting installations that are mostly unmanned is in any case extremely ambitious, even if this represents the IALA standard. This would mean average downtime for each installation of only one day a year. Such a target appears too high in comparison to the internationally accepted average availability value of around 93%. This has been achieved in Indonesia. The availability of the fixed units (lighthouses and beacons) installed as part of the measure is 100%. The availability of the buoys supplied is not recorded separately. As 25% of the project buoys were replaced within a period of five years (replacement is always proceeded by a certain downtime) and the buoys that were not replaced also experienced downtimes, their availability was less than 100%. In view of the performance capability of the project executing agency, we assume that the average technical availability of the light buoys was approximately 90%. Overall, we believe that the indicator values for average technical availability were achieved with only few exceptions.

The maintenance and upkeep work as well as the routine visits to the navigation signs are being carried out three to four times a year. In addition, a repair ship visits the light buoys twice a year. This indicator was thus also achieved.

All the navigation signs were installed, albeit one year later than planned. Such a delay is acceptable in a project of this nature.

In summary, the project objective was achieved in nearly every respect. We can also consider the overall objective to have been very largely achieved, as the number of shipping accidents fell markedly between 1997 and 2007. It should however be pointed out that the navigation signs financed through the project account for only 5% of all navigation signs. As for the black areas, it is not possible to show a clear causal relationship between the decrease in black areas and the fall in the number of accidents, although this effect is not disputed in the context of global shipping movements. If we assume that vessel commands in Indonesian waters use navigation signs in the same way as they are used in other parts of the world, the additional navigation signs in Indonesian waters have led to a reduction in accident risk.

The project appraisal did not include a quantitative assessment of the project's macroeconomic impacts. Ex post, we can make the following qualitative statement: the improvement in the traffic situation brought about by navigation signs, thus reducing the losses caused by shipping accidents, is making an important contribution to Indonesia's further integration in the global economy through marine trade. However, it would not be economically feasible to ascertain the exact value of the contribution made by the navigation signs to this effect. Based on experience gained to date, it would seem plausible that the macroeconomic impacts are positive.

No negative environmental impacts were in evidence as a result of the use of the navigation signs, in particular the lights. The project was not designed to have a positive environmental impact, but the avoidance of accidents reduces the danger of marine pollution through oil spills and the loss of hazardous cargoes etc.

The project has a negligible direct impact on employment. Only few additional personnel were employed by the project executing agency to operate and maintain the navigation signs. There were no direct socioeconomic impacts. The project had no potential for improving gender equality. Improvements in participation and good governance were not targeted and none were recorded. The project's contribution to poverty reduction is indirect and dependent on positive impacts in macroeconomic growth.

In summary, we evaluate the developmental efficacy as follows:

Relevance: The assumed causal relationship (results chain), namely the prevention of shipping accidents through the sustainable operation of navigation signs, remains valid. It is internationally recognised that the installation of navigation signs leads to a clear reduction in the number of accidents. As such, the project addressed the core problem of inadequate traffic safety in Indonesian waters. Donor alignment, primarily with Japanese institutions, is evaluated as good. The project was to a high degree in line with the country's development policy priorities and German development policy objectives. The relevance of the project is therefore rated as good (subrating: 2).

Effectiveness: As 25% of the project buoys were replaced within a period of five years (replacement is always preceded by a certain downtime) and the buoys that were not replaced also experienced downtimes, their availability was under 100%, even though the availability of the buoys supplied was not recorded separately. In view of the performance capability of the project executing agency, we assume that the average technical availability of the light buoys was around 90%. The project executing agency's maintenance teams carried out the maintenance and upkeep work as well as the routine visits to the navigation signs. Inspections are being carried out three to four times a year. In addition, a repair ship visits the light buoys twice a year. All the navigation signs were installed, albeit one year later than planned. Overall, the effectiveness of the project was rated as good (subrating: 2).

Efficiency: Owing to the results of the competitive bidding process, the costs of the navigation signs were lower than budgeted for the project. At the time of the final evaluation, no adequate technical and economically feasible solution had been found for installing the navigation signs. Only 80% of the operating costs of the project executing agency are covered. We therefore evaluate the production and allocation efficiency of the project as satisfactory (subrating: 3).

Overarching developmental impact: The overall objective was to improve the safety of shipping in Indonesian waters. As the installations are operational and undoubtedly an important aid to navigation, the objective has been achieved, although this cannot be demonstrated with complete statistical certainty. It appears plausible that the navigation signs have helped reduce personal injury, negative environmental impacts and material damage. A reduction in the risk of accidents also reduces environmental risk, particularly in view of the fact that many tankers use the three shipping routes. The overarching developmental impact is therefore evaluated as good (subating: 2).

Sustainability: 80% of the costs of operating and maintaining the navigation signs are covered, in part through light dues and state subsidies. The level of subsidies has increased continually in recent years, and based on past experience we expect adequate subsidies will also be provided in the future. Although the financial position of the project executing agency was stretched at the time of the final evaluation, it is still able to replace damaged light buoys or lighting equipment on all installations without outside assistance (although not always with the original lighting technology). Given the capability of the

workshops, we expect the navigation signs will remain operational over the long term, even without taking into account the additional operational equipment made available through the project. Furthermore, the introduction of light dues considerably improves the basis for securing sustainable operation. Overall, we evaluate the sustainability of the project as good (subrating: 2).

Taking the individual ratings into account, we evaluate the overarching developmental impact of the project as good (Rating: 2).

General conclusions

It is important to ensure that the specific technical components in the navigation signs, for example remote control systems or LEDs, are adapted to the technical expertise and competence of the operating staff.

Notes on the methods used to evaluate project success (project rating)

Projects are evaluated on a six-point scale, the criteria being relevance, effectiveness (outcome), "overarching developmental impact" and efficiency. The ratings are also used to arrive at a final assessment of a project's overall developmental efficacy. The scale is as follows:

1	Very good rating that clearly exceeds expectations
2	Good rating fully in line with expectations and without any significant shortcomings
3	Satisfactory rating – project falls short of expectations but the positive results dominate
4	Unsatisfactory rating – significantly below expectations, with negative results dominating despite discernible positive results
5	Clearly inadequate rating – despite some positive partial results the negative results clearly dominate
6	The project has no positive results or the situation has actually deteriorated

A rating of 1 to 3 is a positive assessment and indicates a successful project while a rating of 4 to 6 is a negative assessment and indicates a project which has no sufficiently positive results.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability)

The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected.)

Sustainability level 3 (satisfactory sustainability)

The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability)

The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and an improvement is very unlikely. This rating is also assigned if the sustainability that has been

positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The overall rating on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. A rating of 1 to 3 indicates a “successful” project while a rating of 4 to 6 indicates an “unsuccessful” project. In using (with a project-specific weighting) the five key factors to form a overall rating, it should be noted that a project can generally only be considered developmentally “successful” if the achievement of the project objective (“effectiveness”), the impact on the overall objective (“overarching developmental impact”) and the sustainability are considered at least “satisfactory” (rating 3).