

Tuvalu

FY2018 Ex-Post Evaluation of Japanese Grant Aid Project  
“The Project for Construction of a Cargo/Passenger Vessel”

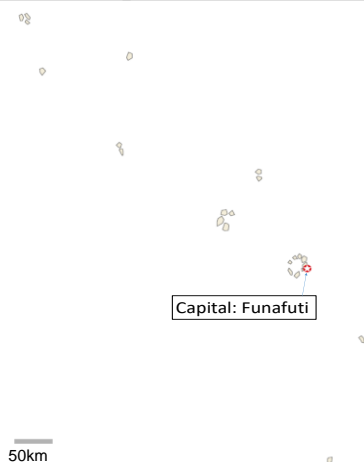
External Evaluator: Keisuke Nishikawa, Japan Economic Research Institute Inc.

**0. Summary**

In this project, a new cargo/passenger vessel was constructed to contribute to the stabilisation of lifelines for the people of Tuvalu through safe and prompt transportation of people and daily commodities. The relevance of this project is high as it was both consistent with the development plans and development needs of Tuvalu at the time of both planning and ex-post evaluation and was also consistent with Japan’s ODA policy at the time of planning. As for the performance of the project, the project outputs were largely as planned, and the project costs and period were both within the plan. Therefore, the efficiency is high. With regard to project effects, it was confirmed that the indicators for quantitative effects were mostly achieved, and the periodic transportation of daily commodities, stabilisation of the lifelines for people on the outer islands, and the improvement in convenience for the people of Tuvalu and surrounding countries were also realised. There were neither negative impacts on the natural environment nor occurrences land acquisition and resident resettlement cases. As a whole, the effectiveness and impact of this project are high. Regarding operation and maintenance, there were no issues in terms of institutional/organisational, technical and financial aspects, however, regarding the status of operation and maintenance, some issues were observed in routine maintenance, and the Preventive Maintenance Program (hereinafter referred to as ‘PMP’) had not been introduced. Therefore, the sustainability is judged to be fair.

In light of the above, this project is evaluated to be highly satisfactory.

**1. Project Description**



Project Location (entire area of Tuvalu)



MV Nivaga III,  
constructed through this project

## 1.1 Background

Passenger and cargo transport in Tuvalu was being shouldered by two government operated cargo/passenger vessels: the MV Nivaga II and the MV Manu Folau. Without air transport services in the country, the only means of transporting people and cargoes were sea transport. Particularly at the beginning and the end of school terms and during church events, sport events, and so on, the vessels became very crowded. Food, daily goods, fuel oil, and so on were transported from the capital, Funafuti, to the outer islands by these vessels.

International air transport was served by Air Pacific (currently named Fiji Airways) between Funafuti, the capital of Tuvalu, and Suva, the capital of Fiji, two times a week. Due to the small size of the airplane, the number of passengers and the volume of cargoes that could be carried on board were limited. As airfares were high, the demand for the government vessels with lower fares was high.

However, as the MV Nivaga II was already 25 years old, cancellations frequently occurred due to hull structure corrosions and machinery breakdowns, and it was difficult to undertake safe services on schedule. High maintenance costs for inspections and repairs had also become a major issue. When the MV Nivaga II was not capable of continuing her services, it was expected that transportation of people and goods needed to rely only on the 11-year-old MV Manu Folau. However, it was feared that sea transportation services could become unstable as sudden machinery breakdowns and suspensions of services due to regular dry docking were unavoidable.

Therefore, for Tuvalu, which was heavily dependent on sea transportation for transporting people and goods domestically and internationally, it was an urgent issue to secure a cargo/passenger vessel to replace the MV Nivaga II as it was imperative to ensure two safe and reliable vessels.

## 1.2 Project Outline

The objective of the project was to transport people and goods safely and promptly by developing and constructing a cargo/passenger vessel in Tuvalu to replace the MV Nivaga II, whose safe operations were threatened because of dilapidation, thereby contributing to the stabilisation of the country's lifelines.

