

**Environmental Regulatory Reform for Japanese Fishing
Port Development: Adopting U.S. Regulatory
Framework to the Japanese System**

by

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Submitted to the Department of Urban Studies and Planning
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Abstract

Environmental evaluation for fishing port developments is a strategy to environmentally assess the projects of fishing port developments so as to minimize or remove the adverse impact of the development of fishing ports on the environment of coastal seas. The National Environmental Policy Act and the Massachusetts Environmental Policy Act, which are core regulations for environmental evaluation in Massachusetts, have refined the qualities of developments through environmental evaluation, although the framework to enforce those regulations should be improved. Their principles are to objectively evaluate developments under the monitoring and cooperation of all government agencies and citizens. The adoption of those regulations for Japan contributes to formulating a successful environmental evaluation framework for fishing port developments. The principles of those regulations enhance the shortcomings of Japan's current environmental evaluation, which has allowed developers' voluntary self-evaluation that hinders the objective evaluation of developments. This reform of environmental evaluation could contribute to proposing a plan that people will recognize as the best way to minimize the adverse impact by using mitigation methods and maximizing the effects of the project. In addition, government agencies and citizens could direct their attentions to environmental preservation.

Thesis Supervisor: J T Kildow

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List of Abbreviation

Army Corps	The United States Army Corps of Engineers
BEL	The Basic Environmental Law
CEQ	The Council of Environmental Quality
CWA	The Clean Water Act
DEIS	Draft Environmental Impact Statement
DEIR	Draft Environmental Impact Report
DEM	The Massachusetts Department of Environmental Management
DEP	The Massachusetts Department of Environmental Protection
DPA	Designated Port Area
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ENF	Environmental Notification Form
EOEA	The Executive Office of Environmental Affairs
EPA	The Environmental Preservation Agency
FEIR	Final Environmental Impact Report
FEIS	Final Environmental Impact Statement
FONSI	Finding of No Significant Impact
FPC	The Fishing Port Council
FPDP	National Long Term Fishing Port Development Plan
FPL	The Fishing Port Law
FWS	The United States Fish and Wildlife Service
JCEQ	The Japan Committee of Environmental Quality
JEPA	The National Environmental Policy Act of Japan
JICA	Japan International Cooperation Agency
MAFF	The Ministry of Agriculture, Forestry, and Fisheries
MCZM	The Massachusetts Coastal Zone Management Regulations
MEPA	The Massachusetts Environmental Policy Act
MHWMA	The Massachusetts Hazardous Waste Management Act

MPRSA	The Marine Protection, Research, and Sanctuaries Act
MSWMA	The Massachusetts Solid Waste Management Act
NEPA	The National Environmental Policy Act
NGO	Nongovernmental Organization
NMFS	The National marine Fishery Service

1. Introduction

Environmental evaluation for fishing port developments (environmental evaluation) is a strategy to environmentally assess the projects of fishing port developments so as to minimize or remove the adverse impacts of the development of fishing ports on the environment of coastal seas.

Fishing port developments are required to enhance coastal and aquaculture fisheries. However, fishing port developments, at the same time, cause the destruction of fishing grounds surrounding fishing ports. Hence successful environmental evaluation to minimize the impacts and maximize the effects of the projects is required. However, there exists no successful environmental evaluation framework at a central government level in Japan. As a result, environmental evaluation of projects has been trusted to developers. This current inefficient regulatory system has led to a failure of sustainable development.

Massachusetts, on the other hand, has already introduced an environmental evaluation framework, based on the National Environmental Policy Act (NEPA) at the federal level and the Massachusetts Environmental Policy Act (MEPA) at the state level, which requires Federal and state agencies responsible for development activities to implement environmental assessments.

It is important to analyze the merits and the issues of NEPA/MEPA because NEPA/MEPA, which strictly requires developments to have an objective environmental evaluation, could solve the shortcomings of Japan's current environmental evaluation framework.

The goal of this research is to identify the adaptability of the environmental evaluation framework

based on MEPA/NEPA to the Japanese environmental evaluation framework to create a successful framework for Japanese fishing port developments.

1.1. Background

The goal of environmental evaluation is to harmonize the developments of fishing ports with environmental preservation at their sites and in their surrounding areas in order to achieve sustainable development. A successful environmental evaluation framework consists of a regulatory framework to create an effective process to estimate the impact of developments and to propose mitigation methods; and an institutional framework to objectively and comprehensively assess projects. Furthermore, it contributes to enhancing a citizen's understanding about the necessity of environmental conservation and encourages developers and government agencies to be more attentive to environmental considerations.

Successful environmental evaluation is required, especially in Japan, to achieve sustainable fisheries, because Japan's fishing ports are typically surrounded by grounds for coastal fisheries and farms for aquaculture fisheries. Furthermore, these fisheries are becoming important because they are required to compensate for the decline in distant water fisheries that are being increasingly restricted because of the strengthening of international fishing regulations. The dilemma lies in the fact that although the development of fishing ports is necessary for the stable supply of fish products, these kinds of activities cause environmental destruction in surrounding sea areas. In addition, the higher the technologies for monitoring environmental impact that have been invented, the more citizens have detected the impact. Under these conditions, an effective environmental evaluation framework is required to achieve sustainable fishery activities. Japan has developed an

effective fishing port development framework to economically construct facilities to maximize the effects of developments. Furthermore, central agencies have invented advanced technologies to construct the facilities, to mitigate the impact of development, and to artificially preserve marine resources. However, there exist no regulations for an environmental evaluation framework at the central government level, and few prefectures have environmental evaluation ordinances. In fact, fishing port developments, except for specific developments such as large scale landfills of 50 hectares (approximately 125 acres) and landfills within National Parks, are not required to have environmental assessment due to a lack of regulations. Hence, the environmental evaluation of projects is trusted to the developers. This current inefficient regulatory system has led to a failure to sustain living resources

The U.S., on the other hand, has already introduced an environmental evaluation framework based on the National Environmental Policy Act (NEPA), which requires federal agencies responsible for development activities to implement environmental assessments. Furthermore, some states have copied NEPA in order to create effective environmental evaluation frameworks at the state level (Pendall). For instance, Massachusetts, which is one of the states with strong environmental regulations, has a statute called the Massachusetts Environmental Policy Act (MEPA), which is comparable to the NEPA. In Massachusetts, NEPA/MEPA have taken up important roles to environmentally evaluate projects in the coastal areas, because the development of all fishing port facilities requires the permission of state and federal agencies as well as local municipalities.

The Basic Environmental Law (BEL), which states the environmental policy of Japan, and some parts of which are comparable to the NEPA in the U.S., was finally enacted in 1993. This law does not include a concrete environmental control regime that requires developers and government

to consider environmental impact. Hence, although the enactment of a new act or amendment of the BEL is required, regulations to achieve a successful environmental evaluation have not been set up. Hence, Japan's current environmental evaluation framework does not objectively estimate the impact, does not consider the mitigation methods, and does not propose the best project to achieve sustainable development.

The central government is preparing for the enactment of the Environmental Impact Assessment Law (a tentative name) in two years. Furthermore, related regulations to enforce this statute will be authorized to achieve successful environmental evaluation by interested agencies. This is because the Japanese central government needs to establish successful environmental control for developments, including fishing port developments. Although the culture and the fundamental political system in the U.S. are different from those in Japan, it is important to analyze the merits and the issues of NEPA/MEPA. NEPA/MEPA, which strictly requires developments to have objective environmental evaluation, could solve the shortcomings of Japan's current environmental evaluation framework.

1.2. Purpose of the Research

The purpose of this research is to demonstrate the necessary elements for a successful environmental evaluation framework for fishing port developments in order to achieve sustainable development.

For this purpose, the goal of this research is to identify the adoptability of NEPA/MEPA to Japan's environmental evaluation framework to create a successful framework for fishing port

developments in Japan.

In order to achieve this goal, this paper focuses on the regulatory issues and effects in the NEPA/MEPA process. This paper: 1) clarifies the necessity for a successful environmental evaluation for fishing port developments in Japan, 2) identifies issues and effects in the current Japanese environmental evaluation framework, 3) identifies effects and issues in the environmental evaluation framework in Massachusetts, and 4) identifies the adoptability of NEPA/MEPA to the Japanese environmental evaluation framework.

1.3. Areas of the site to be Studied

Although environmental control frameworks for fishing port developments are different among states in the U.S., this research focuses on the environmental evaluation framework in Massachusetts. It is because 1) this state is one of the states that have strong environmental evaluation regulations such as MEPA, and 2) fisheries have been promoted in the state, and 3) there exist some fishery-oriented communities, and these communities have political power in the state and federal governments.

1.4. Areas of Environmental Controls to be Studied

This research focuses on the environmental evaluation framework of fishing port developments. Furthermore, environmental evaluation frameworks consist of two frameworks: a regulatory framework to regulate the evaluation process, and an organizational framework under these regulations.

1) Regulatory framework that regulates the evaluation process for fishing port development

Regulations to control fishing port developments include statutes and regulations enforced by the federal government, the state government and municipalities. In the U.S., the state government has independent regulations from the federal government. Furthermore, public financial support has an important role in promoting the environmental control regime. It is because these provide an impetus for interested parties to consider environmental preservation or to develop environmental strategies. This financial support is divided into two types according to the goals of: a) intergovernmental financial support to provide impetus for state and municipal agencies to install environmental control regimes or to develop environmental control regimes, and b) public financial support for developers to encourage their consideration of environmental preservation in developments.

2) Organizational framework that enforces regulations and affects projects

The fishing port developments involve many kinds of organizations and parties. Involved organizations and parties are mainly a) developers (the proponent of projects), b) Federal government, state agencies, and local governments (responsible agencies) that review the projects, get comments from involved persons, and issue the permission for the projects, c) Federal and state agencies and local governments (cooperating agencies) that environmentally review the projects and give comments to responsible agencies, and d) related citizens (stake holders), experts and parties (cooperating parties) that review the projects and give comments to responsible agencies. Cooperating agencies and cooperating parties also have the role of monitoring the activities of responsible agencies. This role encourages responsible agencies' to objectively evaluate project, and contributing to refining the proposal of the projects in order to maximize the

effects of the project and to minimize the negative impact on the environmental condition.

1.5. Areas in Fishing Port Developments to be Studied

The most important goal of environmental evaluation is to minimize or remove the environmental impact of the developments on the surrounding sea areas. The most serious impact that fishing port developments have on these areas is the destruction of fishing grounds and fish nurseries in adjacent areas. This destruction is caused by 1) the construction of aquaculture facilities on the coastal sea, 2) the construction of breakwaters, 3) the dredging for basins or sea lanes, and 4) reclamation for land creation. Hence, this paper focuses on these five kinds of fishing port developments. Hereafter, they are referred to as fishing port developments in this paper.

1.6. Methodology

In order to achieve the purpose of this research, the methodology for the research includes five stages in the following order. Figure 1-1 shows the process of this research.

Stage 1: The Clarification of the Necessity for Successful Environmental Control in Japan

The identification of the relationship between the necessity for fishing port developments and the resultant environmental problems caused by the developments is useful in clarifying the necessity for successful environmental control. In this stage, the roles of Japan's fishing ports are identified to clarify the necessity for fishing ports developments in Japan. Furthermore, the environmental problems caused by the developments are identified. Finally, the necessity for a successful evaluation method of fishing port developments is shown.

Stage 2: An Evaluation of the Current Japanese Environmental Evaluation Framework

The goal of this stage is to clarify the shortcomings of the Japanese environmental evaluation framework. This clarification contributes to the identification of the necessity for a NEPA/MEPA-like regulation in Japan's framework, and the issues concerning the adoption, which are analyzed in Stage 5. In order to achieve this goal, the regulations that affect fishing port developments, and agencies enforcing these regulations, are identified. The regulations and agencies enforcing them can be at two levels: national and local. Furthermore, the current process of environmental evaluation is identified. Finally, the effects of, and the issues caused by, this framework are identified.

Stage 3: The Identification of the Environmental Evaluation Framework in Massachusetts

The regulations that affect fishing port developments in Massachusetts are identified, as are the goals and jurisdictions of each regulation. In addition, the processes for fishing port developments and the environmental evaluations of NEPA/MEPA are identified. The regulations can be at three levels: federal, state, and local. Furthermore, relevant persons and organizations concerned with the enforcement of the regulations are identified. In addition, organizations, such as nongovernmental organizations (NGOs) and fishery cooperatives, that potentially affect developments, are identified.

Stage 4: The Identification of Effects and Issues in the Environmental Evaluation Framework in Massachusetts

Some case studies are reviewed to clarify the actual power of NEPA/MEPA. Especially,

NEPA/MEPA (40 CFR 1500-1508, 301 CMR 11.00) requires 1) agency cooperation, 2) information disclosure, 3) citizen participation, 4) an evaluation process built in to a planning process, 5) monitoring after the agencies' decisions, 6) a wide scope impact estimation, 7) an effective exemption from environmental impact assessment for projects with no-significant impact, and 8) a reduction of duplicated evaluations; hence this stage identifies how and how much these eight goals are achieved. As case studies, two cases in Gloucester Harbor, a large one and a small one, are analyzed because this fishing port has been improved, and some environmental problems have occurred. In these case studies, the main focuses are on how the development plan was environmentally reviewed, who intervened in this process, which problems and conflicts occurred in the process, and how these problems were solved. In this stage, the local characteristics that affect the environmental control regime are also discussed. Finally, the effects and issues of NEPA/MEPA and the solutions of the issues are identified.

Stage 5: The Identification of the Adoptability of NEPA/MEPA to Japan

The goal of this stage is to identify the adoptability of a NEPA/MEPA-like regulation to Japan's environmental framework. In order to achieve this goal, this stage 1) clarifies the necessity for NEPA/MEPA in order to achieve a successful Japanese evaluation framework, 2) identifies the adoptability of NEPA/MEPA to Japan's framework, and 3) proposes how to adopt the NEPA/MEPA process into Japan's environmental framework.

