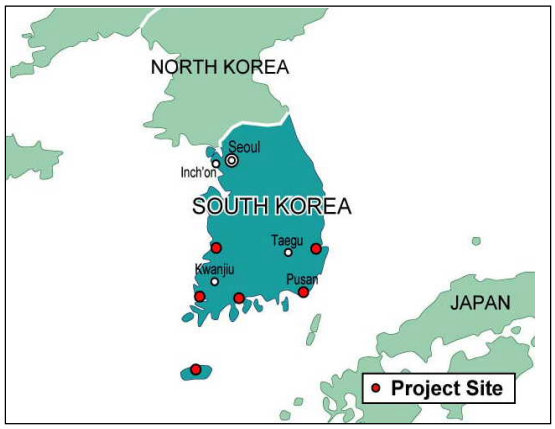
Korea

Fisheries and Maritime Education Facilities Expansion Project

Report Date : September, 2001
Field Survey : September, 2001

1. Project Profile and Japan's ODA Loan



Site Map: The location of 7 target schools

Site Photo: Training vessel "HANNARA" and equipment procured by the project

1.1 Background

It was highly important to develop and support the maritime industry for the export-led South Korean economy. However, the increase in the number of workers (a yearly average increase of 4.2%) had not caught up with the sharp increase in the amount of cargo transportation (a yearly average increase of 13.4%) at the time of appraisal (1988). On the other hand, while the fisheries was an important sector, occupying the position of 8th in the world by the volume of fish catch (3,371,000M/T in 1987), the fishery industry was at low-growth rate because of scientifically underdeveloped fishing methods and other reasons. As in the case with the maritime industry, it was also necessary in the fishery industry to nurture seafarers by enhancing their quality, especially in respect of advanced technology.

Moreover, since the Korean government ratified the "International Convention on Standards of Training, Certification and Watch keeping for Seafarers" (hereinafter referred to as STCW) in April, 1984, there had been a necessity for training seafarers along with development of curriculum based on this convention. For this reason, in Korea, it was necessary to extend the shipboard training period from 6 months to one year.

Under these circumstances, five of eighteen training vessels owned by seven national fisheries and maritime schools became obsolete and the schools could not conduct ocean navigation training due to frequent troubles. Consequently, these seven schools were able to conduct shipboard training only for 34% of all students using existing training vessels and they contracted with private enterprises for shipboard training for the rest of the 66% of the total number of students (fishery schools: 71% and maritime schools: 43%). However, there were the following problems in shipboard training by private enterprises due to the fact that students participated in the usual crews of the enterprises:

(1) It was impossible to conduct efficient and systematic training under a unified curriculum
(2) Safety measures for shipboard training were not sufficient.

In this situation, the Korean government gave a high priority to the construction of seven training vessels in fishery and maritime schools, planning to carry this out in 1987 as a part of the project by the Asian Development Bank (ADB) "Marine Sciences Education Project in the Republic of Korea". However, since costs overran occurred by an increase in the construction costs of vessels after 1988, the

Korean government requested ODAloan from the Japanese government. As a result, ADB financed the structure of training vessels and the installation of a part of their facilities, and Japan's ODA loan financed other facilities and equipment that were necessary for shipboard training. (Hereinafter "the Project" specifically refers to the portion financed by Japan's ODA loan).

1.2 Objectives

To supply the necessary equipment and facilities by Japan's ODA loan for seven vessels procured by ADB in fishery and maritime schools so that each school can carry out shipboard training, with a view to enhancing the level of fishery and maritime education and to satisfy the requirement for the STCW treaty.

1.3 Project Scope

Target schools (seven schools)

① Fishery schools
National Fisheries University of Pusan, Cheju National University, Yosu Fisheries College, Kunsan Fisheries Junior College, Pohang Fisheries High School

② Maritime schools
Korea Maritime University, Mokpo Merchant Maritime Junior College

Equipment and facilities were procured for seven training vessels (gross tonnage 300-4,500t) of seven target schools in the above. Although the equipment to be procured differed for each vessel, they covered about 480 items in total, including navigation systems, engines, electric machinery, fishing tools, lifesaving, fire-fighting equipment, teaching materials and other equipment. The educational contents specified in the STCW treaty were taken into consideration as one of the criteria upon the selection of the equipment.