Grant Limit / Actual Grant Amount	1,544 million yen / 1,541 million yen
Exchange of Notes Date / Grant Agreement Date	September, 2013 / September, 2013
Executing Agency	Ministry of Communication and Transport, Department of Maritime and Port Services
Project Completion	December, 2015
Target Area	Entire area of Tuvalu
Main Contractor	Japan Marine United Corporation
Main Consultant	Fisheries Engineering Co., Ltd.
Preparatory Survey	January – August, 2013
Related Projects	<p>[Grant Aid]</p> <p>The Project for Construction of the Inter-Island Vessel for Outer Island Fisheries Development (2001)</p> <p>The Project for Improvement of Funafuti Port (2007)</p> <p>Follow-Up Cooperation for the Project for Construction of the Inter-Island Vessel for Outer Island Fisheries Development (2010)</p> <p>The Project for the Construction of the Multi-Purpose Vessel for Outer Islands Development (2018)</p> <p>[New Zealand]</p> <p>Tuvalu Ship to Shore Transport Project (2008-2013)</p> <p>[Asian Development Bank]</p> <p>Outer Island Maritime Infrastructure Project (2015-2021)</p> <p>[World Bank]</p> <p>Maritime Investment in Climate Resilient Operations Project (2018-2024)</p>

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Keisuke Nishikawa, Japan Economic Research Institute Inc.

### 2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October 2018 – October 2019

Duration of the Field Study: 27 January – 9 February, 2019

### 3. Results of the Evaluation (Overall Rating: A<sup>1</sup>)

#### 3.1 Relevance (Rating: ③<sup>2</sup>)

##### 3.1.1 Consistency with the Development Plan of Tuvalu

The development plan of Tuvalu at the time of planning of this project was the *National Strategy for Sustainable Development 2005-2015 (Te Kakeega II)*. In the strategy, one of the priority development agenda items was Infrastructure Development, in which the development and maintenance of a reliable transportation network was imperative. In addition, in the budget estimate at the time of planning (FY2012/13), the short-term goal related to maritime matters was the strengthening of roles of the maritime authority and stable operations of the MV Nivaga II and the MV Manu Folau.

After the expiry of the target period of the *National Strategy for Sustainable Development 2005-2015*, the *National Strategy for Sustainable Development 2016-2020 (Te Kakeega III)* was formulated and positioned as the national development plan at the time of ex-post evaluation. The strategy had a focus on Infrastructure and Support Services and described that domestic shipping would become easier as a new cargo/passenger vessel would be introduced through this project. Based on that, there was a focus on the formulation of a maintenance plan. Moreover, in the budget estimate for FY2018/19, provision of safe and affordable shipping services would be continued for domestic maritime transport. Furthermore, in the *Tuvalu Infrastructure Strategy and Investment Plan 2016-2025*, one of the priority items was to develop the ports of the outer islands for safe cargo handling operations on the new vessel developed through this project (called the MV Nivaga III) and so on.

In this way, this project was consistent with the national development plans both at the time of planning and ex-post evaluation, and the budget estimates also emphasised stable operations of the cargo/passenger vessel. Moreover, it was confirmed that Tuvalu's infrastructure development plan had been focusing on the development of ports to realise safe handling operations. Therefore, this project, which supported the realisation of safe and stable maritime transport, can be said to have been consistent with the development policies of Tuvalu.

##### 3.1.2 Consistency with the Development Needs of Tuvalu

At the time of planning of this project, regarding international transport to and from

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<sup>1</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>2</sup> ③: High, ②: Fair, ①: Low

Tuvalu, the demand was higher for inexpensive shipping services to move passengers rather than that for expensive air services, and the demand for affordable maritime transportation of cargoes was also higher. Also, regarding domestic transportation, Tuvalu did not have any domestic air routes, and the maritime transportation services, mainly conducted by the above-mentioned two vessels, were the only means. However, one of these two ferries (the MV Nivaga II) was a vessel provided by the United Kingdom in 1988, meaning that it was more than 20 years old and had become difficult to operate safely and regularly because of frequent corrosion and breakdowns.

During the ex-post evaluation, the needs for domestic and international transport was checked with the executing agency and other government organisations, which revealed that maritime transport by the ferries had remained very important for people's lives in terms of supplying food, fuel construction materials, and so on, as well as for transporting people to hospitals, and it had become a crucial lifeline for the people of Tuvalu. The MV Manu Folau, having been provided through Japan's grant aid project in 2002, was also becoming dilapidated, as 17 years had passed at the time of ex-post evaluation. As a result, the demand for use of the MV Nivaga III had consistently been high since the operations started, and the vessel was preferred by many passengers because it had more transportation capacity compared to that of the MV Manu Folau. In fact, it was confirmed that the MV Nivaga III had frequently been used on domestic and international routes since being provided, specifically for a total of 245 days (44 voyages) in 2016, 207 days (43 voyages) in 2017, and 237 days (39 voyages) in 2018<sup>3</sup>.

Based on the above, this project can be said to have been consistent with the maritime transportation needs both at the time of planning and ex-post evaluation.