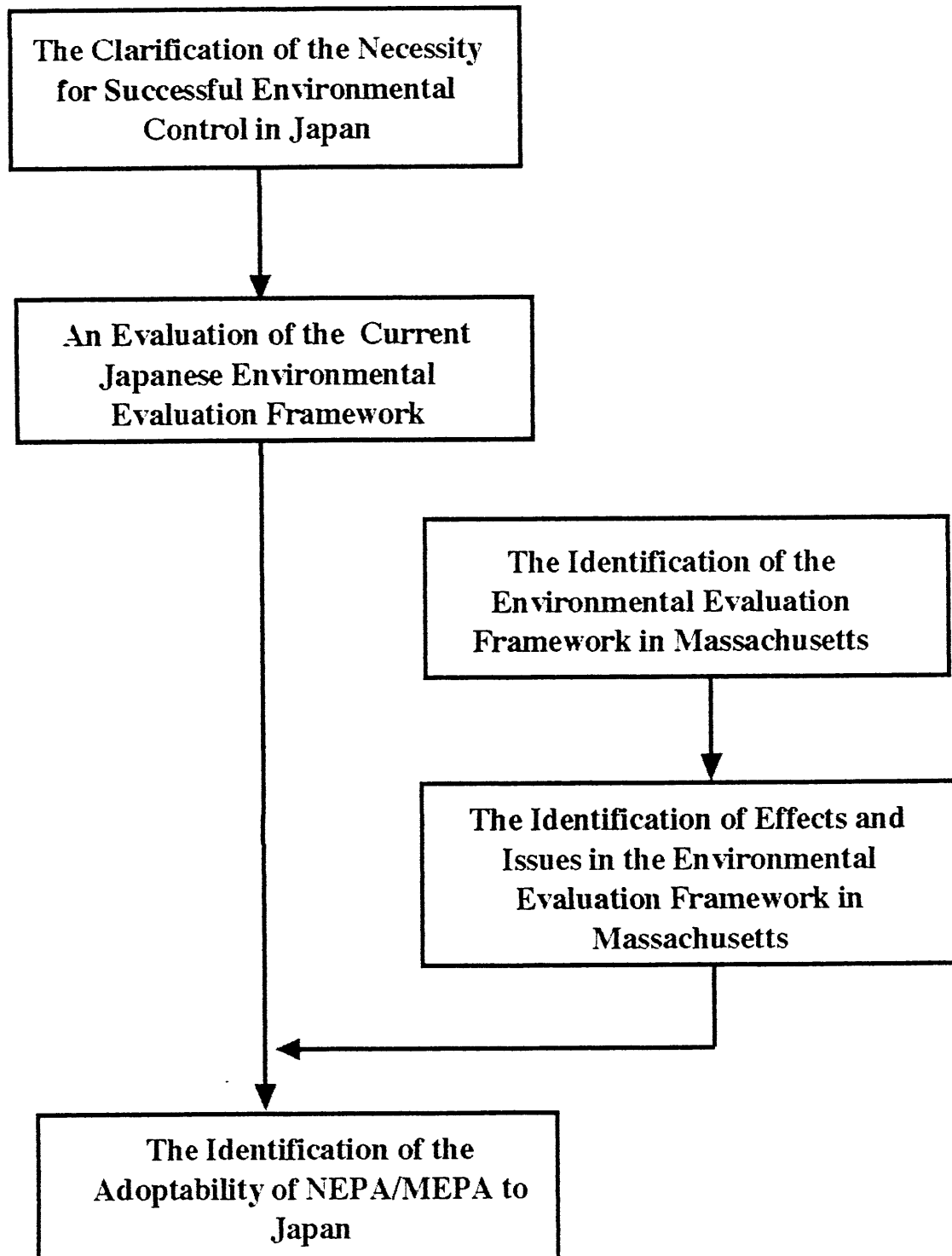


Figure 1-1. Process of the Research

2. The Clarification of the Necessity for Successful Environmental Control in Japan

The goal of this chapter is to identify the relationship between the necessity for fishing port developments and the resultant environmental problems caused by the developments. It clarifies the basis for the necessity for successful environmental control.

2.1. Statistics for Fishing Ports in Japan

Fishing ports are designated by the minister of Ministry of Agriculture, Forestry, and Fisheries (MAFF), pursuant to the Fishing Port Law (FPL). According to the Statistics of Fishing Ports in Japan (Japan, Fisheries Agencies), there are approximately 3,000 fishing ports in Japan, and they regularly provide many kinds of fresh fish products to people. To make fishing activities convenient, the fishing ports are constructed on coasts where natural resources are preserved near the rich fishing grounds. These ports are more than bases for fishing vessels.

2.2. Roles of Fishing Ports in Japan

According to the Fishing Port Guide Book (Japan, Department of Fishing Port), the roles of fishing ports are mainly four:

- 1) Fishing ports regularly produce and distribute many kinds of fresh fish that are important resources of protein for the Japanese. Large- and middle-sized fishing ports are, typically, complex areas made up of many industries and structures related to fisheries. There are processing plants, ice-making plants, selling plants, landing quays, a mooring basin to protect fishing vessels from waves, fish handling sheds, oil supply facilities, live fish stock farms, etc.

Most small-scale fishing ports also have most of these facilities to achieve effective productivity.

- 2) Fishing ports are also typically recreation areas. Fishing ports are usually surrounded by underdeveloped lands. In fishing ports and these adjacent areas, tourism has been promoted so much that many people come to these sightseeing points to enjoy the view and the sea food. Fishing ports are also utilized as a base for pleasure fishing and pleasure boating.
- 3) Fishing ports typically have spaces for public facilities and other infrastructures. Since the flat area of land between the sea and surrounding mountains is often insufficient to meet these demands, the space in fishing ports is created by landfill, which often harms the ecosystem and marine resources.
- 4) Large-scale fishing ports are also utilized as bases for research plants and seeding production plants for these kinds of fisheries. These days, coastal fisheries and aquaculture fisheries have been promoted and tend to occupy important roles in supplying fish products because of the decline in off-shore and distant water fisheries. These fisheries require our biotechnology and other high-technology, and highly sophisticated management.

2.3. The Necessity for Fishing Port Developments in Japan

Although fishing ports in Japan have important roles for regional communities as well as fisheries, most fishing ports do not have adequate facilities to fulfill their roles. For instance, improved quays were approximately 50 % of the necessary quays in 1995 (Japan, Department of Fishing Port). These days, the demand for live fish is increasing drastically, so fishing ports are required to

have live fish storage facilities. In addition, although 26% of the total amount of marine fish products was produced by off-shore fisheries and distant water fisheries in 1985, this percentage increased to 35% in 1992 (Japan, Ministry of Agriculture, Forestry, and Fisheries). Hence, although fishing ports have been improved as bases for off-shore fisheries and distant water fisheries, these fishing ports need to be reconstructed as bases for aquaculture and coastal fisheries to substitute for the declining off-shore and distant water fisheries. The facilities required in the fishing ports for distant water fisheries are different from those for aquaculture fisheries or coastal fisheries. Besides fishing port facilities necessary for off-shore and distant-water fisheries, coastal fisheries and aquaculture fisheries require research plants, seeding production plants, live fish products stock farms, and aquaculture facilities.

Furthermore, pleasure boats using fishing ports increased from 14,896 in 1987 to 23,537 vessels in 1992 (Japan, Department of Fishing Port). However, most fishing ports do not have facilities for pleasure boats, although the development of facilities for pleasure boats was improved in 24 fishing ports by 1992 (Japan, Division of Planning). In addition, houses with a public sewage system in fishery communities were only 5.4 % of the total houses in fishery communities in 1988 (Japan, Department of Fishing Port).

2.4. Environmental Problems Caused by Fishing Port Developments

It is necessary to improve fishing port facilities to raise productivity, guarantee safety, and maintain a regular supply of fish products; however, port developments can cause serious environmental destruction that affects near-shore marine resources as well as aquaculture fisheries. Aquaculture fisheries themselves damage the coastal environment. The most serious activities affecting the

coastal environment are the construction of aquaculture facilities and breakwaters, the dredging for basins and sea lanes, reclamations for land creation, and aquaculture.

1) The construction of fishing ports, including reclamation, the dredging for basins and sea lanes, and the construction of breakwaters, destroys fish grounds and fish nurseries in adjacent areas. These actions trigger a stirring-up of sediments on the sea bed, a decline in tide circulation, and the destruction of the natural sea bed. According to the investigation by Japan's Environmental Protection Agency, the natural coastal tideland decreased by 41.4% between 1945 and 1978 (Japan, Environmental Protection Agency).

2) In addition to the development of fishing ports, increasing the influx of waste water from populated areas to the sea area worsens the quality of sea water. The influx of waste water to mooring basins in fishing ports also worsens the quality of sea water in these areas. Furthermore, it affects living marine resources along coasts and live fish products kept in mooring basins. The muddy soil accumulates on the sea beds of the water area in the fishing ports and adjacent areas. This accumulated muddy soil contributes to the worsening of the quality of sea water as well as destroys the natural sea beds, which are important nursery grounds for seaweed and fish. Water pollution accidents, such as red tide, on average, caused approximately ninety-nine accidents to fishery resources each year between 1990 and 1994 (Japan, Ministry of Agriculture, Forestry, and Fisheries). Furthermore, the increase in the pleasure boats that use fishing ports as their bases has caused an increase in water pollution and illegal fish catching (Japan, Ministry of Agriculture, Forestry and Fisheries).

3) Furthermore, aquaculture activities themselves cause a sedimentation from fish feces, a

sedimentation of leftover feeds, and creation of oxygen deficiency in the fish farms. They influence the environment of the surrounding sea areas.

Although this impact may finally cause the destruction of fishery resources, the current technologies can not eliminate them completely. Furthermore, the more high technologies for monitoring environmental conditions there are, the more the impact is recognized by the people. In addition, the increase of educated people, who tend to pay attention to environmental preservation, has estimated this impact to be more serious.

2.5. The Necessity for the Sustainable Development of Fishing Ports

The most important issue to be solved in fishing port developments is that they be sustainable, because fishing ports must be developed under conditions that minimize the adverse impact of the developments and maximize their effects. Although the best way would be to improve the fishing port facilities without causing any impact on the coastal marine environment, this cannot be achieved with the current technology. Hence, the best way to achieve sustainable development, under current conditions, is to improve fishing port facilities while minimizing any possible impact on the coastal marine environment.

The marine resources that are seriously damaged by fishing port developments are renewable resources such as seaweed and fish. With sustainable development, the damage is minimized, and what little damage is caused can be negated by the artificial enhancement of living marine resource populations and living conditions so that the current environmental level, including both on-site and off, can be restored. In the case of non-renewable resources, such as natural wetlands, this

damage is also minimized, even if they are destroyed by development. Furthermore, the remaining damage is mitigated in order not to affect the ecosystem as a whole, both on-site and off-site.

2.6. The Necessity for Successful Environmental Evaluation

Sustainable development requires a harmonious relationship between necessary development and environmental preservation. Unfortunately, it is impossible to produce a consistent and concrete definition of such a harmony between development and environmental preservation with extremely minimized environmental damage. This is because the definitions change little by little as social conditions change and technologies are improved.

Under these current conditions, the best and only environmental evolution that will achieve sustainable development is, with the participation of as many citizens and government agencies as possible, 1) to evaluate objectively the appropriateness of the projects, 2) to anticipate the damage caused by the project, and 3) to propose a project that the involved parties recognize to be the best way to minimize the adverse impact, with the mitigation method, and the best way to maximize the effects of the project. Furthermore, the evaluation of projects by involved people can lead to an understanding by humankind of the best means to harmonize development with environmental preservation, even though the damage can not be eliminated completely. As a result of this new understanding, the proponent of projects will be able to accept the rejection of one or another of his proposals. In addition, the attention of the citizens, and their cooperation with the environmental protection and successful development, are encouraged. Finally, this effect will raise the quality of the environmental evaluation itself. This strategy is a successful environmental evaluation that achieves sustainable developments.

However, Japan has not formulated a successful environmental evaluation; regulations to assess the impact of developments have never been authorized. Figure 2-1 shows a vicious cycle caused by the lack of successful environmental evaluation.

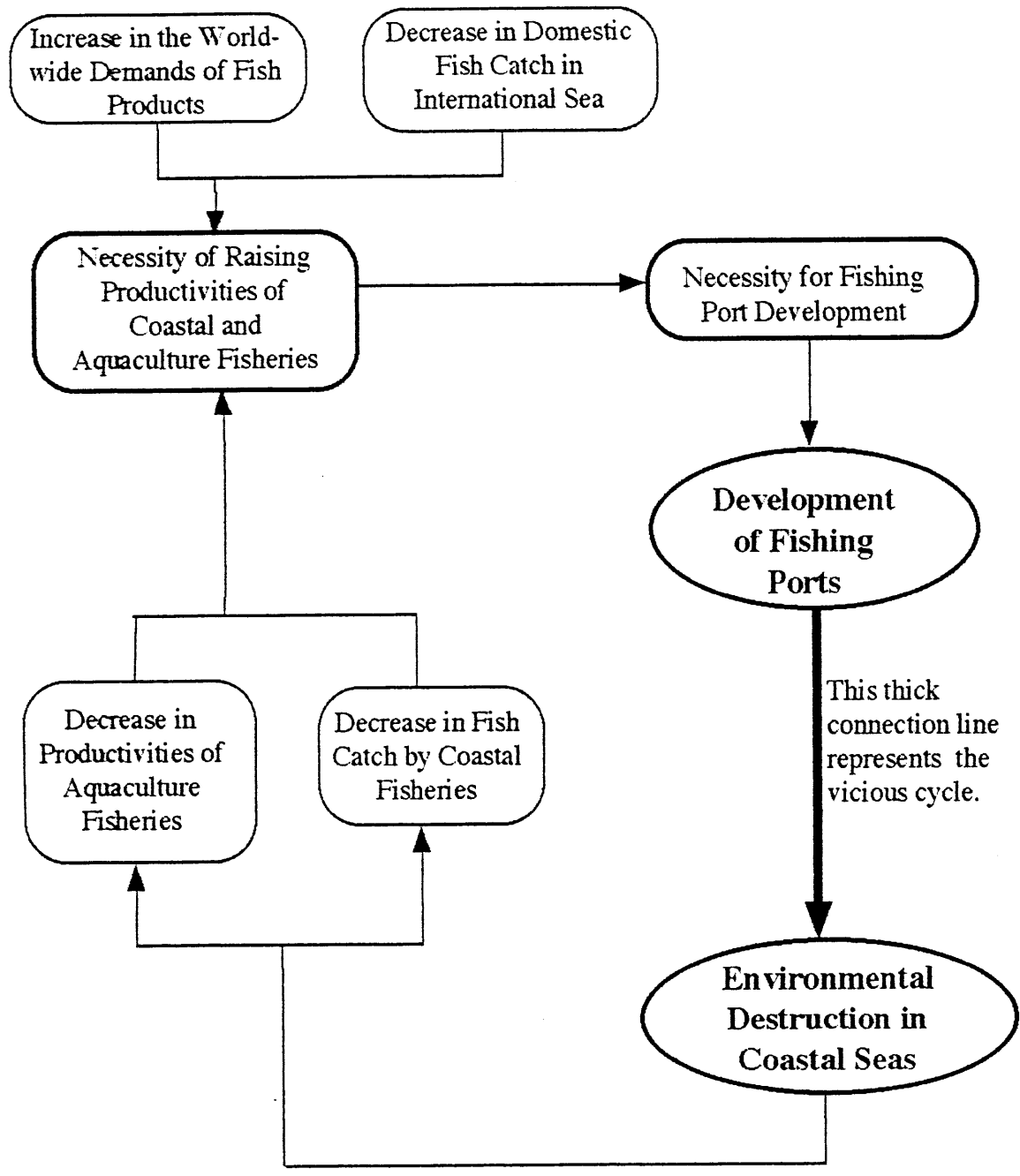


Figure 2-1. Vicious Cycle of Fishing Port Developments without Successful Environmental Evaluation

3. An Evaluation of the Current Japanese Environmental Evaluation Framework

Japanese fishing ports have been strictly administrated by vertical relationships between fishing port administrators, which are prefectural agencies, and the Ministry of Agriculture, Forestry, and Fisheries (MAFF), pursuant to the Fishing Port Law. According to the JICA (JICA), in this framework, the developers, which are also public agencies at the prefectural level, have been requested to minimize the environmental impact by MAFF and fishing port administrators, although no regulation for environmental evaluation has existed. Furthermore, all environmental evaluation of the projects has been entrusted to developers, under the supervision of MAFF and fishing port administrators. In addition, it has become more important for coastal and aquaculture fisheries to preserve fishing grounds and nursery grounds on the coasts. Citizens, who have been excluded from coastal developments and information about them, have an accumulating frustration about environmental destruction of the coastal areas. On the other hand, MAFF, fishing port administrators, and developers are also starting to recognize that, although the current environmental framework costs much to operate, it can not explain the situation to people's satisfaction, can not minimize the detected impact, and can not maximize the effects of the projects.