1.4 Borrower/Executing Agency

The Government of the Republic of Korea／Ministry of Education (At the time of appraisal. At present, Education Facilities Affairs Division, Ministry of Education and Human Resources Development)

1.5 Outline of Loan Agreement

Loan Amount Loan Disbursed Amount	2,160 million yen 2,159 million yen
Date of Exchange of Notes Date of Loan Agreement	September 1990 October 1990
Terms and Conditions Interest Rate Repayment Period (Grace Period) Procurement	 4.0% p.a. 25 years (7 Years) General Untied
Final Disbursement Date	January 1996

2. Analysis and Evaluation

2.1 Relevance

The Project is a part of "Marine Sciences Education Project in the Republic of Korea" [1]by ADB that aims at improving the quality of fishery and maritime education and strengthening the capability of research on marine science technology. This ADB project was considered to be important in the five-year plan of Korea at the time of appraisal. The objective of the Project was to supply with equipment seven training vessels constructed under the component of the ADB project. It was originally planned that this portion would be financed by the ADB loan. However, as Korea became ineligible for further ADB loan to finance the costs overran caused by the rise of the construction cost for vessels after 1988, equipment and facilities were financed hastily by Japan's ODA loan. In this sense, the government of Japan timely financed the portion that was indispensable to the completion of the ADB project.

Although the share of the fishery sector to the total GDP and the number in the work force in the sector showed a downward tendency after the year 1990, Korea recorded 3,116,000 tons of marine products for the recent five-year average (1995 to 1999) and it was still in the 12th position in the world (1997) in terms of production volume. As compared with indicator in 1987, the current production volume has slightly decreased and the position of Korea was retreated from 8th to 12th among other countries. However, domestic demand for marine products remains high at present, and the importance of continuous support for the sector is still clear.

On the other hand, examining the maritime sector, the number of entry and departure vessels changed from 274,000 in 1995 to 325,000 in 2000, and the total tonnage of vessels increased from 1,232 to 1,760 million tons. The total volume of cargo handling also has an upward tendency, increasing by 1.5 times during the same period. Thus, it is considered that there is still an importance in the maritime sector at present.

Moreover, in order to satisfy the requirements for the STCW treaty, establishment and revision of laws with regard to seafarers were undertaken after the project completion, such as the standard for appointed educational institutions (notification No.1998-34, Ministry of Maritime Affairs and Fisheries), quality standards of maritime technology (notification No.1998-35, Ministry of Maritime Affairs and Fisheries). Education for improvement of the quality of seafarers is still significant at present in observing the STCW treaty.

From the points described above, the Project plan was relevant to the situation at the time of appraisal and still is at present.

2.2 Efficiency

2.2.1 Project Scope

There were some changes in the items procured by the project in four schools: Pukyong National University (National Fisheries University of Pusan at the time of appraisal), Korea Maritime University, Mokpo National Maritime University (Former Mokpo Merchant Maritime Junior College), and Yosu National University (Former Yosu Fisheries College). The reasons for the changes were: (1) changes in the curriculum, (2) due to the reinforcement of regulations, some new equipment was introduced,. All these revisions were made according to the necessity of achievement of the Project objective, and therefore, the changes were deemed to be appropriate.

2.2.2 Implementation Period

At the time of appraisal, the project was planned to be completed within two years by 1992. However, afterwards, the project completion was delayed owing to a delay in the construction of vessels due to

[1] Components of this project comprise: (1) Construction or renovation of facilities for education, research, supervision, and boarding in 15 fishery and maritime schools, (2) Construction of 5 fishery training vessels, 2 maritime training vessels, and one oceanic research vessel, (3) Provision of training and experiment materials, books, furniture and other equipment, (4) Provision of financial resources for external or domestic training of teachers, and (5) Consulting service.

cost overrun, in the portion financed by the ADB, and also owing to the changes in the procurement items. Particularly, for four schools, which had some changes in the equipment items to be procured, the project completion date of each school was between September, 1995 and January, 1996. It was due to that time was taken because there were several re-tenders due to absence of tenderers. Although the overall schedule of ADB-financed project "Marine Sciences Education Project in the Republic of Korea" was behind the plan due to the delay in vessel construction, other parts except for the portion financed by JBIC, were completed in May 1995.