### 3.1.3 Consistency with Japan's ODA Policy

At the time of planning of this project, Japan, in its Country Assistance Policy for Tuvalu, was to provide assistance in consideration of difficulties of development from a number of aspects caused by Tuvalu's severe geographical conditions (sparseness, smallness, and remoteness) and set out the 'Program for Economic Infrastructure Development and Improvement of Management and Maintenance' as part of 'Overcoming Vulnerability', which was one of the priority areas. In addition, JICA's *Country Analysis Paper for the Pacific Region* regarded the 'Transportation infrastructure as an indispensable lifeline not

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<sup>3</sup> The MV Nivaga III and the MV Manu Folau were the vessels charged with scheduled shipping operations, and there were occasions when they couldn't respond to urgent matters such as injuries or diseases of outer islands residents. Therefore, a grant aid project 'The Project for the Construction of the Multi-Purpose Vessel for Outer Islands Development' was being implemented at the time of ex-post evaluation. This demonstrates that there is a demand that these two ferries cannot meet and that there are great needs for domestic maritime transportation as a whole.

only for exports and imports but also for transporting goods and moving people to outer islands within the country’.

Therefore, this project can be said to have been consistent with Japan’s ODA policy for both the entire Pacific region and Tuvalu.

It was confirmed that this project had been consistent with the development plans and the development needs of Tuvalu at both the time of planning and ex-post evaluation, and with Japan’s ODA policy for Tuvalu at the time of planning. Furthermore, it was considered that there were no issues in terms of project planning and approach.

In light of the above, the relevance of this project is judged to be high.

### 3.2 Efficiency (Rating: ③)

#### 3.2.1 Project Outputs

In this project, it was planned that a cargo/passenger vessel to be charged with transportation inside and outside Tuvalu would be newly constructed<sup>4</sup>. The concrete plan and actual outputs (executed by the Japan side) are shown in Table 1, and they were implemented mostly as planned.

Table 1: Planned and Actual Outputs of This Project

	Plan	Actual
Length overall	60.5 m	60.5 m
Breadth	12.6m	12.6 m
Depth	6.0 m	6.0 m
Gross tonnage	1,270 tons	1,337 tons
Main engine power	478 kW x 2	480 kW x 2
Deadweight	500 tons	578 tons
Cargo hold capacity	450 m <sup>3</sup>	737 m <sup>3</sup>
Passenger capacity	International: 271 Domestic: 380	International: 271 Domestic: 380
Trainee	20	20
Crew	29	29

Source: Preparatory Survey Report and documents provided by JICA

Differences in the outlines of the vessel were seen in the gross tonnage, the deadweight, and the cargo hold capacity. According to the project consultant, the gross tonnage became slightly larger as a result of an adjustment to the vessel’s shape, and the deadweight and the cargo hold capacity came to have gaps, as the estimated minimum values to be ensured in the

<sup>4</sup> The vessel was constructed at a shipyard in Japan and travelled to Tuvalu after completion.

initial plan turned out to have larger values once the final design was confirmed. As for the cargo hold capacity in particular, once the equipment to be loaded was actually decided, the righting stability upon damages to the vessel was recalculated, then the margins were expanded for the cargo space. As a certain degree of gaps was estimated from the initial planning stage, it could be said that these gaps as a whole would not be problematic.

Table 1 shows an outline of the structure of the MV Nivaga III. In addition, a set of spare parts necessary for the PMP of the vessel, two workboats for cargo handling in outer islands (10 m long x 4 m wide, made of aluminium), and six outboard motors<sup>5</sup> were planned for procurement. It was confirmed in the ex-post evaluation that these items were all executed as planned.



Deck area of the MV Nivaga III  
(during the cargo handling operation)



Handling operations using the workboat for  
outer island cargo handling  
(Niulakita Island)

In addition to the cooperation of the Japan side, the Tuvalu side planned to undertake administrative procedures, tax exemption measures, banking procedures (including the payment of commissions), and the development of parts storage. As the actual outputs, administrative matters were implemented as planned, but the development of an air-conditioned storage to store spare parts and so on was not sufficiently implemented because of a budget shortage, and the parts were being placed in one corner of an existing storage<sup>6</sup>. However, as no negative influences on the generation of project effects were observed and as the proportion of such storage was very small in the entire project scope, it was not regarded as a problem in the ex-post evaluation.

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<sup>5</sup> Two outboard motors were installed to each workboat, and the remaining two motors were on standby.