This stage clarifies the issues and the effects of the Japanese environmental evaluation framework. This will contribute to the clarification of the necessity for adoption of a NEPA/MEPA-like regulation to formulate a successful environmental evaluation framework.

3.1. The Administration of Fishing Ports in Japan

In Japan, except for special areas, developers are usually local governments, which are usually the

administrators of the fishing port. The private sector is excluded from the development of fishing ports, although they can be contracted to construct the facilities, and they can own their facilities in some areas of the fishing ports, in compliance with the Fishing Port Law (FPL). It is because a fishing port is recognized as an important infrastructure to regularly provide sea food; hence, it is required to keep fishing ports public and to protect them from capricious private developments. FPL controls all fishing port developments. FPL 1) establishes a fishing port, 2) designates the boundary of a fishing port, 3) establishes the Fishing Port Council (FPC), 4) authorizes the National Long Term Fishing Port Development Plan (FPDP), 5) authorizes an administrator for each port, 6) approves individual development plans proposed by the municipality based on the FPDP, 7) approves the individual development plans proposed by municipalities, 8) approves the use of fishing ports, 9) authorizes port management codes submitted by the administrator of each fishing port, and 10) distributes the budget for each year. The administrators of fishing ports are typically local governments such as prefectures, cities, or towns, although, in a few cases, fishing ports are administrated by fishery cooperatives.

A FPDP is a six-year master plan affecting all fishing port developments. This plan refers to the forecasting of the demand for fishing ports, the fundamental strategy of fishing port developments, a total budget needed for six years, and the designation of fishing ports undertaking large- or middle-scale developments.

The Fishing Port Council consists of outside members who are authorized by the Prime Minister, supervising the activities of MAFF. The Council has the responsibility of reviewing the designation of fishing ports, the draft of the FPDP and the total budget, and also the conditions of fishing ports. Hence, the Minister of MAFF is required to obtain a comment from the Council before he

submits the draft for a budget or for statutory amendments to the Cabinet and the Diet to get their approvals.

Under these conditions, all fishing ports are strictly controlled by the port administrators in compliance with FPL under the supervision of the Minister of MAFF. In fishing ports, any activities of the public sector and the private sector require the permission of MAFF. Furthermore, all facilities are effectively arranged based on an authorized individual development plan supported and supervised by MAFF. In addition, most facilities are improved by the local governments with a large investment granted by MAFF, in order to achieve a high quality of facilities.

3.2. Regulations Affecting Fishing Port Developments

The main regulations affecting fishing port developments are 1) the Basic Environmental Law, which requires developers planning landfills of over 50 hectares (approximately 125 acres) to implement an environmental impact assessment, 2) F P L, in which MAFF has responsibility for the environmental maintenance of fishing ports, 3) Landfill Law, which regulates landfills in territorial waters, requires developers to consider the environmental impact of landfills, and authorizes the governors of prefectures to issue permission for landfills, 4) the Natural Park Law, which regulates environmental preservation in areas designated as Natural Parks, 5) local environmental ordinances authorized by central government agencies, including MAFF, which regulate environmental impact assessments. On the other hand, most fishing port developments are under 50 hectares and are located outside Natural Parks. Furthermore, even if the project has an area of over 50 hectares, an environmental impact assessment is entrusted to the developer; hence, key regulations are FPL, the Landfill Law, and local environmental ordinances authorized by the

Minister of MAFF in accordance with FPL. In addition, governors are required, under the Landfill Law, to get the agreement of the Minister of MAFF in order to issue the permission for landfills within fishing ports. Under this condition, although no regulations exist that authorize the environmental evaluation of fishing port developments, FPL enforced by MAFF, and the Landfill Law enforced by the governors of prefectures, have the potential responsibility for the environmental evaluation of a project. Actually, the Minister of MAFF and the governors of prefectures have often requested an environmental evaluation of developments from developers, if necessary, in order not to worsen the environment of fishing ports.

3.3. The Process for Fishing Port Developments in Japan

A fishing port is developed when the local government, the administrator, or MAFF recognizes the necessity for development, or when the fishermen or fishery cooperatives make a request to fishing port administrators. In the case of small-scale developments, a developer is required to formulate the comprehensive development plan of the port. Furthermore, this development plan requires the permission of the fishing port administrator. In addition, the administrator needs to get approval from the Minister of MAFF before the development is permitted. The developer is also required to get permission from the fishing port administrator to construct facilities in compliance with the authorized individual plan. For this, too, the administrator needs to get approval from the minister of MAFF before its permission. In the case of a middle- or large-scale development, furthermore, the individual development plan is required to be listed in the FPDP.

Here is the process of environmental evaluation: 1) after planning the project, the impact is forecasted by the developer; 2) if a serious impact is forecasted by the developer, the Minister of

MAFF or the port administrator implements an environmental impact assessment; 3) serious impact on fishery resources and the citizen is estimated; 4) the impact is mitigated with advanced technologies; 5) damaged people are compensated for loss; and 7) the outcome of the environmental impact assessment is reported to MAFF and the fishing port administrator. In the process of environmental evaluation, less than 50 % of the necessary cost is granted by MAFF. Furthermore, only a few cities and prefectures have local environmental ordinances authorized by the Minister of MAFF. A developer that is planning to develop within these boundaries is also required to implement an environmental evaluation of the project based on this ordinance (JICA).

3.4. The Effects and Issues of Japan's Environmental Evaluation

Generally, environmental control in Japan has been developed to prevent the direct damage to human living conditions in fishing port developments and to calculate compensation money for damaged people. Japan's current environmental evaluation for fishing port developments has considered mostly the impact on the fishery resources under the supervision of MAFF. However, there exist shortcomings that caused sustainable developments to fail.

Japan's environmental control of fishing port developments has eight characteristics:

- 1) Although no regulations exist that require the environmental evaluation of fishing port developments, MAFF and fishing port administrators, which have responsibility for the environmental maintenance of fishing ports, monitor the environmental impact of projects.
- 2) The implementation of environmental impact assessments are entrusted to developers,

administrators of the port, and MAFF.

- 3) Environmental impact assessments are implemented by developers and are monitored by fishing port administrators and MAFF.
- 4) In the process of environmental impact assessment, environmental experts and citizens, who are selected by developers, are involved in the environmental impact assessment.
- 5) Environmental impact assessment is usually implemented in the final stage of planning when the impact can be clearly calculated. Based on the review of the impact, mitigation of the impact is considered. Furthermore, compensation money for the remaining damage is calculated for the citizens.
- 6) The environmental conditions of all fishing port are being monitored totally by MAFF.
- 7) Environmental technologies that prevent the impact of fishing port developments are researched at a government research firm; hence, developers can apply these technologies at a reasonable cost.
- 8) The cost for environmental evaluation implemented by developers is paid for by MAFF.

3.4.1. The Effects of the Japanese Environmental Evaluation

The effects of current Japanese environmental evaluation are as follows:

1) Comprehensive planning by the public sector

Even small developments of a fishing port are required to be listed in the six-year long-term plan of the fishing port and authorized by MAFF. Furthermore, all facilities to be improved within an each fishing port are effectively coordinated by the port administrator under the supervision of MAFF in order to propose the plan. Hence, fishing ports are able to avoid detrimental and unnecessary developments. Furthermore, port administrators can estimate the accumulated impact of small-scale developments.

2) Environmental evaluation with advanced technologies

MAFF and the local governments that are fishing port administrators or developers have developed technologies to estimate impact and to mitigate the impact. For instance, the developers have adopted artificial seaweed beds and breakwaters with devices for marine resource propagation so that fish can spawn and grow under good conditions in order to compensate for the destruction of natural sea beds. These technologies have been adopted in environmental evaluation and in the construction of facilities implemented by developers. These technologies contribute to minimizing the detected impact.

3) The investments of public money in fishing port developments

All fishing port developments are financed by the public sector with public money. Furthermore, MAFF covers less than 50 % of the costs. Remaining costs are borne by the developers, which are local governments. Hence, environmental evaluation, and the adoption of necessary mitigation to minimize the impact, are implemented by the public sector, which has sufficient budgets. This sufficient money also contributes to minimizing the impact identified by the proponent, although

the process to identify the impact is entrusted by the proponent under the supervision of MAFF and the fishing port administrator.

3.4.2. The Issues in Current Japanese Environmental Evaluation

There exist no regulations to authorize environmental evaluation in Japan. As a result, all environmental evaluation for the projects has been entrusted to developers under the supervision of MAFF and fishing port administrators. This characteristic of current Japanese environmental evaluation has caused regulatory issues that hinder the achieving of sustainable developments, as citizen's environmental concern has grown.

The more educated citizens have increased and the better technologies have been available to detect the impact of developments, the more sensitive to the impact citizens have become. In addition, it has become more important for coastal and aquaculture fisheries to preserve fishing grounds and nursery grounds on the coasts. Citizens, who have been excluded from environmental evaluation for developments, have an accumulating frustration about the environmental destruction of coastal areas and their exclusion from the evaluations. On the other hand, MAFF, fishing port administrators, and developers are also starting to recognize that, although the current environmental framework costs much to operate, it can not explain the situation to people's satisfaction, can not minimize the detected impact, and can not maximize the effects of the projects. This problem has become extremely serious, as Japanese coastal areas have been developed more. As a result, 1) it has been too wide for the developers and MAFF to estimate the required scope of environmental impact because of technological inventories, hence it is hard to estimate the entire scope of the impact by themselves; 2) it takes too much money and too much time for the

developers and MAFF to estimate the impact by themselves; 3) citizens' frustrations, especially people outside fisheries, have accumulated because information about the expected impact of developments has not been disclosed although the citizens have been educated. Furthermore, it makes the citizens emotionally opposed to some developments. Finally, those problems have contributed to failing in sustainable development. Figure 3-1 shows problems in Japan's environmental evaluation framework.

This paper suggests that the following six regulatory issues caused by lack of an authorized environmental evaluation framework in Japan are hindering the achievement of sustainable developments:

1) No supervisors

No organization objectively supervises the environmental evaluation of projects. The evaluation is entrusted to developers under the supervision of MAFF and fishing port administrators. Even if developers fail in the appropriate environmental evaluation of the project, and the fishing port administrator and MAFF permits the development nonetheless, no organization corrects these activities.

2) No cooperation with other governmental agencies

No agencies except MAFF and the departments for fishing port administrations in local governments pay attention to environmental evaluation.

Cooperation of related agencies, such as Technology Agency, Environmental Protection Agency, enhances the quality of evaluation because they also have information and technologies for

estimating impact and eliminating impact. It also contributes to the monitoring of other agencies' development activities. Furthermore, appropriate coordination with environmental programs and coastal developments, promoted by other agencies, contributes to comprehensively minimizing the impact of developments in coastal areas. However, the current environmental evaluation framework does not force interested agencies to cooperate.

3) An environmental evaluation framework independent of a planning process

The current evaluation process is not included in a planning process. Hence, the environmental impact assessment is implemented after planning in order to make sure of the propriety of the plan in terms of environmental preservation. If the impact on the environment is serious, the only strategy that can be used is one that will mitigate the strength of the impact or that will provide financial compensation for the victims.

4) Exclusion of the public

The citizens and NGOs have often been excluded from the process of evaluating the environmental impact of a project, although citizens may be given the chance to comment on the plan during the process. The evaluation is also not disclosed to the public either. As a result, the current controls do not meet most conditions necessary for successful environmental control. The citizens have been excluded from the process of planning because their participation has not been required by the regulations, and the developers have not wanted the participation of the citizens, who tend to oppose all development or request extraordinary compensation money.

5) No penalties for violations

Environmental evaluation is not mandatory; hence, even if the administrator of the fishing port or

the local government do not obey the result of an environmental impact assessment they have implemented, nobody can make them change their policy or stop the project.

6) No disclosure of related information.

Furthermore, the regulation does not require developers to disclose information about the process of development. As a result, the citizens have been excluded from the process of planning. The citizens have not been able to know the contents of a project or to evaluate the environmental control; they have been notified only of the decision by the governments to approve the projects. This means that citizens have been completely excluded from the regional development process.

Lack of Authorized Environmental Evaluation Framework



- Social Dynamics**
- 1) Invention of Technologies to Monitor Environmental Conditions
 - 2) Increase of Educated People, who Pay Attention to Environmental Preservation
 - 3) Raising Costs for Environmental Evaluation
 - 4) High Dense Coastal Developments

- Regulatory Shortcomings of Environmental Evaluation Framework**
- 1) No Supervisors
 - 2) No Cooperation with Other Governmental Agencies
 - 3) An Environmental Evaluation Framework Independent of a Planning Process
 - 4) Exclusion of the Public
 - 5) No Penalties for Violations
 - 6) No Disclosure of Related Information



- Failure in Environmental Evaluation**
- 1) Widening Impacted Scope beyond Developers' and MAFF's Capacity
 - 2) Increase of Environmental Damages Caused by High Dense Coastal Developments
 - 3) Public Emotional Opposition to Developments
 - 4) Public Indifference to Sustainable Developments



Failure in Sustainable Development

Figure 3-1. Problems in Japan's Environmental Evaluation Framework

4. The Identification of the Environmental Evaluation Framework in Massachusetts

Massachusetts, with MEPA/NEPA, is the one of the states that has strong environmental evaluation. Furthermore, fisheries have been promoted because Massachusetts has had rich fishing grounds nearby; many fishing ports have been improved in the state. In addition, there exist some fishery-oriented communities and these communities have political power in state and Federal governments. Hence, it is very useful to review the environmental evaluation framework of Massachusetts as a good example that may be adopted into the Japanese framework. In particular, NEPA/MEPA, which was authorized for sustainable developments, has regulated environmental evaluation and environmentally enhanced the quality of the projects (Berzok).

The goals of this stage of the paper are 1) to identify the environmental evaluation framework in Massachusetts, and 2) to identify the roles of NEPA/MEPA for the environmental evaluation and the goals of NEPA/MEPA.

4.1. Analytical Methodology

This stage of the paper, first, identifies a regulatory framework and an organizational framework for the environmental evaluation of Massachusetts. Furthermore, this stage identifies the actual roles and goals of NEPA/MEPA. This stage especially focus on the efficiency of the NEPA/MEPA process that is authorized to environmentally evaluate development projects. This is because 1) one of the purposes to authorize them is to minimize the development impact and maximize the development effects in order to achieve sustainable development, 2) these regulations have been widely copied and replicated throughout the world as strong tools for achieving sustainable

development, 3) although Japan has no NEPA/MEPA-like regulation, it has started to consider the adoption of it, and 4) this regulation actually has achieved an important role as a core regulation to environmentally evaluate projects.