2.2.3 Project Cost

Regardless of some changes in the procured equipment items, the actual project cost was 2,563 million yen, within the limits of the planned cost of 2,592 million yen.

2.3 Effectiveness

The following are discussions on the situation of the training vessel equipment financed by the Japan's ODA loan and also on the overall effect , together with other portion financed by the ADB. Indicators and information referred to below are primarily based on the answers by each school to the questionnaire prepared for this evaluation.

① Operation (utilization) of supplied equipment

When the present condition of the equipment supplied by the project was asked about in the questionnaire to the seven schools targeted by the project and to the Education Facilities Affairs Division, Ministry of Education and Human Resources Development, in August 2001, all answered that the equipment procured by the project still existed without problem and it was well utilized. In addition, the situation of the equipment was checked by site survey in Pukyong University and the Korea Maritime University, and it was confirmed that equipment was adequately operated in both universities.

② Coverage rate of students to training vessels of schools

Coverage rate of students to training vessel of the seven schools in the project (number of target students for shipboard training / number of passengers at maximum capacity) increased in both fishery and maritime schools, compared with the time of appraisal. As for fishery schools, the coverage rate was beyond the target rate of 35%, reaching about 50%. The coverage rate in the case of maritime schools, together with two schools, almost attained the target rate of 100%.

However, when verifying the details with each school, the precondition for achieving the target percentage changed due to various factors. In the category of fishery schools, the Cheju University and the Kunsan University had not reached the target percentage, because the capacity of vessels decreased as they recently sold other old training vessels for the reason that they were overage. The Coverage rate of Pukyong University also decreased in 2000. However, the reason for this was also that they sold one old vessel other than the project-training vessel. The Kunsan University had a plan to purchase one new vessel in the year 2002, and then increase the coverage rate. In Pukyong University, Yosu University, and Pohang fishery high school, the number of the students for shipboard training decreased remarkably due to reorganization and changes in the course curriculum, etc. In particular, the Pohang fishery high school had a decrease in the number of students due to changes in curriculum. However, they continue to receive other school students for shipboard training.

As for the maritime schools, the coverage rate of Korea Maritime University is annually about 80 % and the other 20 % of students have shipboard training in private enterprises. In a field survey of this university, it seemed that they think there is meaning in training by private enterprises for the students at this percentage, since there is a merit injob placement for the students. Considering that the percentage of the students who could participate in shipboard training at school vessels was 48% of total at the time of appraisal (1990), there was a remarkable increase in the number of students for shipboard training conducted by the schools after new training vessels were constructed by the Project.

Some universities pointed out that the increase of the coverage rate for shipboard training by themselves made it possible to conduct shipboard training for students from several other departments (including shipboard training for the purpose of investigation or research) or for various grades at the same time.