<sup>6</sup> In the World Bank's 'Maritime Investment in Climate Resilient Operations Project', being implemented at the time of ex-post evaluation, a full-scale development of the parts storage was being examined.

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

This project was planned at a total cost of 1,545 million yen, composed of Japan's project cost of 1,544 million yen and Tuvalu's project cost of one million yen.

The actual project cost of the Japan side was 1,541 million yen (construction: 1,450 million yen, equipment: 20 million yen, design and supervision: 70 million yen). The project cost of the Tuvaluan side (bank commissions) was checked by the executing agency and the Ministry of Finance and Economic Development during the site visit in Tuvalu, but no sufficient data were confirmed. Therefore, an evaluation judgement was made by comparing the planned and actual project costs of Japan. Against the planned amount of 1,544 million yen, the actual amount was 1,541 million yen, which can be said to have been within the plan (100% of the plan).

#### 3.2.2.2 Project Period

The planned period of this project was 28 months from the signing of the grant agreement. The actual project period was 28 months, from September 2013 till December 2015, and its breakdown is shown in Table 2.

Table 2: Breakdown of the Project Period

Project stage	Breakdown
Signing of grant agreement	September 2013
Detailed design period (including the bidding period)	September 2013 – February 2014
Construction period	February 2014 – November 2015
Completion (bringing ship and handing over to Tuvalu)	December 2015

Source: Documents provided by JICA

Therefore, the period of this project can be said to have been as planned (100% of the plan).

The outputs necessary for the generation of project effects were implemented mostly as planned. Both the project cost and period for them were also within the plan. Therefore, the efficiency of the project is high.



### 3.3 Effectiveness and Impacts<sup>7</sup> (Rating: ③)

#### 3.3.1 Effectiveness

##### 3.3.1.1 Quantitative Effects

As the quantitative effects of this project, four indicators each for an increase in the number of passengers carried, a reduction in the maintenance cost, more efficient cargo handling operations in the outer islands, and a reduction in stoppage days due to vessel breakdown were expected. The target year was set as the fourth year, which was three years after operations with the two-vessel formation had practically started generating the effects (with the MV Nivaga III, constructed through this project, and the MV Manu Folau, provided through the grant aid project in 2002). As the ex-post evaluation study was conducted in 2018 – 2019, the figures for the three years from 2016 till 2018 were captured, and an evaluation judgement was made with a viewpoint of whether there was a prospect of achieving the target values in 2019.

The baseline values, target values, and the actual values of the quantitative effect indicators of this project are shown in Table 3.

Table 3: Quantitative Effect Indicators of This Project

Quantitative effects (Effect indicators)	Baseline	Target	Actual		
	2012	2019	2016	2017	2018
		4 Years After Completion	1 Year After Completion	2 Years After Completion	3 Years After Completion
Increase in the number of passengers carried (average of the past three years <sup>Note</sup> )	Approx. 4,000	Approx. 4,300	Out: 6,793 In: 5,065	Out: 5,853 In: 4,550	Out: 5,847 In: 4,996
Reduction in maintenance cost (thousand Australian dollars/year)	432	246	Not known	100	154
More efficient cargo operations in the outer islands (average hours/each time)	6.0	4.5	No data		
Stoppage days due to vessel breakdown (days/year (average of the past three years))	Approx. 10	1 or less	0	0	0

Source: Ex-ante Evaluation Report and documents provided by the executing agency

Note: The upper row shows the number of passengers carried (actual values) from the capital, Funafuti and the lower row showing the number arriving in the capital, Funafuti

Although the number of passengers carried fluctuated substantially depending on shipping schedules and destinations, there were 5,517/year on average between 2016 and 2018, exceeding the target value before the target year. The maintenance cost

<sup>7</sup> Sub-rating for Effectiveness is to be put with consideration of Impacts.

(budget-based) was 100 thousand Australian dollars in 2017 and 154 thousand Australian dollars in 2018, achieving the target value. While the maintenance costs were estimated to increase as the vessel became more dilapidated, it was considered that there were no problems as the budget was largely secured sufficiently at the time of ex-post evaluation. Also, stoppages because of breakdowns had never occurred after the commencement of operations, achieving the target value.

On the other hand, it was not possible to capture and analyse the data quantitatively as the data on the efficiency of handling operations between the outer islands were not developed at the executing agency. However, according to the crew of the MV Nivaga III, the workboat for outer island handling operations was twice the size of the wooden workboats loaded on the MV Nivaga II, having a flat-bottom structure and being much more stable than the wooden ones. Therefore, while there were no data, the operation became at least twice as efficient (the time was halved), and the target value is considered to have been sufficiently achieved.