The process of analysis of the case studies is: 1) a description of the characteristics of Gloucester Harbor, 2) the identification of the environmental condition of Gloucester Harbor, 3) the identification of the Massachusetts environmental control framework for Gloucester Harbor, 4) an analysis of the case study of the large-scale project of Gloucester State Pier. Figure 4-1 shows the process of fishing port development in Massachusetts

4.2. Characteristics of the Gloucester Community

Gloucester is the one of New England's oldest fishing ports, and it was established in 1642. In its history, the port has experienced several periods of substantial change in markets and technology. In the early years, fish were caught with hand lines and salted. By the late eighteenth century, nets were being used by sail-powered vessels, and fresh fish had replaced salt fish as the primary fish processing product. With the introduction of freezing technology, some frozen fish processing started in Gloucester, expanding considerably after World War II. Furthermore, the vast bulk of the fish supply facilities for the frozen processors was improved (Terkla). On the other hand, maritime tourism, such as whale watching and sports fishing, is considered a major industry in Gloucester. According to the Chamber of Commerce, more than 100,000 people visited Gloucester during 1992 (Terkla). In 1980, the number of jobs in the City of Gloucester directly involved in the commercial fishing industry exceeded 3,200, or 25 percent of city-wide employment. When the money these workers spend for local retail goods and services are considered, as well as the jobs

attributable to the fishing industry's purchase of goods and services from other local businesses, it is likely that over 40 percent of the 1980 employment in Gloucester can be traced to the commercial fishing industry. By 1995, the number of jobs in the City of Gloucester directly involved in the commercial fishing industry had declined to an estimated 1,400, or 56 percent of the 1980 level. These direct jobs now account for approximately 14.5 percent of city-wide employment. Counting the money spent by these workers within the local economy, and the industry purchases from other local businesses, the commercial fishing industry today accounts for an estimated 2,400 local jobs, roughly 25 percent of the city-wide total. These estimates do not include employment in retail, lodging, recreation services and other industries primarily engaged in servicing tourists (ICON Architecture Inc., "Gloucester Scope for Port Development Plan:Phase1"). In this situation, the Gloucester Harbor Survey, that was done to estimate the citizen demand for Harbor development in 1997, shows that the citizen's desire for Gloucester Harbor is for the development of port infrastructure and the promotion of fisheries and maritime industry (ICON Architecture Inc., "Gloucester Harbor Survey"). In this situation, the community can be identified as a fishery-oriented community. Furthermore, this fishery-oriented community has political power in the local and state governments to help it promote regional fisheries. As a result, the government's political strategies for fishery communities are affected by the intents of these communities. In this situation, the citizens in this fishery-oriented community eagerly push governments to invest a good deal in fisheries and to put emphasis on strategies to promote fisheries, and on raising their productivity. Hence, fishing port developments are eagerly demanded by this community as long as the developments do not affect fishery resources.

4.3. Features of Gloucester Harbor

Gloucester Harbor is located in a fishery-oriented community; hence, it is similar to Japan's fishing ports. In the harbor, most areas are occupied by fishery facilities improved by the state or by private investors. The harbor geographically consists of two areas: the Outer Harbor and the Inner Harbor. Most facilities are located in the Inner Harbor, where vessels are mostly protected from outside high waves. In the Inner Harbor, fishing port facilities have been improved and are owned by private fishermen and private fish dealers, except for the State Fish Pier and a few public quays improved by the Gloucester public sector. The total perimeter of commercial wharves and piers is appropriately 13,195 linear feet in the Inner Harbor, although most of these structures, that are made of timber piles and timber dockings, are poor and destroyed. The State Fish Pier has a dock for 22 large vessels and 43 smaller vessels (Terkla). Most of the Inner Harbor falls within the Designated Port Area (DPA), in which water-dependent industry uses are given priority based on Massachusetts Regulation 301 CMR 25.00: 50% of the DPA is used for water-dependent industry, 13% of the DPA is used for non-water industry, 14% of the DPA is used for water-dependent commercial; non-water commercial is 9%, and 14% is vacant is (ICON Architecture Inc., "Gloucester Scope for Port Development Plan:Phase1"). Furthermore, within the Inner Harbor, most waterfront lots are designated as marine industry and other waterfront lots are registered as residential in the Gloucester Zoning Ordinance.

4.4. The Environmental Condition of Gloucester Harbor Caused by Developments

Environmental problems in Gloucester Harbor are mainly worsening water quality, sediment quality, and living conditions for marine resources.

1) Water quality

Water flushing capacity is bad because of low tidal circulation and little fresh water input (Division of Waterways). Especially the residents of the Rocky Neck area of Gloucester point out the floating pollutants on the surface of the waters (MEPA Unit). Furthermore, combined sewer overflow sometimes occurs, although the water quality has improved as a result of an extended sewage treatment plant, according to the Gloucester environmental planner (ICON Architecture Inc., "Gloucester Scope for Port Development Plan: Phase 2"; Management Division).

2) The Destructions of the Water Area

The water area has been moderately decreased because of construction of docks and piers; the decrease has contributed to the lowered flushing capacity and tidal circulation of the Inner Harbor.

3) Living marine resources

Shellfish beds within the Inner Harbor and the Outer Harbor have been closed for many years because of overfishing and decreasing water quality (ICON Architecture Inc., "Gloucester Scope for Port Development Plan:Phase 2"). Furthermore, around the offshore of the Harbor, exist living areas for fishery resources such as the sand lance, longhorn sculpin, a sea scallop (Grosslein); and also the spawning areas of fishery resources such as the surf clam, American lobster, Atlantic herring, scup, Atlantic mackerel, Atlantic cod, and red hake (Strategic Assessment Branch).

4.5. The Framework to Control Gloucester Harbor Developments

In Massachusetts, no comprehensive regulations exist that manage fishing ports and control fishing port developments like FPL of Japan. The jurisdiction of government in fishing port development is limited, to ensure public interests, to protect private property rights, and to protect environmental

conditions. This policy is completely different from Japan's, in which fishing ports are improved by governments, based on the plans to raise the productivity of the fishery. Because of no FPL-like regulation, there exists no official definition of fishing port, no official boundary for an individual fishing port, no technical standard for fishing port structures, and no comprehensive management regulation. On the other hand, the administrator of the harbor, the Harbor Master authorized by the City of Gloucester whose power is not so great as the fishing port administrators with exclusive management jurisdiction in Japan oversees daily activities in the harbor. In this situation, fishing port facilities are mainly developed and owned by the private sector except for large-scale projects and large-scale public facilities improved by the public sector. Hence, fishing port developments largely depend on citizen demand. Here, fishing port developments are eagerly demanded by this fishery-oriented community to raise productivity as long as the developments do not affect fishery resources. However, it is hard for citizens to recognize the scarcity of fishery resources in the coastal areas, because fishery resources are common goods. They will consider other environmental impact much less. This situation can be compared to Japan's. In these conditions, the main role of environmental control in Massachusetts is to avoid capricious projects and encourage the developer to produce a development plan that can minimize environmental impacts.

In Massachusetts, although the state and local governments have independent jurisdictions, there exist umbrella regulations, such as NEPA/MEPA and MCZM, that create a network among agencies in order to maximize the cooperation and mutual monitoring. Under these regulations, environmental control should pay attention to all stages of fishing port development. Furthermore, agency and public comments should be absorbed into the project. Under the the NEPA regulation (40 CFR 1500-1508) and the MEPA regulation (301 CMR 11.00), 1) the agency responsible for issuing the related permission (lead agency) is required to get comments from involved agencies,

2) most projects, except for small projects, must have an environmental review, 3) citizen participation and information disclosure is mandatory, 4) an environmental impact assessment is implemented by a proponent and a lead agency under the supervision of many involved parties, 5) an environmental impact assessment is installed in a planning process to minimize the impact, and 6) the project is evaluated by the agency responsible, according to the result of an environmental impact assessment.

The process of getting permission for developments is typically: 1) a review of the MEPA procedure, 2) issuances of the state and local permissions, 3) the MCZM procedure, 4) the NEPA process, and 5) the issuances of federal permissions; these five processes are implemented with a strong relationship among state, local and Federal agencies. Furthermore, the processes of NEPA and MEPA are jointly implemented because of almost the same procedures. In this process, the NEPA/MEPA process achieves an important role in environmentally evaluating projects and providing environmental information which affects agencies' decision-making to other agencies and the public. All five steps have individual thresholds; some projects with a small impact on the environment can be skip some steps.

Regulations relating to fishing port developments are enforced by Federal, state, and local agencies and, at the same time, regulate these agencies. These agencies have jurisdictions to issue the permissions for developments or responsibilities to cooperate in developments. Furthermore, public parties has a jurisdiction to give comments for the proposal of developments in order to supervise these agencies' activities under the regulations.

Appendix-A and Appendix-B, respectively, explain each regulation affecting fishing port

developments and involved parties affecting fishing port developments.

4.6. Environmental Evaluation Framework

NEPA and MEPA have important roles, as core regulations, in the environmental evaluation of projects. Both of them require a three-step environmental screening process. First, agencies determine whether their actions are subject to any review. Then, for any reviewable action, they conduct a threshold determination, deciding whether the action could have a significant effect on the environment. If not, they issue a finding of no significant impact (FONSI), also called a negative declaration. For the actions that could have significant effects, they must prepare detailed reports about the effects, generally called Environmental Impact Statements (EISs) at the Federal level, or Environmental Impact Reports (EIRs) at the Massachusetts state level (Pendall). These reports must include the description of a project and the discussion of its expected effects on the environment, as well as a discussion of measures to mitigate the adverse effects, and an analysis of alternatives to the action or project. An EIS/EIR gives other agencies, and the public, an important opportunity to review and comment on environmental documents. Although the NEPA process is gone through for Federal permission, and the MEPA process is gone through for State Permission, the NEPA process usually occurs after the MEPA process because Federal permission is usually issued after State permission. Furthermore, for the project which clearly requires the preparation of an EIS, based on the NEPA, a joint evaluation is done by the Federal and state agencies. In Massachusetts, the NEPA/MEPA has come to play an important role in environmentally evaluating projects on the coastal areas, because the development of all fishing port facilities require the permission of state and Federal agencies, as well as of local municipalities (Pendall).

4.6.1. The Goals of NEPA/MEPA

The purpose of NEPA/MEPA is to create sustainable developments. In order to achieve this purpose, the NEPA regulation (40 CFR 1500-1508) and the MEPA regulation (301 CMR 11.00) requires related agencies to accomplish eight goals:

1) Agency cooperation (40 CFR 1501.6, 40 CFR 1503.1 & 301 CMR 11.01, 11.03, 11.05, 11.06, 11.08, 11.09, 11.24)

Cooperation among involved organizations and parties to achieve a consistent policy and get the best evaluation is required. In the process of the evaluation, each decision must be objectively made. This cooperation must also have mutual monitoring, which discourages ambiguous decision making.

2) Information disclosure (40 CFR 1506.5, 40 CFR 1506.9 & 11.05, 11.06, 11.08, 11.09, 11.19, 11.24)

Information disclosure includes the disclosure of information about the proposed projects, evaluations, and the process of evaluation, by the people involved, the final decisions of the developers, and a monitoring report after the project decision. In particular, citizens can deepen their understanding of the project and start paying attention to environmental issues outside the project as well. Furthermore, biased or ambiguous decisions lacking a clear logic, can be avoided.

3) Citizen participation (40 CFR 1506.6 & 301 CMR 11.03, 11.05, 11.06, 11.08, 11.09, 11.12, 11.19, 11.24)

Citizen participation is a strategy in which citizens participate in a committee created to assess the

impact of the development on the environment, and in which they can express their opinions and ideas during the evaluation. The goal of citizen participation is to give every citizen a leading role in the evaluation. Citizen participation has some merits. First, citizen responsibility and cooperation during the decision-making process can be increased to a high level. Second, a high degree of interaction among citizens and the people involved in the project, can occur. Third, the citizens can deepen their understanding of the project. Furthermore, developers and agencies can get a large number of citizens' opinions and proposals relatively quickly and cheaply. Finally, citizens start paying attention to other environmental issues and development issues outside the project. In this process, the main role of the government is not to persuade the citizen to agree to the project plan, but to disclose the information necessary for a fair discussion and analysis of the developments between developers and citizens.

4) An evaluation process built into a planning process (40 CFR 1501.2 & 301 CMR 11.01)

An evaluation method should be installed in a planning process in order to review the project beginning at the first stages. This can: 1) involve parties and people in the planning, and raise their understanding and level of cooperation, 2) reflect the environmental advice of the experts and the environmental opinions of citizens about the projects and, as a result, the plan can be drawn up without much re-planning, 3) can install some alternatives, including no-action, in a planning process, and 4) clarify the necessity of the projects.

5) Monitoring after the agency decision (40 CFR 1502.2, 40 CFR 1505.3 & 301 CMR 11.17, 11.19)

Even after the decision to do the project, environmental monitoring during the construction of the facilities and after is required to confirm the evaluation of the projects. Furthermore, monitoring

may identify unknown impact and contribute to an improvement of the evaluation method.

6) A wide scope impact estimation (40 CFR 1501.7, 40 CFR 1508.25 & 301 CMR 11.06)

NEPA/MEPA requires a wide evaluation of the impact of developments. Furthermore, the impact of each project and evaluation method is different. In addition, impact factors should be evaluated as much as possible using current technology, in order to keep damage to a minimum.

7) An effective exemption from environmental impact assessment for projects with no-significant impact (40 CFR 1507.3 & 301 CMR 11.25~11.27)

Although it is important to pay attention to any kind of development activity in the fishing ports, simplified procedures should be applied to small projects, which have no significant impact, to save money and time. However, if a leading agency has a loose and ineffective screening regime, projects with a non-small impact are also exempted from evaluations. The environmental impact of these exempted projects is not always small, because the exemption is not decided based on scientific consideration, but on regulatory screening. Furthermore, this exemption may cause a serious environmental problem that can not be forecasted at the screening.

8) A no-duplicate evaluation procedure (40 CFR 1500.4, 1500.5 & 301 CMR 11.01, 11.10)

The process to get development permission is, typically: 1) a review using the MEPA procedure, 2) the issuance of the state and local permits, 3) the MCZM procedure, 4) the NEPA procedure, and 5) the issuance of Federal permission; however, these five steps are taken with a strong relationship among the state, local and Federal agencies. In this process, duplicate evaluation work must be eliminated to have an effective evaluation.

4.6.2. The NEPA Process

Under NEPA, if a project exceeds the review threshold of the supplemental regulation authorized by the agency issuing permission, the agency shall prepare an Environmental Assessment to evaluate the necessity of an EIS (40 CER 1501.3). If the agency determines, on the basis of the EIS, that it does not need to prepare a statement, it prepares a finding of no significant impact (FONSI). Before the final decision to prepare a FONSI, the agency shall make the FONSI document available for public review for 30 days. Furthermore, the agency is always required to prepare an EIS for large-scale projects defined in the supplemental regulation. If the agency is going to prepare an EIS, it begins the scoping process (40 CER 1501.3, 1501.4, and 1501.5). Just after the decision to prepare an EIS and before the scoping process, the lead agency shall publish a notice of intent in the Federal Register (40 CER 1501.7). Furthermore, the agency determines the scope of the issues in the project. Furthermore, it shall be reviewed by the public and by agencies. Based on the scoping, the agency prepares a draft EIS (DEIS). Furthermore, the agency shall obtain comments from the public and agencies. Then, a final EIS (FEIS), which responds to public comments, is prepared by the agency (40 CER 1502.9). If agencies disagree with the FEIS, they refer to CEQ to ask it to intervene in the problem (40 CER 1504.1).