Table 1: Coverage rate of students to training vessels of schoools

Type	Name of schools		At appraisal (1990)	Plan after the project	1994	1995	Completion year 1996	1997	1998	1999	2000
Fishery Schools	Pukyong National University (Former National Fisheries University of Pusan)	(1)Capacity of passengers (No.)	310	310	139	139	139	139	139	139	89
		(2)Students for shipboard training (No.)	480	480	120	120	120	120	120	120	120
		(3)Coverage rate (1)/(2)	65%	65%	116%	116%	116%	116%	116%	116%	74%
	Cheju National University	(1)Capacity of passengers (No.)	103	174	185	136	129	129	112	112	112
		(2)Students for shipboard training (No.)	456	456	467	484	436	426	415	431	404
		(3)Coverage rate (1)/(2)	23%	38%	40%	28%	30%	30%	27%	26%	28%
	Yosu National University (Former Yosu Fisheries College)	(1)Capacity of passengers (No.)	235	295	254	254	254	254	254	254	129
		(2)Students for shipboard training (No.)	798	798	360	360	360	360	360	240	240
		(3)Coverage rate (1)/(2)	29%	37%	71%	71%	71%	71%	71%	106%	54%
	Kunsan National University （Former Kunsan Fisheries Junior College）	(1)Capacity of passengers (No.)	172	200	200	200	200	160	160	160	100
		(2)Students for shipboard training (No.)	682	682	710	710	670	520	605	694	559
		(3)Coverage rate (1)/(2)	25%	29%	28%	28%	30%	31%	26%	23%	18%
	Pohang Fishery High School	(1)Capacity of passengers (No.)	110	160	260	260	260	260	260	260	260
		(2)Students for shipboard training (No.)	812	812	200	200	200	200	200	200	200
		(3)Coverage rate (1)/(2)	14%	20%	130%	130%	130%	130%	130%	130%	130%
	Total	(1)Capacity of passengers (No.)	930	1,139	1,038	989	982	942	925	925	690
		(2)Students for shipboard training (No.)	3,228	3,228	1,857	1,874	1,786	1,626	1,700	1,685	1,523
		(3)Coverage rate (1)/(2)	**29%**	**35%**	**56%**	**53%**	**55%**	**58%**	**54%**	**55%**	**45%**
Maritime Schools	Korea Maritime University	(1)Capacity of passengers (No.)	192	400	326	326	326	326	326	326	326
		(2)Students for shipboard training (No.)	400	400	400	400	400	400	400	400	400
		(3)Coverage rate (1)/(2)	48%	100%	82%	82%	82%	82%	82%	82%	82%
	Mokpo Natinal Maritime University (Former Mokpo Merchant Maritime Junior College)	(1)Capacity of passengers (No.)	250	400	400	400	400	400	400	400	400
		(2)Students for shipboard training (No.)	379	379	382	256	342	314	340	331	333
		(3)Coverage rate (1)/(2)	66%	106%	105%	156%	117%	127%	117%	120%	120%
	Total	(1)Capacity of passengers (No.)	442	800	726	726	726	726	726	726	726
		(2)Students for shipboard training (No.)	779	779	782	656	742	714	740	731	733
		(3)Coverage rate (1)/(2)	**57%**	**103%**	**93%**	**111%**	**98%**	**102%**	**98%**	**99%**	**99%**
Grand total of Seven schools		(1)Capacity of passengers (No.)	**1,372**	**1,939**	**1,764**	**1,715**	**1,708**	**1,668**	**1,651**	**1,651**	**1,416**
		(2)Students for shipboard training (No.)	**4,007**	**4,007**	**2,639**	**2,530**	**2,528**	**2,340**	**2,440**	**2,416**	**2,256**
		(3)Coverage rate (1)/(2)	**34%**	**48%**	**67%**	**68%**	**68%**	**71%**	**68%**	**68%**	**63%**

Source: JBIC appraisal report and answers to questionnaire by each school

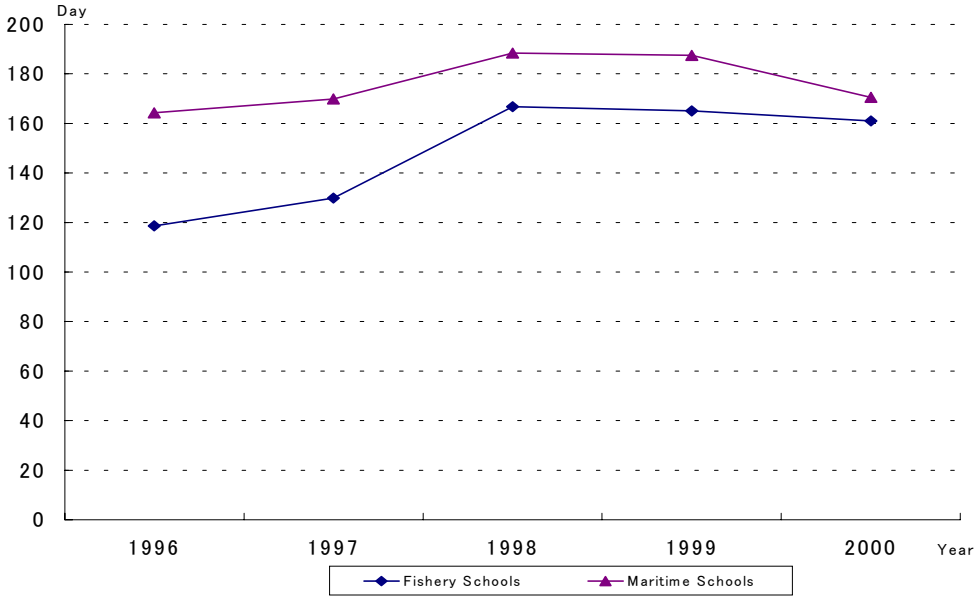
Notes: Shipboard training in training vessels by the Project started around 1993 to 1994 in each school. It started when the main equipment was installed. Since this Project was only equipment supply, the completion year was when the last equipment supply was completed at each school.