#### 3.3.1.2 Qualitative Effects

At the time of planning of this project, it was expected as qualitative effects of project implementation that daily goods would be transported regularly. Regarding this point, the shipping schedules of the two Tuvaluan cargo/passenger vessels were prepared every three months, and the regular transportation of daily goods did not become hampered by factors such as breakdowns, while changes at the convenience of the Government of Tuvalu and delays due to poor weather conditions occurred. It can be said that stable transportation of daily goods has been realised.

With regard to the transportation capacity, according to the executing agency, the cargo space had been fully utilised whenever the MV Nivaga III left the capital, Funafuti on domestic routes, and goods and fuel tanks had been fully loaded and carried to Funafuti on the return trip (from Fiji to Tuvalu) after operations started. On the MV Nivaga II, there were some occasions when daily goods could not be transported in one voyage as cargo space was limited, but it had become possible to carry more goods in a single voyage on the MV Nivaga III.

### 3.3.2 Impacts

#### 3.3.2.1 Intended Impacts

It was expected as an impact of project implementation that this project would

- (1) stabilise the lifeline; and
- (2) improve the convenience of Tuvaluan people travelling within Tuvalu and outside

the country (between Tuvalu and Fiji).

Regarding (1), no changes to shipping schedules caused by sudden breakdowns of the MV Nivaga III had occurred, contributing to the stabilisation of the lifeline of people on the outer islands. As described in the qualitative effects, operational delays occurred only when changes based on government decisions and poor weather conditions occurred.

As for (2), the operation record was checked, which showed that, for international voyages, there were records of trips not only to Fiji several times a year but also to Nauru, Kiribati, Cook Islands, Samoa, and American Samoa, leading to the improved convenience of the people of the south Pacific countries.

While no surveys on the stabilised operations or the improved convenience of the cargo/passenger vessel had been conducted by the Government of Tuvalu, including the executing agency, opinions were uniformly heard at the time of the ex-post evaluation from the Ministry of Finance and Economic Development and the Ministry of Foreign Affairs, Trade, Tourism, Environment and Labour, in addition to those from the executing agency that the implementation of this project had realised the improved convenience of the people through stable operations of the vessel.

### 3.3.2.2 Other Positive and Negative Impacts

#### (1) Impacts on the Natural Environment

At the time of planning of this project, undesirable impacts to the environment and society through project implementation were considered to be minimal, and the implementation of an environmental impact assessment was not necessary. Moreover, Tuvalu and Fiji had ratified the *International Convention for the Prevention of Pollution from Ships*, and it was planned that measures against oil contamination (installation of an oil-water separator) and sewage contamination (installation of a sewage tank), and measures to prevent air pollution (adoption of low NOx-emitting diesel engines) would be taken for the construction of the MV Nivaga III.

When these points were checked at the time of ex-post evaluation, it was confirmed that measures against oil contamination (installation of an oil-water separator) and sewage contamination (installation of a sewage tank), and measures to prevent air pollution (adoption of low NOx-emitting diesel engines) were all taken as planned for the MV Nivaga III, and there were no breakdowns of the equipment. Also, according to the executing agency, no other incidents of having negative impacts on the environment had occurred at all, nor were there complaints lodged by the people.

Therefore, it can be judged that there have been no issues in terms of the natural environment.

## (2) Resettlement and Land Acquisition

In this project, the vessel was constructed at a shipyard in Japan. Therefore, neither land acquisition nor resident resettlement cases occurred. It can be said that there were no problems.

The MV Nivaga III, constructed through this project, has been extensively used and all the quantitative effect indicators of this project have been achieved. Furthermore, it was confirmed that regular transportation of daily goods, stabilisation of the lifeline to the outer island people, and the improved convenience of people's movement in Tuvalu and the surrounding countries were realised through the implementation of this project.