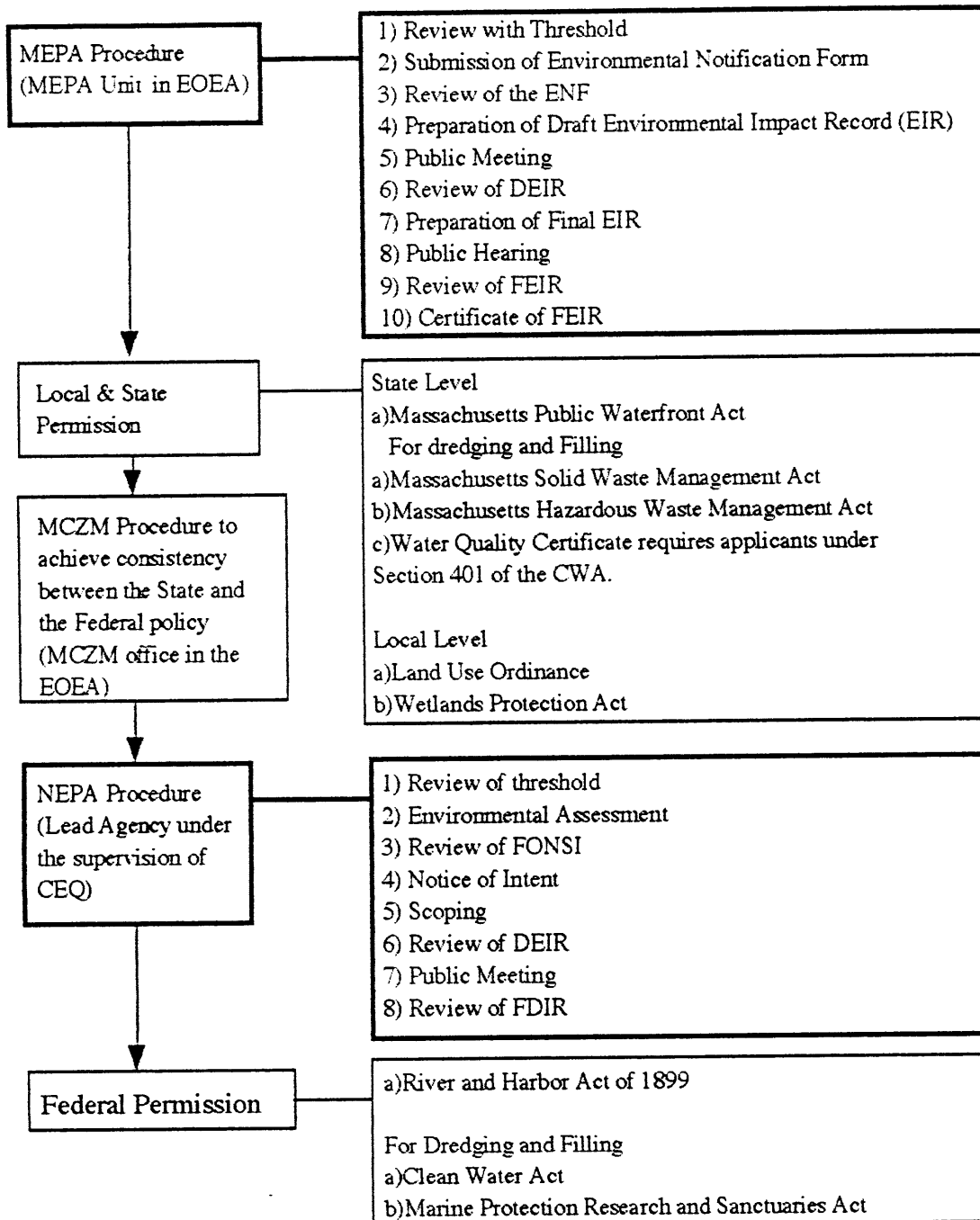
4.6.3. The MEPA Process

In the MEPA process, if a project exceeds the review threshold, the proponent of the project begins the review process by preparing and filing an Environmental Notification Form (ENF) with the Secretary of EOEA (MGL Chapter 30, Section 62). The threshold is when any project needs state agencies' permission or state financial assistance, with has a size beyond a certain level.

Furthermore, the following projects require ENF and EIR procedures: a) any project resulting in the dredging, filling, alteration, or removal, of one or more acres of bordering vegetated wetland or salt marsh, or ten or more acres of any other resources area protected by the Wetlands Act, excluding the buffer zone, b) any project requiring a MGL chapter 91 license for non-water dependent use of one or more acres of tideland, c) new marinas of 250 slips or more, d) any new marine terminal, or the expansion of an existing terminal to accommodate vessels, other than fishing, passenger, or Coast Guard vessels, of 25 gross tons or more, and e) any site for the treatment or disposal of hazardous material off the site of generation or release, and any site for the disposal of radioactive materials (301 CMR 11.25, 11.26 and 11.27). Furthermore, a public notice is published with the Environmental Monitor. A 30 day review period follows, during which the Secretary receives agency and public comments, and visit the site. At the close of the ENF review period, the secretary determines whether an EIR is necessary. If no EIR is required, agencies may begin on the project. If an EIR is required, it is prepared by the proponent and submitted to the Secretary. The EIR is reviewed and commented on, at both the draft and final stages, by agencies, the public, the MEPA unit, and the Secretary. After the completion of the Secretary's review of the FEIR, and the expiration of a legal challenge period, agencies may begin the project (301 CMR 11.01 (2)). Furthermore, for a large project, the Secretary may establish a Citizens Advisory Committee to assist the Secretary in the review and evaluation of the environmental impact of the project (301 CMR 11.01 (2)). Consultation meetings are held during comment periods at each step in order to receive advice and comments about an ENF and a DEIR, although this is not required by the MEPA.

According to the investigation by the author based on the Environmental Monitor issued every month, based on the 301 CMR 11.19. of the MEPA regulation, in the City of Gloucester, between

1992 and 1996, under MEPA, twenty-seven ENFs were submitted, of which twenty-four were ENFs concerning coastal area development. Only one ENF was for a fishing port development, and two other ENFs were for development in Gloucester Harbor. On the other hand, no EIS process was implemented during this period. On the other hand, an EIR process was applied to the Gloucester State Pier in 1988. Other small projects in Gloucester Harbor were under the threshold of an ENF review. The NEPA process was not applied to the development in the harbor during this period.



- 1) Joint programs between MEPA & NEPA are often applied
- 2) Interested Federal and State agencies intervene a MCZM, MEPA, and NEPA processes
- 3) The MCZM office intervenes a MEPA process
- 4) Proponents are required to announce each of the five steps of a project as soon as possible.
- 5) Environmental evaluation for projects is implemented within a NEPA and MEPA processes.

Figure 4-1. Process for Fishing Port Developments in Massachusetts

5. The Identification of Effects and Issues in the Environmental Evaluation Framework in Massachusetts

NEPA/MEPA, which was authorized for sustainable developments, has regulated environmental evaluation and environmentally enhanced the quality of the projects. On the other hand, NEPA/MEPA has been criticized by specialists because its goals are not always achieved (Berzok).

The goals of this stage of the paper are 1) to identify the effects of NEPA/MEPA, 2) to identify the issues that hinder the achievements of the goals of NEPA/MEPA, 3) to propose a solution to these issues. Furthermore, the case studies are analyzed to achieve those two goals of this stage.

5.1. Analytical Methodology

In this stage of the paper, the case studies are analyzed to identify the actual effectiveness of NEPA/MEPA. Especially, according to the NEPA regulation (40 CFR 1500-1508) and the MEPA regulation (301 CMR 11.00), both NEPA and MEPA require interested peoples to achieve eight goals: 1) mutual observation, 2) agency cooperation, 3) information disclosure, 4) citizen participation, 5) an evaluation process built into a planning process, 6) monitoring after agency decisions, 7) a wide scope impact estimation, and 8) an effective exemption from environmental impact assessment for projects with no-significant impact; hence, the case studies identifies how and how much these eight goals are achieved. Furthermore, issues that hinder the achievement of the goals of NEPA/MEPA are identified. Finally, the solution for these issues are proposed.

Two cases studies in Gloucester Harbor, a large one and a small one, are analyzed because this fishing port has been improved and some environmental problems have occurred. In these case

studies, the main focuses are how the development plans were environmentally reviewed, who intervened in this process, which problems and conflicts occurred in the process, and how these problems were solved. In this section, the local characteristics that affect the environmental control regime are also discussed. Finally, the effects and issues of NEPA/MEPA, and solutions to those issues, are identified.

These case studies especially focus on the efficiency of the NEPA/MEPA process that is authorized to environmentally evaluate development projects. This is because 1) one of the purposes to authorize them is to minimize the development impact and maximize the development effects in order to achieve sustainable development, 2) these regulations have been widely copied and replicated throughout the world as strong tools for achieving sustainable development, 3) although Japan has no NEPA/MEPA-like regulation, it has started to consider the adoption of it, and 4) this regulation actually has achieved an important role as a core regulation to environmentally evaluate projects.

The process of analysis of the case studies is: 1) an analysis of the case study of the large-scale project of Gloucester State Pier, 2) an analysis of the case study of the small-scale project of Studio Lounge and Deck inc., 3) an identification of the effects and issues of NEPA/MEPA and, 4) a recommendation of a solution for the issues.

5.2. Criteria for Evaluation of NEPA/MEPA

The goal of these case studies is to evaluate the effectiveness of NEPA/MEPA, which are core regulations in the environmental evaluation process. The reason why the case study focuses on

NEPA/MEPA is that 1) this process is an important process in the environmental evaluation of projects 2) interested agencies evaluate projects based on the outcome of the NEPA/MEPA process, 3) proponents refine the project based on the NEPA/MEPA process, and 4) all comments from agencies and citizens are received during the NEPA/MEPA process. In order to evaluate the effectiveness of NEPA/MEPA, the case studies clarify how much the goals of NEPA/MEPA were achieved and what were issues that hindered the goals of NEPA/MEPA.

Criteria to evaluate NEPA/MEPA in this research are whether the goals of NEPA/MEPA were achieved or not in the case studies. NEPA/MEPA requires related agencies to achieve eight goals: 1) agency cooperation, 2) information disclosure, 3) citizen participation, 4) evaluation process built into a planning process, 5) monitoring after the agency decisions, 6) a wide scope impact estimation, 7) an effective exemption from environmental impact assessment for projects with no-significant impact, and 8) a no-duplicable evaluation procedure. The case studies identify how much these eight goals were achieved and what hindered the achievement of these eight goals.

5.3. The Selection of the Project for the Case Study

For the case study, two projects were selected: a large-scale project and a small-scale project to identify effects of the goals of NEPA/MEPA and issues hindering the goals of NEPA/MEPA for even small projects.

Large-scale projects generally have a large impact on the environment; hence, a serious environmental review may be done. In this process, although the impact is reviewed, it can be hard to consider all of the implications that come from what may be a very complex study. For a large-

scale project, the Gloucester State Fish Pier was selected because all kinds of large-scale facility development, such as dredging, filling, and pier construction, was included. Furthermore, this project was a public project. On the other hand, small-scale projects may have a small impact, but the accumulated impact of many projects is not small if the environmental control of small-scale projects is loose. As a small-scale project, the Studio Lounge and Deck, which consisted of the construction of a free-standing deck and the extension of a float within the public tidal areas, was selected. This was not a development of fishing port facilities; however this case can identify the NEPA/MEPA process small scale developments because 1) the proposed project in this case included the same structures as the piers for fishing vessels, 2) the project was planned within Gloucester Harbor, and 3) there still exists all information necessary for identification of the NEPA/MEPA process.

5.4. Case study of a Large Project

For the case study of a large scale project, the environmental evaluation process in the redevelopment of the Gloucester State Fish Pier is analyzed.

5.4.1. The Identification of Environmental Evaluation

In this case, the NEPA process was not applied because 1) MEPA was implemented and the Federal agencies reviewed projects, and 2) the EIR prepared in the MEPA process succeeded in the estimation of the impact caused by the project. However, unofficial discussion continued among the EPA and Army Corps before the issuance of Federal permission in order to make certain of safety of the disposal of dredged material. Furthermore, the Massachusetts Department of

Environmental Management (DEM) was required for more analysis to clarify some of the environmental impact and the mitigation methods used to minimize it, after the MEPA process, because the proponents failed in evaluating these impacts during the time limit of the MEPA process.

The MEPA procedure for this project was as follows.

1) Project name: Gloucester State Fish Pier

2) Project proponent: Commonwealth of Massachusetts Department of Environmental Management, Division of Waterways.

3) Background

The Gloucester State Fishing Pier, which was constructed in 1938, is located in the heart of Gloucester Harbor. It is owned by DEM. DEM signed a lease and management agreement with the Massachusetts Government Land Bank to provide interim management of the Pier. The Massachusetts Land Bank has been managing the Pier since 1982, overseeing daily operations, as well as supervising the redevelopment of this state-of-the-art pier facility.

Gloucester Marine Protein Inc., which was managing a fish waste processing plant on the Gloucester State Fish Pier, was planning a plant extension project in 1984 because of deterioration of the plant. This plant was the only large scale fish waste processing plant in Massachusetts. Most of the waste produced in Boston, New Bedford and Gloucester was sent to this plant; hence, this plant had an important role for Massachusetts fisheries and the State. The State was financially supporting this plant. However, the plant was discharging odors, which was causing serious

environmental problems. The City and the citizens were concerned about a new plant, which could cause more serious odor problems.

On the other hand, the City was experiencing an economic decline caused by the decrease of fish catch; hence, it was hard to request that Gloucester Marine Protein Inc. close the plant, which was bringing in a good deal of tax income, and processing most of the fish waste in Gloucester. Furthermore, the City wished to utilize the State Fish Pier more effectively in order to direct more investments for fishery industries.

The City requested that the State, which is the landowner for the State Fish Pier, and which had jurisdiction to issue permission for the project, solve this problem. As a result, the State decided on the redevelopment of the State Fish Pier, including the reconstruction of the fish waste processing plant. A five member Gloucester Pier Advisory Board was established to advise DEM on management decisions when DEM assumed management of the State Pier. Furthermore, some public meetings were held to obtain the comments of the citizens and municipal agencies on the redevelopment of the State Pier.

The environmental evaluation of the project started at the time of the ENF submission to the Executive of EOEA in October, 1985.

The end of 1993 saw the completion of the first phase of pier reconstruction, a six-million dollar project which included the provision of full industrial grade facilities for the future sites of new processing, wholesaling and marine services, along with a commercial docking facility able to accommodate fishing vessels of 25 to 100 feet.

4) Project description

This project included: 1) the construction of a finger pier to provide berthing for approximately 2 intermediate to large commercial fishing vessels, including dredging with disposal at the 14-mile EPA 000115 Foul Area in Federal waters, 2) the construction of a 110' × 280' solid fill extension to provide access to the finger pier, 3) the demolition of the old dehydration complex, 4) the rehabilitation of an existing finger pier on the south side of the main Pier, 5) the rehabilitation of an existing rip rap slope on the south side of the Pier, 6) the provision of relocation assistance to the tenants of the Stalls Building, 7) the demolition of the old Stalls Building, 8) the provision of sewer and electrical service to portions of the Pier not then serviced, and 9) the rehabilitation of 800 feet of the North Wharf. The total amount of money available for the State Fish Pier rehabilitation and development was 7.1 million dollars. As an expected benefit, the State Fish Pier would provide one of the few remaining public facilities dedicated to the fresh fish industry of the Commonwealth. Redevelopment of the State Fish Pier would contribute to the enhancement of the fishery industry, not only in Gloucester, but also across the state.