③ Implementation of shipboard training (observation of STCW treaty standard)

Concerning the one-year shipboard training per person stipulated in STCW treaty, all schools answered in the questionnaire that they conduct it. However, unlike the other six schools, Pohang fishery high school is of tertiary level of education and conducts only four-months of shipboard training. In fact, many graduates proceed to university, and there they will do further shipboard training. Showing the effectiveness of the Project, this school stated that ocean navigation training had been made possible by the new vessel.

Figure 1 indicates the period of training of each vessel. Although the situation is different depending on each school, all schools conduct a cruise of about two to six months. The remainder of the shipboard training is implemented on an anchored vessel. As for cruise training, the number of days for cruising varies according to annual budget.

Figure: l Average cruise days per training vessel (days per one ship, per one year)



Source: Answer to the questionnaire by target schools of the Project

As a result, although the situation of shipboard training differs for each school, the effectiveness of the Project is visible based on the fact that the coverage rate of students in training vessels increased, and that the Project enabled schools to train their students by ocean navigation. Therefore the Project contributed to meeting the STCW treaty standard.

2.4 Impact

Envisaged impacts of the Project were the "development of the fishery and maritime sector in Korea by nurturing excellent navigation officers", and an "increase in employment and acquisition of foreign currency by boarding for foreign vessels". However, these impacts are easily affected by external factors, and it requires the time for them to become visible. It is therefore difficult to verify the relationship between direct cause and effect. Also, considering the impact on the human resource development of seafarers, it is necessary to recognize the fact that training vessels of four of the schools among seven schools were renewal of obsolete ones, that is, not the introduction of a new additional vessel. Thus, there are some constraints in measuring quantitatively the total impact of the Project. This report, however, attempts to discuss all possible considerations as below.

Increase in employment and acquisition of foreign currency by boarding for foreign vessels

Firstly, to describe the background to this Project, the number of students working in the fishery and maritime industry and the number of graduates with seafarer qualification shows a tendency to decrease, compared with the time of appraisal. In general, the number of navigation officers has also been decreasing in recent years (see Table 2 & 3). Moreover, as compared with the indicator in 1988, the number of navigation officers has decreased by half, and the number of navigation officers in foreign vessels has especially decreased rapidly. This is attributable to change of the external surroundings. By economic development, Korea lost its comparative advantage in personnel expenses over foreign countries, such as countries in Southeast Asia. The impact of an "increase in employment and acquisition of foreign currency by boarding foreign vessels" consequently has diminished in recent years.

Contribution to human resource development in the fishery and the maritime industry

It is considered that there was some impact on the "nurturing of excellent seafarers". While the importance of the fishery and maritime industry is still evident, the Project contributed to the

enhancement of the quality of navigation officers as in the following:

- Given that there are in total seven universities related to fishery or maritime in Korea, the Project extended support to almost all the universities , since the project target was six universities and one high school.
- Concerning the number of graduates who obtained qualifications as seafarers, although there is almost no change in the percentage of qualified graduates to total graduates, the number of graduates and those who obtained qualifications remains at certain level. For example, in 2000, there was a total of 860 graduates with the qualification of navigation officer in a total of seven schools, and this occupies 4% of total number of navigation officers in Korea in the same year.
- Some schools in the Project, three schools out of the total seven, newly developed or revised the curriculum in order to further improve the education after introducing new vessels through the project.
- In answer to the questionnaire by each school, many schools replied that although there are no remarkable changes quantitatively, the Project contributed to an improvement in the quality of education for nurturing excellent personnel.