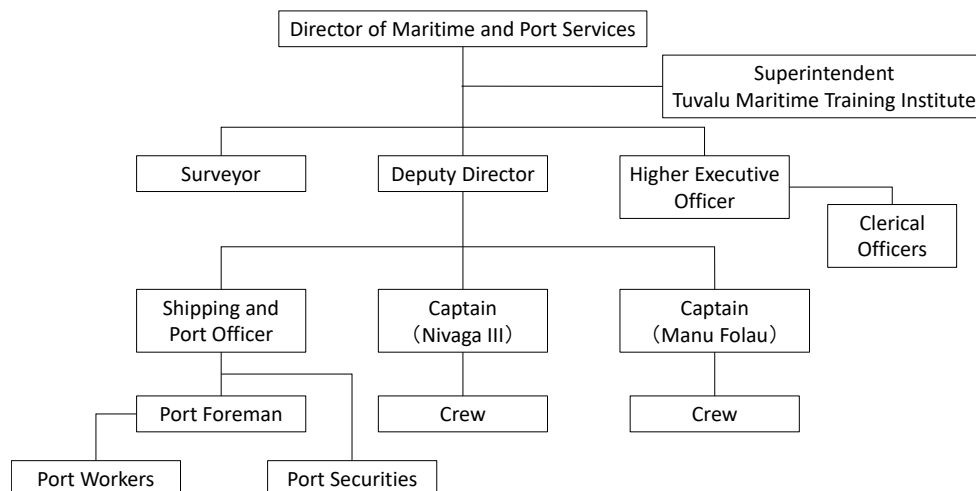
No negative impacts to the natural environment, land acquisition or resident resettlement occurred through the implementation of this project, and it can be said that there were no problems on the environmental and social aspects.

In light of the above, the effectiveness and impacts of this project can be judged to be high.

### 3.4 Sustainability (Rating: ②)

#### 3.4.1 Institutional / Organisational Aspect of Operation and Maintenance

The executing agency of this project was the Ministry of Communication and Transport. The Ministry is comprised of five departments, of which the Department of Maritime and Port Services was in charge of operation and maintenance of the two cargo/passenger vessels. The organisational structure of the Department of Maritime and Port Services is shown in Figure 1.



Source: Document provided by the executing agency

Figure 1: Organisation Chart of the Department of Maritime and Port Services

64 staff members belong to the Department of Maritime and Port Services under the Director, of which the number of crew members for the MV Nivaga III, constructed through this project, was 29<sup>8</sup>. According to the executing agency and the captain of the MV Nivaga III, the number of crew was sufficient. The staff of the vessel, led by the captain and the chief engineer, had the qualifications necessary for international and domestic voyages. In addition, 10 trainees from the Tuvalu Maritime Training Institute were on board during the field survey and were engaged in various activities, such as cleaning inside the vessel and cargo handling operations as assistants.

It was considered that an institutional arrangement as a whole had been established to continuously provide maritime transportation services and that a sufficient structure had been built up for smooth operations in terms of the number of crew, structure and qualifications.

#### 3.4.2 Technical Aspect of Operation and Maintenance

During this project, instructions were given on operation and daily inspections, including at the time of travel from Japan. According to the executing agency, the crew members had the skills to operate the vessel and carry out routine maintenance without problem. Operational situations from the capital to the outer islands were checked with the evaluator, who actually boarded the vessel at the time of the ex-post evaluation, and it was thought that the crew had the skills to conduct routine maintenance for stable operations.

Items that couldn't be repaired solely by the executing agency, for example, when a malfunction of air conditioning equipment occurs, the repair is undertaken by private companies. Also, as Tuvalu does not have facilities to dry-dock vessels of the scale of the MV Nivaga III, repairs and maintenance operations that couldn't be handled in Tuvalu were being outsourced mainly to Fiji Shipping & Heavy Industries Limited (FSHIL) in Fiji, who has slipways, and it was confirmed that maintenance activities were conducted as necessary<sup>9</sup>. It is considered that there have been no technical problems with operation and maintenance, as the technical skills to carry out routine inspections and basic repairs have been equipped, and there was a structure to repair the items the executing agency couldn't do independently by outsourcing them to FSHIL in Fiji.

With regard to the implementation of training programmes for the crew, there were no systematic plans in place<sup>10</sup>, but the Government of Tuvalu has secured a budget every year

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<sup>8</sup> The number of crew members on board the MV Manu Folau was 22.

<sup>9</sup> Dry-docking was conducted in November 2017. The next one is an annual inspection scheduled to be implemented in November 2019.

<sup>10</sup> It was confirmed at the time of ex-post evaluation that small-scale technical assistance was provided by other donors. Concretely, training programmes were being implemented from 2017 till 2019 by a vessel safety officer of the Maritime Technology Cooperation Centre in the Pacific (MTCC-P) from the regional organisation of the

and has authorized the crew to study overseas in Australia, New Zealand, or Fiji to acquire qualifications as international navigator. This suggests that the government itself has been implementing the study abroad programme to obtain qualifications to operate vessels, and it is considered to be highly prospective that technical skills of the crew members under the captain will be maintained above a certain level.