5) Schedule of the MEPA procedure:

The time schedule of each step was as follows:

- a) Notification Date of the ENF: November 12, 1985
- b) Date of Certificate of the ENF: December 26, 1985
- c) Notification Date of the DEIR : January 23, 1987
- d) Date of Certificate of the DEIR : March 2, 1987
- e) Notification Date in Monitor of the FDIR : December 14, 1987
- f) Date of Certificate of the FDIR: January 20, 1988

6) Other regulations necessary for the project

This project required permission based on a) the Waterways Act enforced by DEP, b) Section 10 of the Rivers and Harbor Act regulating developments within navigable waters enforced by Army Corps, c) the Land Use Ordinance regulating the land use of coastal areas and the development of coastal areas, d) the Wetlands Protection Act, which authorizes local conservation commissions to review construction activities and issue the agreement of the project, e) the Clean Water Act (CWA), which requires fill activities in territorial waters and discharging activities of any dredged or filled materials into estuary waters to receive permits from Army Corps. f) the Marine Protection, Research, and Sanctuaries Act, which requires any disposal activities in ocean waters to receive a permit from Army Corps and EPA, g) the Massachusetts Solid Waste Management Act, which requires projects employing upland disposal of nonhazardous dredged material in sanitary landfills to receive a permit from the Division of Solid Waste Management within DEP, and h) the Massachusetts Hazardous Waste Management Act, which requires projects employing upland disposal of hazardous dredged material in hazardous waste landfills to receive a permit from the Division of Hazardous Waste within DEP. Furthermore, the Water Quality Certificate requires applicants for Federal permits or licenses who are conducting activities that might result in the discharge of pollutants into state wetlands or waterways to obtain a water quality certificate, issued by DEP under the authority of Section 401 of CWA.

In addition, although the approval of municipal agencies was required in order to get a license, get through the NEPA process, and get through the MCZM program, the proponent had already been approved by the Gloucester Zoning Board, the Gloucester City Council, and the Gloucester Conservation Commission before the submission of the ENF.

7) The basis for submission of the ENF

This project was beyond the MEPA threshold for waterway use in terms of dredging, disposal of dredged materials, landfill, and new marinas (301 CMR 11.26 (7) (b)), the public money investment for the project (301 CMR 11.27 (4) (a)), and the discharge of hazardous material (301 CMR 11.26 (7) (g)).

8) The identifications of the ENF

The Secretary of EOEA requested that DEM prepare an EIR for this project. In detail, EOEA required an EIR that presented and evaluated the entire redevelopment plan so that available mitigation, which might involve changes in the overall plan, might be considered. Furthermore, EOEA required the EIR to estimate environmental problems, which were 1) water quality, 2) odors, 3) traffic congestion, and 4) the disposal of dredged material caused by the development. The MCZM office and the Metropolitan Area Planning Council had the same comments. Two citizen's groups, such as the East Gloucester Environmental Committee, also had the same concerns, according to the ENF.

9) Identification of the DEIR

The DEIR explained the construction impact and the ongoing operation impact related to the proposed project, which were tidal flushing and circulation, air quality (odor), traffic, harbor traffic, mooring displacement, tenant displacement, and dredging disposal. The DEIR stated that all these could be mitigated with appropriate means.

10) The Identification of the comments about the DEIR

a) Certificate of the DEIR

EOEA asked DEM to evaluate the complete plan, including the fish waste processing plant and other plants, but DEM evaluated only the projects described in the ENF. Furthermore, EOEA stated as follows: the DEIR had some shortcomings: no analysis of odor as it would impact the community (said by EOEA), a limited discussion of alternatives to harbor filling (said by the MCZM office and the National Marine Fisheries Service), a limited discussion of the impact of reduced tidal flushing on potentially anoxic harbor waters (Said by the National Marine Fisheries Service), no analysis of new potential pollution coming from the new facilities and the new fish waste processing plant (Massachusetts Audubon Society), and no discussion of the necessity for analysis of the disposal of dredge spoils at sea, as was proposed for some of the spoils (Said by the National Marine Fisheries Service). The DEIR did mention a docking problem during southwest winds for vessels landing at the pier which would be a detriment to the facility's usefulness (Said by the Division of Marine Fisheries and the MCZM office). The DEIR did not identify the potential exiting traffic impact of the redevelopment plan (Said by EOEA). In addition, the project definition was absurd: the DEIR referred to the potential for a container ship cargo facility, although the legal purpose of the project was for commercial fishing and its support industries (Said by the National Marine Fisheries Service). Only the Metropolitan Area Planning Council stated the DEIR was adequate.

c) Public Comment about the DEIR

The Gloucester Fishermen Wives Association pointed out that the preparation of the DEIR had lacked public participation because the public could not read the DEIR and could not comment on it. The Massachusetts Audubon Society had concerns about the unclear comprehensive plan that would include a new fish waste processing plant and its impact.

11) Identification of the FDIR

After the submission of the Draft EIR, the project was changed in the following ways, based on the comments: 1) the proposed finger pier configuration was changed to eliminate encroachment across the designated channel line and the the first leg of the finger pier was rotated 20 degrees counterclockwise to lessen the probability of storm damage to vessels berthed at that leg, 2) the dredge foot point had been adjusted accordingly, 3) the project now entailed the demolition of the old dehydration complex and the old Stalls building, 4) the project no longer entailed the construction of a new building or other buildings on the Pier, 5) the project included the rehabilitation of an existing pier and rip rap slope on the south side of the Pier, 6) the project entailed the rehabilitation of an additional 600 feet of the North Wharf, and 7) the project included the construction of an additional 15,400 square feet of West Pier extension.

Furthermore, the unclear impact of the project pointed out by some agencies in the review of the DEIR, was clarified. Although, this impact was expected to include water quality, tidal flushing and circulation, air quality (odor), traffic, harbor traffic, mooring displacement, tenant displacement, and dredged disposal, the impacts, and the available means of mitigation evaluated in the DEIR, were reevaluated and re-discussed in the FDIR.

12) The identification of the comment to FDIR

The MCZM office insisted on more analysis of the water quality and the tidal flushing capacity. As a result, EOEAs stated in the Certificate of FDIR as follows: 1) the FDIR was weak in the areas of tidal flushing, water quality impact, and long term impact, 2) furthermore, additional mitigation methods for the impact should be in the FDIR, and 3) hence, EOEAs required that responsible

agencies solve these problems in order to allow permission for the project.

5.4.2. Evaluation of NEPA/MEPA Procedure

1) Effects of NEPA/MEPA

The case study for the large-scale project can identify the following effects.

a) The MEPA process refines a project because some independent agencies and the public review the project at each step of the process. In the MEPA process, many plans of the facilities were modified so as to minimize the environmental impact.

b) The MEPA process does not allow for biased decision-making on the part of responsible agencies. Actually, DEM and the Planning Council of Gloucester were sometimes requested by EOEAs or the citizens to review the decision.

c) The MEPA process saves time for a proponent because the proponent does not propose the plan to each agency. After the MEPA process, the proponent is not required to do more investigation except for clarifying the unclear points in the FEIR.

d) In the MEPA process, involved agencies can comprehensively recognize the environmental issues of a project. In this case, EOEAs urged the proponent to show the impact of a long term development plan. Furthermore, agencies could get any information they needed.

e) Citizens not only get more information about a project, but also about the environmental

condition of a local area. It is because the ENF and EIR are issued to the public.

g) Developers, agencies, and the public have been more attentive to environmental consideration. It is because environmental impact is objectively reviewed by the interested agencies and other publics with official documents. It encourages the proponent to consider their comments at the each step of the MEPA process.

2) Issues in NEPA/MEPA

a) EOE problem

MEPA encourages the proponent to begin the MEPA process at an early stage of planning; however, this project had already finished being planned before the submission of the ENF. Hence, there existed little room to discuss the project definition, and alternative definitions, in the MEPA process. Actually, the goal of the project was very ambiguous: although the official purpose of the project was for state-wide fishery industry promotion, DEM proposed potential container ship use in the DEIR. Furthermore, the scale of the project was too small to promote fisheries statewide. This DEM action discouraged the citizens and cooperating agencies. Furthermore, the MEPA's scoping procedure was poor; hence, alternative and impact evaluations in the DEIR were not well considered. It was an organizational problem that EOE did not force DEM to evaluate the impact more.

b) No relationship with local government

Municipal agencies, such as the Gloucester Zoning Board and the Gloucester City Council, agreed to the project on the basis of the MEPA procedure. As a result, some citizen groups requested that

the city reconsider its approval of the project. Furthermore, the Conservation Commission did not fully consider the environmental impact assessment implemented by the MEPA process to evaluate the project strictly. This means the MEPA process does not affect local decision-making. Furthermore, the City of Gloucester, in its pursuit of economic growth, seemed to overlook the environmental impact of projects that might enhance the economy. Many citizens had concerns about the goal of the project and the impact of the project.

c) Public exclusion

According to the comments of citizens about the DEIR, the public, including NGOs, was sometimes excluded from the discussion of the planning. Furthermore, DEM did not disclose all information about the project, even at the public meeting. In addition, the public could not review the scientific data, such as water quality, dredged material, and the impact on human health.

d) The failure to find a solution to the impact

Some environmental impact and most mitigation methods for the impact caused by the development, could not be identified within the MEPA process, although these are the goals of MEPA. Furthermore, the Secretary of EOEA entrusted more analysis to the proponent and interested agencies; however these action spoiled the principles of MEPA because MEPA could not oversee the environmental evaluation implemented by the proponents and the agencies.

e) An old-fashioned mitigation method

The technology applied to the mitigation method and construction structure technique was old-fashioned. For example, a breakwater that enhances tide circulation, and a sea wall with a self-aeration system, should have been installed into this project. However, the proponent did not

apply those technologies to this project, in order to enhance the environmental quality at the new facility.

f) **A bad relationship with the DPA program**

The environmental control framework did not effectively work to oversee the DPA. Restrictions against development in the DPA, such as dredging, filling and the construction of some port facilities, were relaxed by MEPA and Chapter 91. It was because the DPA regulation gives priority to water-dependent industry uses. This, in general, contributes to a high concentration of water-dependent industry facilities; furthermore, it causes environmental destruction in these areas. However, there exists no state level regulation to oversee the environmental conditions in the DPA, and they are entrusted to the local municipality. Unfortunately, in this case, the local municipality, Gloucester, had no effective environmental control framework for the Gloucester DPA.

5.5. Case Study of a Small Project

In this case, the NEPA process was not required because the project was reviewed in the MEPA process and MCZM process. The process of the MEPA was as follows:

5.5.1. Identification of Environmental Evaluation

- 1) Project name: Studio Lounge & Deck, Inc.

- 2) Project proponent: Studio Lounge & Deck, Inc.

3) Project description:

The proponent owned and operated the Studio restaurant at Rocky Neck in Gloucester. The restaurant had been at its current location for more than 45 years. There were licensed and unlicensed floats, and a catwalk, outside the restaurant on the water side that were used by transient boats frequenting the restaurant. The proponent proposed to increase the size of the floats and to construct a freestanding deck (approximately 33'×60' in size) for non-water dependent use.

4) Time table of the MEPA procedure

The schedule for environmental evaluation was as follows:

- a) Notification Date in Monitor of the ENF: January 26, 1990
- b) Date of Certificate of the ENF: February 26, 1990

5) Other regulations necessary for the project

Required permission for this development was as follows:

- a) the Waterways Act license from DEP, b) Section 10 license from the Army Corps, c) the Land Use Ordinance that regulates the land use of coastal areas and the development of coastal areas, d) the Wetlands Protection Act, which authorizes local conservation commissions to review construction activities and to issue the agreement of the project.

Furthermore, although the approval of municipal agencies is required in order to get a license and get through the NEPA process, and get through the MCZM program, the proponent had already been approved by the Gloucester Zoning Board, the Gloucester City Council, and the Gloucester Conservation Commission before the submission of the ENF.

6) The necessity for filing an ENF

This case required ENF filing because the licensing, pursuant to M.G.L. Chapter 91 (the Waterways Act), of any non-water dependent use of tidelands requires it (301 CMR 11.26 (7) (b)).

7) The identification of the ENF

The ENF described the project as follows: 1) the area to be built upon is already built upon and the structure will be entirely supported by piles, thereby not causing any significant impact to fisheries or any wildlife; 2) some patrons will be served food on the deck but this will not increase the current sewage load which, in any event, is handled by municipal sewers; 3) the project in and of itself will not result in an increased consumption of municipal water; 4) there may be several new boats using the expanded float system but this will not generate other sources of air pollution.

8) Identification of the comments about the ENF

a) Comments of other agencies against the ENF

During the review session, no state agency found any adverse impact to the project.

b) Public comment

Residents gave comments to the MEPA unit. In the comments: 1) Rocky Neck, where the restaurant is situated, is already congested with traffic, which is a threat to public health and safety, and the project does not include parking lot development; and 2) Smith Cove is a dead-end cove with poor tidal flushing. In summer, pollutants can often be seen floating in streams and masses along the surface of the water, remaining and sometimes multiplying in outbursts of algal growth, and combining with discharges of sewage, fish waste and storm drainage overflow.

9) The basis of exemption for an EIR

The comment of the Secretary of EOEA about the ENF was issued on January 26, 1990, which said that the project did not require the preparation of an EIR. Although the reason for this was not explained in this document, a supplemental condition was written in that DEP, in its comments, had outlined some of the proposed public benefits of the project which are intended to offset the proposed private use of the tidelands. In response to verbal comments from residents of the Rocky Neck area, the Secretary strongly urged DEP to make the proponent provide a sign which would encourage the public to respect private property in the vicinity of the restaurant.

5.5.2. An Evaluation of the NEPA/MEPA

1) Effects of NEPA/MEPA

The public got information about the project through public notice. Furthermore, interested agencies was involved in the project evaluation of the MEPA process.

2) Issues in NEPA/MEPA

a) Public exclusion

Public concern was clearly an issue ignored by EOEA. EOEA not only ignored public comment, but also suggested that the public respect the private property. In the process, the comments lacking scientific proof were ignored, but the citizens had no ability to give comments backed up by scientific proof. This meant that public comment could not be incorporated into the project. If EOEA had listened to the citizens' comments, EOEA could have improved the strategy to assess the project and come up with a new strategy to prevent the impact of accumulated small things.

b) No relationship with local government

Municipal agencies, such as the Gloucester Zoning Board, the Gloucester City Council, and the Gloucester Conservation Commission, agreed to the project before submission of the ENF. This means the MEPA process does not affect local decision-making. The proponent utilized the approval of municipal agencies as a tool to encourage the state and Federal agencies to agree to the project. Furthermore, basis of these agencies' approval was ambiguous in its logic. Especially considering that the Gloucester Conservation Committee is entrusted with state power by the state under the Wetlands Act, it should have been more careful about the agreement.

c) A bad relationship with the DPA program

This project was a non-water dependent use project; this type of use is extremely restricted by the DPA, whose tideland gives priority to water-dependent industry use; however, the MEPA process was easily passed through, and a special license of the Waterways Act was issued by DEP. Considering that this facility would cause some environmental problems, such as worsening traffic congestion and water quality, and the DPA was been already a high density development area, the mitigation method should have been applied.

d) The accumulated impact of small projects

This project was a small project; however, its accumulative impact, combined with other small projects, was not considered in the MEPA process. If these projects are easily approved, all the tideland will be occupied by these facilities within a short term. The DPA of Gloucester Harbor, in particular, is a high density waterfront area. It is clear that the accumulative impact on land and sea can not be ignored.

e) The old fashioned mitigation method

The proponent did not voluntarily try to enhance the environmental quality at the new facility construction, because of the lack of ability and capital, although the mitigation with new advanced technologies more contributes to minimizing the impact than old fashioned method.

5.6. Evaluation of Environmental Control in Massachusetts

NEPA/MEPA requires related agencies to achieve eight goals: 1) agency cooperation, 2) information disclosure, 3) citizen participation, 4) an evaluation process built into a planning process, 5) monitoring after agency decision, 6) a wide scope impact estimation, 7) An effective exemption from environmental impact assessment for projects with no-significant impact, and 8) a non-duplicate evaluation procedure. However, the lack of an effective framework to enforce NEPA/MEPA hinders the perfect achievement of these goals. The U.S. and Massachusetts governments should reform the regulation so as to achieve the goals of NEPA/MEPA better.