Taking into consideration these points and the fact that the schools were able to train more students onboard ship through the new equipment and training vessels, the Project's main contribution was to the enhancement of the quality of education for nurturing excellent personnel in the fishery and maritime industry.

Table 2: Number of fishery and maritime schools

At the time of evaluation（2001）			
Division	University	Specialized College	High School
No. of Schools	7	1	11
No. of Departments	18	2	27
No. of Students	4,856	162	3,207
At the time of appraisal（1990）			
Division	University	Specialized College	High School
No. of Schools	4	4	13
No. of Departments	35	21	—
No. of Students	7,699	5,079	10,170

Source: JBIC Appraisal report and document of Ministry of Maritime Affairs and Fisheries

Table 3: Employment of Navigation officers

Item		1988	1998	1999	2000
Vessels of Korean Nationality	Navigation officers	17,783	17,624	18,560	17,223
	Sailors	49,876	30,687	33,071	28,574
	Sub-total	67,659	48,311	51,631	45,797
Foreign Vessels	Navigation officers	14,449	4,825	4,714	4,381
	Sailors	26,187	2,866	2,473	1,994
	Sub-total	40,636	7,691	7,187	6,375
Total		108,295	56,002	58,818	52,172

Source: JBIC Appraisal report and document of Ministry of Maritime Affairs and Fisheries

2.5 Sustainability

Each school reported that vessels and equipment are maintained by qualified personnel such as navigation officers, navigation engineers, and communication officers, etc. and there is no problem with

the number of staff or with technical matters. The budget for the operation and maintenance of vessels is allocated by the central government or local government. Some schools reported that this budget has decreased recently and therefore the number of cruising days for training has decreased; however, in general, they answered that no critical problem is seen in terms of the budget for operation and maintenance. Reviewing the most recent three years' governmental budget, the total budget of the Ministry of Education and Human Resources Development has shared 13% to 16% of the total budget of the Korean government; and seven schools in the Project received annually 2 % of the total budget of the Ministry.

Table 4: The trend of governmental budget

Unit: 100 million Won

Item	1998	1999	2000
①Total governmental budget	746,412	842,806	887,736
②Budget for Ministry of Education and Human-resources Development (②/① %)	120,564 (16.2%)	110,361 (13.1%)	126,513 (14.3%)
③Budget for seven schools in the Project (③/② %)	2,795 (2.3%)	2,800 (2.5%)	3,039 (2.4%)

Source: Ministry of Education and Educational facilities division

Each school has an obligation to evaluate internally the quality of education. Also, the Ministry of Maritime Affairs & Fisheries[2] conducts external evaluations on each school in accordance with the regulations of the STCW treaty (revised in 1995). It is agreed that each school has made efforts to keep the quality of education at a certain level[3].

With this evidence, it can be said that the sustainability of the Project can be assured in the future.

[2] Translation in Japanese uses the Chinese characters "Kaiyou Sui Sanbu", however, the English title is "Ministry of Maritime Affairs & Fisheries". Therefore the administrative organization is the "Ministry" whose work contains Fishery Agency and Japan Coast Guard etc. in Japan.

[3] Evaluation is presented by the points in each evaluation item. For example, of a total 500 points, Pukyong National University obtained 464.8 points (93% of total), Korea Maritime University has 457.8 points (91.6%), and both figures are higher than 90%.

Comparison of Original Plan and Actual

Item	Plan	Actual
1. Project Scope	Necessary equipment is supplied for seven training vessels procured under the loan financed by ADB for seven fishery and maritime schools.	Same as plan
2. Implementation Schedule	May, 1990～February, 1992	May, 1990～January, 1996
3. Project Cost		
Foreign currency	2,160 Million Yen	2,159 Million Yen
Local currency	432 Million Yen （2,016 Won）	404 Million Yen (2,607 Won)
Total	2,592 Million Yen	2,563 Million Yen
Out of which, ODA Loan Portion	2,160 Million Yen	2,159 Million Yen
Exchange Rate	1Won＝0.214 Yen (As of 1990)	1Won＝0.155 Yen （Weighted average rate of 1992－95）