### 3.4.3 Financial Aspect of Operation and Maintenance

The Department of Maritime and Port Services is not a financially independent department and receives allocation from the government budget. Budget appropriation had been made for the operations of the MV Nivaga III and the MV Manu Folau. The operating budget for the MV Nivaga III and the MV Manu Folau between 2017 and 2019 is as follows.

Table 4: Operating Expenses of the MV Nivaga III and the MV Manu Folau (budget-based)

(Unit: thousand Australian dollars)

Item	MV Nivaga III			MV Manu Folau		
	2017	2018	2019	2017	2018	2019
Salaries and allowances	403	456	490	295	397	397
Victualling	100	120	160	100	100	120
Fuel	500	500	700	380	400	550
Maintenance	100	154	346	300	304	232
Other	51	50	76	48	48	57
Total	1,154	1,280	1,772	1,123	1,249	1,356

Source: Documents provided by the executing agency

On the other hand, operational revenues of the MV Nivaga III and the MV Manu Folau are shown in Table 5.

Table 5: Operational Revenues from the MV Nivaga III and the MV Manu Folau

(Unit: thousand Australian dollars)

Item	2016	2017	2018
Revenue from passengers	77	348	409
Revenue from freight	108	89	108
Special services	11	0	983
Total	196	437	1,500

Source: Documents provided by the executing agency

Note: The 'Special services' refers to charter uses by foreign governments and so on.

The budget for the MV Nivaga III and the MV Manu Folau has been increasing, and the maintenance budget for the more frequently used MV Nivaga III has been increasing year by year. As vessel maintenance costs have tended to increase as vessels become older, the size of the maintenance budget for 2019 is thought to be necessary thereafter. In addition, it was confirmed from the budget estimate that the cost for dry-docking scheduled for November 2019 had been secured at the amount of 300,000 Australian dollars, apart from the budget shown in Table 4.

As shown in Table 5, revenues through operation of two cargo/passenger vessels<sup>11</sup> were significantly lower than the operating budget in Table 4. While the special service revenue increased substantially in 2018, as the MV Nivaga III was being chartered to Samoa, American Samoa, and the Cook Islands for a total of nearly two months, the same kind of revenue cannot be expected continuously. Therefore, it can be said that the operation of the cargo/passenger vessel has been on a red-ink trend. However, the budget necessary for safe and stable operations of the two vessels, which are the lifeline, especially for outer island residents, has been allocated every year, though it has not necessarily been sufficient. Therefore, the prospect of the public sea transportation service to be financially continued is considered to be high in the future.

#### 3.4.4 Status of Operation and Maintenance

It was confirmed during the field survey that the vessel constructed through this project had been operated safely and stably without any breakdowns, being in good condition. During the field survey period, the operations to the outer islands in the South were checked by actually getting on board the MV Nivaga III, which revealed that the vessel was being operated under sufficient disciplines and that cleaning was being thoroughly conducted by the trainees every day. Operation logs were also taken.

Regular inspections of the MV Nivaga III (inspections by the Nippon Kaiji Kyokai) had been conducted in February 2017, November 2017, and November 2018, and it passed all the inspections. The inspections in February 2017 and November 2018 were done with the vessel in the water and the one in November 2017 was done at a time of dry-docking. The next dry-docking has been scheduled to be executed in Fiji in November 2019, as stated above. The company outsourced for the docking work also commented that all the inspections and maintenance had been conducted without delay and there had been no problems in terms of necessary repairs and maintenance work.

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<sup>11</sup> For Tuvaluans, it is 20 Australian dollars per adult and 10 dollars per child each way on domestic routes. The fares for foreigners vary depending on the distance, set between 6 and 35 Australian dollars. In addition to these, first and second-class cabin fees and meal charges are additionally required. As for international routes, a rate table was prepared in 2018 for the routes connecting with Pacific island countries. (E.g. 82.68 Australian dollars for Tuvaluans and 95.40 Australian dollars for foreigners as for one-way rates between Funafuti and Suva)

Thus, the MV Nivaga III has been in operation without any breakdowns, and the spare parts have been replaced in a timely manner<sup>12</sup>; however, the PMP, expected as an item to be implemented by the Tuvalu side at the time of planning, had not been implemented mainly because of the large amount of expenses needed to fully introduce it<sup>13</sup>. Moreover, as the MV Nivaga III was often at sea, rust removal and painting work had not necessarily been done sufficiently, and there were some rusty parts spotted.