1) Agency cooperation

The MEPA process is strictly supervised by EOE. Furthermore, cooperation between the Federal and state agencies to environmentally evaluate projects has been achieved. As a result, the MEPA process refines the project with many agency comments. Actually, the proponent and agencies have been attentive to environmental consideration.

However, although CEQ, which enforces NEPA, is independent of other agencies, EOE is situated at the top of the Massachusetts environmental departments, which manages many projects.

It means that EOEa has the role of supervising these environmental departments as well as enforcing the MEPA. This means that EOEa is not always independent of these environmental departments' activities. This can prevent EOEa from objectively evaluating the activities of these departments.

In addition, there exists no effective environmental control framework to oversee the DPA. The restriction of developments in the DPA, such as dredging, filling and the construction of port facilities, was relaxed by MEPA and the Waterways Act. It was because the DPA regulation gives priority to water-dependent industry uses in the DPA. It has contributed to the high concentration of water-dependent industry facilities; furthermore, it has caused environmental destruction in these areas. However, there exists no state level regulation to oversee the environmental conditions in the DPA, and they are entrusted to the local municipality.

In addition, the MEPA process does not affect local decision-making. Furthermore, the logical basis of these agencies' approval was ambiguous. Especially considering that the Gloucester Conservation Committee is entrusted with state power by the state under the Wetlands Act, the committee should have been more careful about the agreement.

The solutions to these issues: 1) create an independent organization, such as CEQ, that will have jurisdiction to administrate MEPA only, replacing EOEa, in this role; 2) formulate stricter environmental regulations to monitor DPAs; and 3) extend MEPA's jurisdiction to the decision-making of municipalities.

2) Information disclosure

Information disclosure encourages developer, agencies, and citizens to be involved in environmental consideration.

Detailed information, such as the original impact estimates, should be disclosed for public and government agency review.

3) Citizen participation

Citizens can get not only more information about the project, but also about the environmental condition of the area. Furthermore, the proponent and agencies pay attention to environmental consideration.

However, the public, including the NGOs, is excluded from the discussion of the planning, although a public meeting is held by EOEA and the proponents. Furthermore, in large-scale projects, the proponent does not disclose all information about the project even at the public meeting. In addition, the public can not review the scientific data, such as water quality, dredged material, and the impact on human health. In this situation, the cooperation of the public and of agencies can not be expected.

A solution to this is, besides the public hearing, authorized places where citizens and other public parties discuss the project and estimate the impacts deliberately should be required. For example, NEPA/MEPA should be amended to always require an advisory committee, consisting of NGOs and citizens, to review the projects needed for the preparation of the EIR. Furthermore, the MEPA process should be amended to affect the decision-making of the municipalities, such as California Environmental Protection Act requires of the municipalities.

4) An evaluation process built into a planning process

The MEPA process refines projects with many agency comments.

MEPA encourages the proponent to introduce the MEPA process at an early stage of planning; however, the proponents in the case studies finished planning the projects before the submission of the ENF. Hence, there existed little room to discuss the project definition, and alternative definitions, in the MEPA process.

In addition, when the power of a community is strong against the State, the power of the local regulation is stronger than those of MEPA and NEPA, which should take priority over other regulations. This weak point contributes to the hindering of an objective review of many involved parties. Actually, in the City of Gloucester, which has a fishery-oriented community, citizens have strong power to control fishing port development. Furthermore, the City Council, the Planning Board, and the Water Way Committee, which are supported by the citizens of Gloucester, also have jurisdiction to issue permission, or to comment on, any harbor developments. The opinions of these organizations are subject to the citizens' opinions; hence, the projects are subject to citizens' intents. The citizens agree to projects as long as the impact on the fishery resources is small, and the project promotes the fisheries. Hence, projects are evaluated more on citizen preferences than on the the scientific environmental impact of the projects. Under these condition, the harbor is protected from capricious development, but the reason does not always come from the effect of current environmental control, but rather from a decreased demand among citizens for the project. Actually, the municipal agencies tend to agree to projects without reviewing the outcome of the MEPA/NEPA process.

An ideal solution would be to this is that MEPA's jurisdiction should be extended to the decision-making of municipalities. However, the political powers of local municipalities in Massachusetts are very powerful; hence it is very hard to persuade the municipalities to accept this propose. The inclusion of municipal decision-making into MEPA will contribute to promoting MEPA reviews from the early stages from planning, because the proponent, first, discusses the feasibility of the project with municipal agencies.

5) Monitoring after agency decisions

MEPA/NEPA prepares the penalties for a violation.

However, the proponents finally, for themselves, decide on the development plan from among the alternatives, based on a review by the involved parties. The formulation of the final plan and permission are finally entrusted to the proponents and to the agency responsible for issuing permits. Although the cooperating agencies can appeal to CEQ and EOEA if they think the final plan does not consider their opinions, they can not successfully oppose the plan as long as interested citizens eagerly support the plan. Actually, concerning the development of the State Fish Pier in Gloucester Harbor, many agencies reviewed these proposals; however, it is unclear how and how much their advice was considered in the final plan.

This problem was caused by the shortcomings of EOEA not requiring proponents to prepare the supplemental environmental impact assessment to complete environmental evaluation for the development within the MEPA process. This problem can be solved if EOEA is allowed to request the supplemental environmental evaluation of proponents till the solution for all environmental

issues can be identified.

6) A wide scope impact estimation

In the MEPA process, agencies give comments about the expected impact. This enhances the scoping process. However, the environmental issues of projects are not discussed sufficiently among citizens and involved agencies.

A solution to this is, besides the public hearing, places where citizens and other public parties discuss the project should be required. NEPA/MEPA should be amended to always require an advisory committee, consisting of NGOs and citizens, to review the projects needed for the preparation of the EIR.

7) An effective exemption from environmental impact assessment for projects with no-significant impact

In NEPA/MEPA is prepared for categorical threshold for small projects expected no significant impacts in order to eliminate the unnecessary paper work and time.

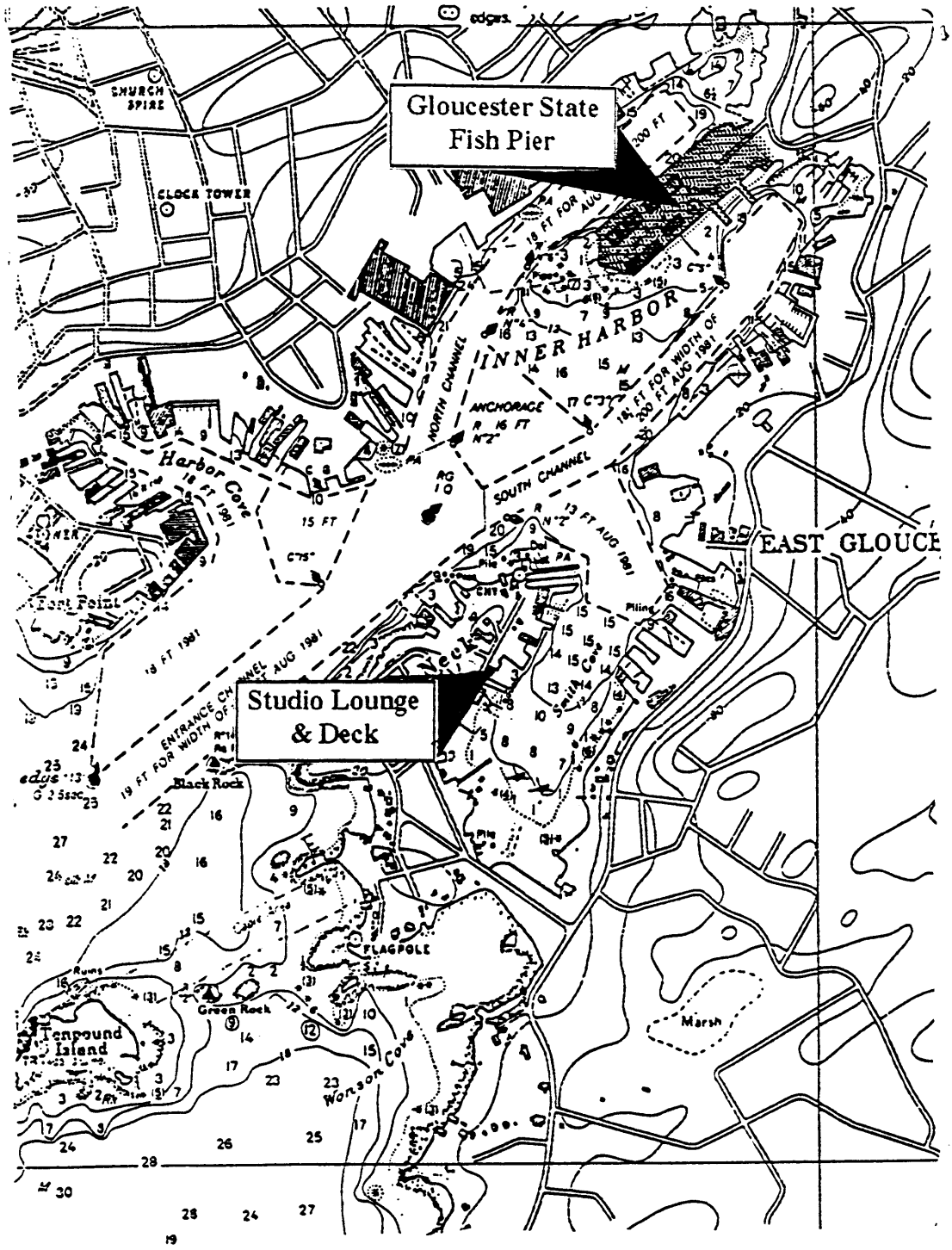
However, the accumulated impact can not be evaluated because a total development plan, including the small developments, does not exist for fishing ports. This fact suggests two issues about environmental control: first, it is not well reviewed, when a single project is screened, as too small to affect the environment. Second, although all the facilities in a fishing port should be consistently improved based on the MCZM program, the physically small facilities, which sometimes have a significant impact individually or cumulatively, are beyond the control of this program. Furthermore, the criteria for the screening of projects is unclear; hence, physically small projects

are not objectively reviewed and detailed evaluations of these small developments are not done. Actually, in Gloucester Harbor, many cheap, private piers have been improved and the water area has decreased.

These problems can not be solved with in the MEPA/NEPA framework. Hence, in order to solve these issues, each port should authorize its long-term plan in order to monitor the accumulated impact of small developments. Furthermore, all developments should be on the list of fishing port developments in the long-term plan. Regarding the authorization of a long-term plan, all projects in each fishing port should be effectively coordinated by a municipal committee that includes local citizens. A Long-term plan contributes to avoiding detrimental and unnecessary developments.

8) A Non-duplicable evaluation procedure

The relationship between NEPA and MEPA is ambiguous. The two projects in the case studies were beyond the threshold of the NEPA procedure; however, the NEPA process was not used in order to eliminate a duplicate environmental evaluation because the Federal agencies attended the MEPA process, and the MCZM process, and they reviewed the projects during these processes. Although the non-duplicable evaluation procedure should be achieved, the reason why the NEPA process was not required was not clarified by the federal agencies. The clearer regulations showing the relationship between NEPA and MEPA should be authorized.



Map Source: Certificate of the Secretary of Environmental Affairs on the Environmental Notification Form for Gloucester State Fish Pier, 1995

Figure 5-1. Location of the Case Studies

6. The Identification of the Adoptability of NEPA/MEPA to Japan

The principles of MEPA/NEPA could contribute to the creation of a successful Japanese environmental evaluation framework, although these regulations should be modified and strengthened before installation in order to fix their weaknesses and to meet the demands of Japan's fishing port administration.

The goal of this section is to explore the adoptability of a NEPA/MEPA-like regulation to Japan's environmental framework. In order to achieve this goal, this section: 1) clarifies the necessity of NEPA/MEPA for a successful Japanese evaluation framework, 2) identifies the adoptability of NEPA/MEPA to Japan's framework, and 3) proposes how to adopt the NEPA/MEPA process to Japan's environmental framework.

6.1. The Necessity for the Adoption of NEPA/MEPA to Japan

In terms of an environmental evaluation framework, in comparison with Massachusetts's control, NEPA at the Federal level and MEPA at the state level are set above all developments and environmental laws; they environmentally evaluate all Federal developments in Massachusetts and contribute to creating conditions needed for successful environmental control. NEPA/MEPA requires related agencies to achieve eight goals: 1) agency cooperation, 2) information disclosure, 3) citizen participation 4) an evaluation process built into a planning process 5) monitoring after agency decisions, 6) a wide scope impact estimation, 7) effective categorical exclusion, and 8) a non-duplicable evaluation procedure. On the other hand, Japan has no authorized environmental evaluation framework; hence, it causes the following serious problems that hinder sustainable

development: 1) no supervisors, 2) no cooperation between government agencies, 3) an environmental evaluation framework independent from a planning process. 4) the exclusion of the public, 5) no penalties for violations, and 6) no disclosure of related information. This comparison between Japan's current situation, and the goals of NEPA/MEPA, shows that an adoption of NEPA/MEPA to Japan's environmental evaluation framework would contribute to the achievement of a successful environmental evaluation framework. This is because the goals of NEPA/MEPA are what Japan's framework needs to enhance its weak points. Figure 6-1 shows the effects on the adoption of NEPA/MEPA by Japan's environmental evaluation framework.

6.2. The Adoptability of NEPA/MEPA to the Japanese Framework

The characteristics of the administration framework for fishing port developments in Massachusetts are: 1) the fishing port facilities are owned and developed privately and publicly, 2) fishing port developments are controlled by the cooperation of agencies and backed up by their standards of permitting, and 3) there exists no detailed improvement plan for each port. On the other hand, the characteristics of the administration framework for fishing port developments in Japan are: 1) the fishing port facilities are owned and developed publicly, 2) fishing port developments are controlled by the fishing port administrators and MAFF, and 3) there exists a detailed improvement plan for each port, authorized by MAFF.

If NEPA/MEPA is adopted to Japan's current environmental evaluation control framework, successful environmental control can be created; furthermore, this control will work better than the Massachusetts control for three reasons: 1) Japan has already created a strong control system of fishing port development, except for the area of environmental control, so that fishing ports have

been ordinarily improved by only the public sector with advanced planning techniques under FPL. Other development organizations are in the same situation; 2) Japan has already invented the advanced technology necessary for the evaluation of environmental impact and the mitigation of this impact; and 3) Japan has a large budget for the development of environmental preservation strategies.

The current development strategy has succeeded in protecting the coastal zone, as a common property, from disorderly development. As a result, it has contributed to protecting the environment in fishing ports and adjacent coastal areas to a certain extent. Hence, the best way to create successful environmental control is not to undertake a revolutionary change in the political framework, but to create a regulatory framework that will correct the current weak points that create environmental issues. In other words, it is necessary to reinforce the current control with a regulatory tool, which can make the current environmental control firm, objective and comprehensive, as well as enforceable and practicable. NEPA could be Japan's best tool for enforcing its rules, although certain weaknesses of NEPA need to be reinforced. Hence, the adoption of NEPA/MEPA to the Japan's fishing port development framework will create a firm framework to evaluate comprehensively and objectively the impact of development.