Therefore, while the operation and maintenance condition of the MV Nivaga III was generally good, the PMP had not been introduced as initially planned. It was thought that there was an issue in terms of insufficient routine maintenance of the ship body.



Inside the engine room



Side of the ship body (rusts and paint peeling)

As a whole, no problems were observed in terms of institutional and organisational or technical and financial aspects. However, regarding the operation and maintenance conditions, while the vessel was operated largely in good condition, some issues were identified in terms of some routine maintenance, and the PMP had not yet been introduced.

Based on the above, the sustainability of the effects generated through the implementation of this project is judged to be fair.

#### **4. Conclusion, Lessons Learned and Recommendations**

##### **4.1 Conclusion**

In this project, a new cargo/passenger vessel was constructed to contribute to the stabilisation of lifelines for the people of Tuvalu through safe and prompt transportation of people and daily commodities. The relevance of this project is high as it was both consistent with the

<sup>12</sup> During the field visit of the ex-post evaluation survey, spare parts for the desalination equipment were being replaced.

<sup>13</sup> During the field visit, a JICA expert (Advisor for Ship Operation, Maintenance and Naval Architecture) was preparing a draft PMP that could be introduced to the executing agency.



development plans and development needs of Tuvalu at the time of both planning and ex-post evaluation and was also consistent with Japan's ODA policy at the time of planning. As for the performance of the project, the project outputs were largely as planned, and the project costs and period were both within the plan. Therefore, the efficiency is high. With regard to project effects, it was confirmed that the indicators for quantitative effects were mostly achieved, and the periodic transportation of daily commodities, stabilisation of the lifelines for the people on the outer islands, and the improvement in convenience for the people of Tuvalu and surrounding countries were also realised. There were neither negative impacts on the natural environment nor occurrences of land acquisition and resident resettlement cases. As a whole, the effectiveness and impact of this project are high. Regarding operation and maintenance, there were no issues in terms of institutional/organisational, technical and financial aspects, however, regarding the status of operation and maintenance, some issues were observed in routine maintenance, and the PMP had not been introduced. Therefore, the sustainability is judged to be fair.

In light of the above, this project is evaluated to be highly satisfactory.

## 4.2 Recommendations

### 4.2.1 Recommendations to the Executing Agency

It was observed that the MV Nivaga III was stably operated and that the effects expected at the time of project planning had been generated. On the other hand, as the vessel was frequently operated, some issues were seen in that routine maintenance (rust removal and painting) and the introduction of the PMP were not executed. In order to operate the vessel in good condition over a long term, it is essential to take preventive measures including planned procurement of spare parts, such as regular replacement of parts and engine overhaul, instead of repairing the vessel after it breaks down. As the MV Nivaga III is a vessel designed for international voyages and a large amount of revenue can be expected when chartered, it is necessary for the executing agency to execute planned maintenance so that the vessel can always retain its international ship class.

### 4.2.2 Recommendations to JICA

In Pacific island countries, including Tuvalu, maritime transportation is a significant means for creating a lifeline between islands. Therefore, it is considered to be important from the viewpoint of sustainability of project effects to continue assistance, even after the provision of the vessel, with a focus on maintenance, such as the introduction of the PMP and its actual execution, so that vessels such as the MV Nivaga III will continue to be operated in good condition. Concretely, it is desirable to steadily implement the formulation

and execution of the vessel maintenance programmes and schedules until they take root in target countries in the Pacific region, including Tuvalu, through cooperation by experts such as the JICA Advisor for Ship Operation, Maintenance and Naval Architecture (2016 – 2019).

#### 4.3 Lessons Learned

##### Formulation and introduction of a project plan (including an operational plan) to concretely implement the Preventive Maintenance Programme (PMP)

Through this project, as through other vessel construction projects in other Pacific island countries to date, the introduction of the PMP was expected, but in fact the PMP, including the development of spare parts storage, had not been introduced because of a budget shortage and so on.

In a small island country such as Tuvalu, it is considered to be effective, in terms of ensuring long-term sustainability of project effects, to formulate a concrete PMP plan and further develop the implementation structure so that the PMP programme will be established immediately after the commencement of vessel operations. In regard to financial aspects, as it is unrealistic to establish a vessel replacement fund from the profits under the situation where expenditures substantially exceed revenues and where the operations are dependent on budget allocation from the government, it is important to plan a project by placing a focus on the long-term use of the provided vessel by maintaining its good condition. Therefore, in planning a similar project, it is desirable to set a PMP with feasible contents in sufficient consideration of the existing condition and with a perspective of long-term use.

End