6.3. Proposal for Authorization of NEPA/MEPA-like Regulation

One of the proposals to create successful environmental control is to create NEPA of Japan (JEPA), which will supervise the environmental evaluation of all central organizations' activities. Furthermore, Japan's Committee of Environmental Quality (JCEQ) to enforce the JEPA should be authorized.

Under JEPA, 1) the Environmental Impact Assessment (EIA) for fishing port developments and environmental thresholds for a JEPA review will be regulated, 2) the proponents of fishing port developments will be required to review the projects with JEPA, 3) local agencies will be required to review the project with JEPA in order to issue the permission for developments, 4) JCEQ will issue the Certificate of Finding of No Significant Impact(FONSI) when it recognizes the project has no significant impact, 5) public participation, reviews of other departments in the local governments, and of other interested parties, and information disclosure, will be mandatory in the JEPA process.

1) The authorization of JEPA

JEPA can be compared to NEPA. JEPA will be authorized to supervise all agency activities that affect the environment, such as the permission for fishing port developments. Each agency will also be required to authorize regulations that clarify its responsibility under JEPA. In compliance with JEPA, in order to issue permission, the Minister of MAFF is required to: a) obtain the environmental comments from other concerned agencies through JCEQ, b) request the developers to consider these comments in the project, and c) get the certificate, in which JCEQ environmentally approves the project. The Minister of MAFF is required to give the environmental comments to the agency responsible for issuing permission, if JCEQ requests it.

2) The establishment of JCEQ

Japan's Committee of Environmental Quality (JCEQ), which pays attention only to the environmental impact of central government development actions, will be founded in the cabinet as the upper organization for all central agencies. JCEQ is required to create the guidelines for JCEQ's

actions to enforce the JEPA. In compliance with these guidelines, JCEQ will coordinate interested agencies to evaluate the project. Furthermore, JCEQ has the responsibility to issue the approval, if the project is recognized as an environmentally appropriate one. JCEQ also has the jurisdiction to be the final judge of the appropriateness of the project or to intervene in the evaluation of the project if an agency appeals another agency's actions, or if there is a conflict among agencies.

3) Amendments of Fishing Port Law

Some amendments to the fishing port law will be required so that JEPA affects the decision-making of MAFF and fishing port administrators as follows: 1) any MAFF permission for fishing port developments require the certificate of FONSI, and 2) any fishing port developments require the certificate of FONSI.

4) Reinforcement of the issues of NEPA/MEPA

Although the goals of NEPA/MEPA will contribute to enhancing the Japanese environmental evaluation framework, NEPA/MEPA in Massachusetts can not always achieve its goals because tools to enforce NEPA/MEPA have not been developed adequately in spite of its high-quality goals. Hence, the issues of enforcement that could hinder the achievement of the goals of NEPA/MEPA need to be addressed before NEPA/MEPA can be transplanted to Japan.

However, as an evaluation tool, the first issue with NEPA/MEPA is that NEPA/MEPA fails as an effective environmental evaluation tool for the accumulated impact of small projects. In Japan, MAFF has controlled all small projects based on an authorized comprehensive long-term plan; hence, the impact of small projects and their accumulated impact, can be detected in the process of evaluating the comprehensive plan. Furthermore, JCEQ can calculate the accumulated impact of

developments permitted, or planned, by all agencies, in the same way. The second issue of NEPA/MEPA is that public comments do not affect perfectly the plan. In order to solve this issue, their comments should be dealt with under the supervision of the public and JCEQ in Japan. The third issue is the formulation of the final plan and the permission for the project. These are finally entrusted to the developer and agency in charge respectively. The process for the reaction to these comments should also be disclosed with strict regulations under supervision of JCEQ in Japan. Furthermore, in Japan, the local community has power over the local government; however, their power is not sufficient to affect the decision of JCEQ, located in the central government. Hence, JCEQ can overcome the capricious opinion of local communities, while still recognizing the community's comments through the responsible agency. Finally, environmental technologies that prevent the impact of fishing port developments are not researched at government research firms in the U.S., but necessary technologies have been invented by public research firms in Japan.

5) The participation of all central agencies

All central agencies should participate in JEPA and all agencies' activities should be supervised by JEPA in order to achieve mutual monitoring among agencies.

6.4. The Effects of JEPA

Figure 6-2 shows the effects of the successful environmental evaluation, JEPA. JEPA requires governments and citizens to achieve eight goals: 1) agency cooperation, 2) information disclosure, 3) citizen participation, 4) an evaluation process built into a planning process, 5) Monitoring after agency decisions, 6) a wide scope impact estimation, and 7) an effective exemption from environmental impact assessment for projects with no-significant impact. Those requirements are

enforced by JCEQ, and penalties are imposed for the violations. As a result, proponents and local governments are always required to environmentally review projects under the supervision of JCEQ, citizens, and interested agencies. Furthermore, MAFF can not permit developments without JEPA process. On the other hand, comments by the cooperating agencies contributes to refining the projects without high costs. As a result, JEPA can effectively minimize the impacts and can maximize the effect of developments.

In addition, the citizens attention to environmental preservation has been increased and the environmental preservation requires specialized and localized evaluations because characteristics of environmental conditions, such as habitats, are largely different among coastal areas. These trends lead the cooperation of local municipalities and citizens to environmental preservation, because they well know and can always monitor the environmental condition within their own areas. Hence, a high degree of interaction among citizens can be expected, because their responsibility and cooperation in the decision-making will be increased under JEPA, which forces Japanese governments to achieve public participation and information disclosure. In addition, citizens can deepen their understanding of the project. Hence, their awareness of comprehensive environmental issues can be enhanced. As a result, citizens will begin to play an important role as one of the parties that initiate regional environmental preservation and monitor the damaging of nature through development. This extension of jurisdiction to a local community to preserve the environmental conditions in its own area contributes to enhancing its responsibilities for environmental preservations and developments. As a result, the burden of central government agencies for environmental preservation and coastal developments can be lightened.

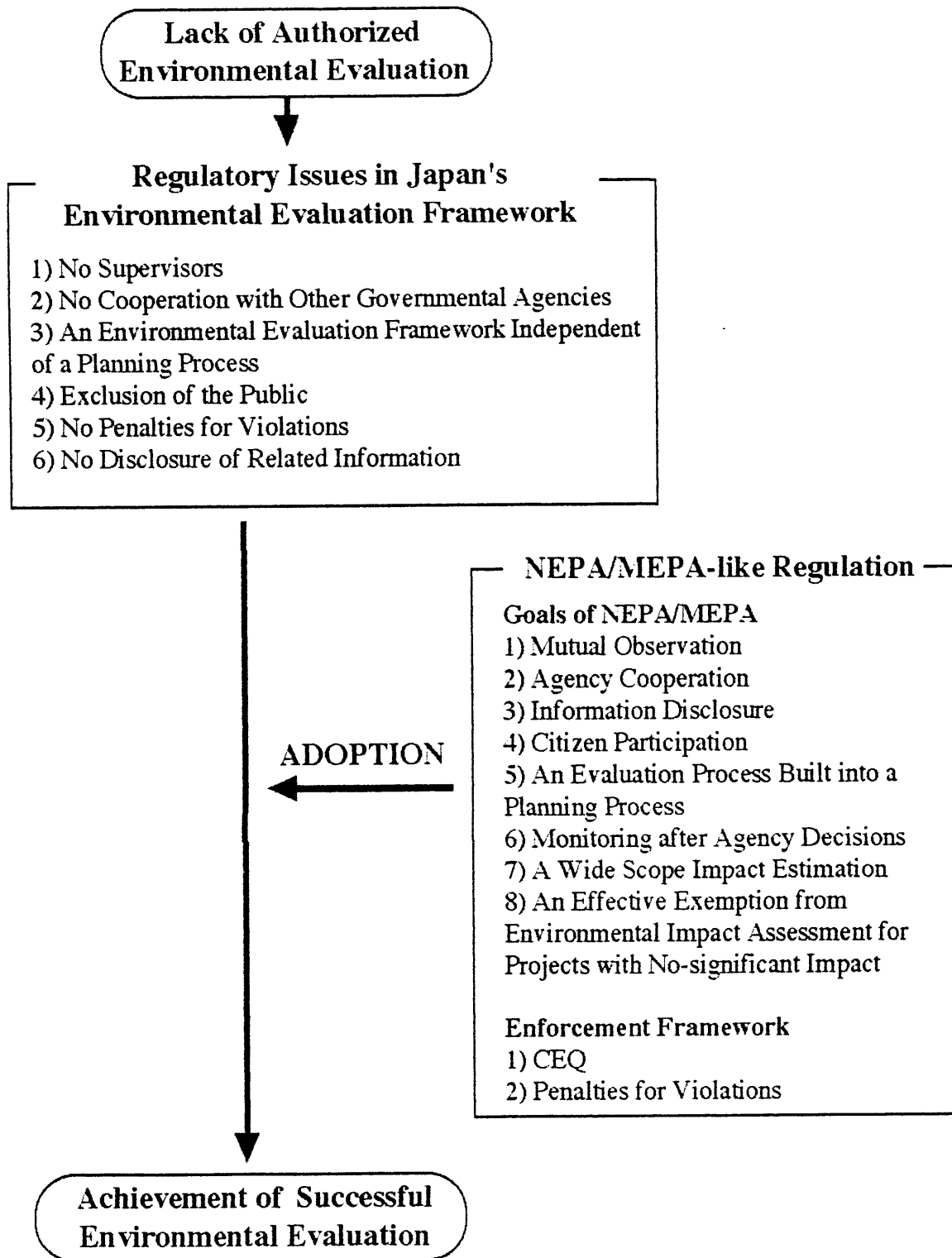


Figure 6-1. The Necessity of the Adoption of NEPA/MEPA to Japan's Environmental Evaluation Framework

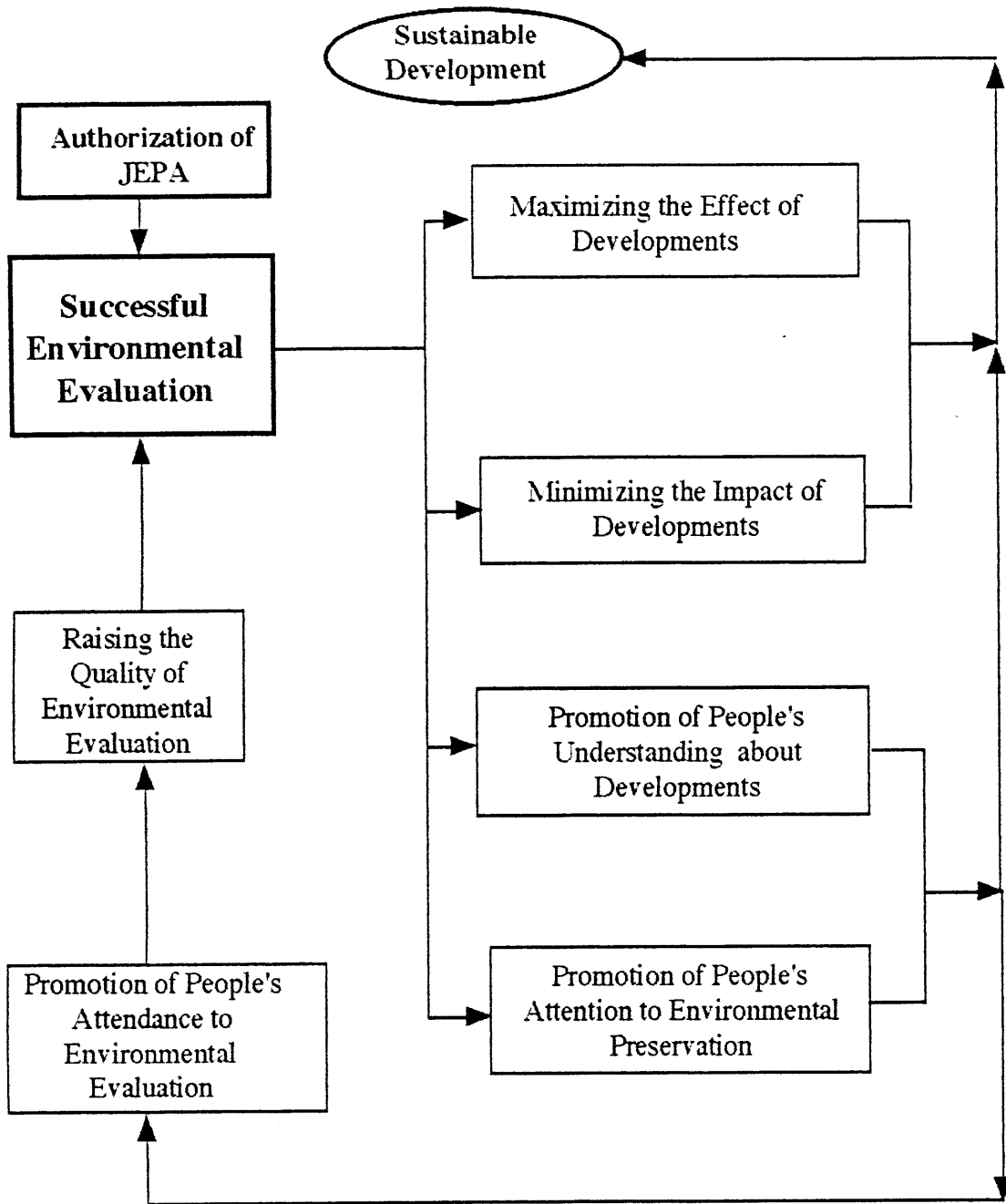


Figure 6-2. Achieving Sustainable Development with a Successful Environmental Evaluation

7. Conclusion

The principles of MEPA/NEPA could contribute to the creation of a successful Japanese environmental evaluation framework, although these regulations should be modified and strengthened before installation in order to fix their weaknesses, and to meet the demands of Japan's fishing port administration.

The new environmental control in Japan can be expected to create supplemental effects: 1) Citizens' awareness of comprehensive environmental issues can be enhanced. As a result, citizens will begin to play an important role as one of the parties that initiate regional environmental preservation and monitor the damaging of nature through development. This trend will also contribute to the promotion of NGO activities. In the U.S., NGO activities for environmental preservation have been accelerated since the 1970's authorization of NEPA/MEPA. Furthermore, their activities have supported the governments' environmental evaluation of the project, which has become harder to evaluate as citizens' attention to environmental impact has increased; 2) New business will be created to invent and provide the hardware and software to estimate more precisely the impact, disclose the information, and mitigate the impact; 3) The efficiency of budget use will be enhanced, because with this control system, unnecessary development is extremely restricted and each agency can share the technologies, information, and comments of all agencies and NGOs. As a result, these effects will enhance the new environmental control more and give impetus to the achievement of sustainable development.

The central government is preparing for the enactment of the Environmental Impact Assessment Law (a tentative name) in two years. Furthermore, related regulations under this statute and other

related laws will be authorized in order to achieve successful environmental evaluation in this century. This is because the Japanese central government needs to establish successful environmental control for developments, including fishing port developments. On the other hand, strong objections by development agencies and developers to JEPA can be forecasted. However, those opponents of JEPA will recognize JEPA as a very useful tools that can lighten their burdens, when they understand the effects of JEPA and the case of the U.S., which has already authorized NEPA/MEPA. This research will be very helpful for them to understand the effects of MEPA/NEPA. This research can also contribute to the formulation of a successful comprehensive environmental evaluation framework that supervises all developments, as well as fishing port developments.

Appendix-A

The Regulatory Framework for Fishing Port Developments

A) For Structure Construction not including dredging and fill on waterways and tidelands

In order to construct structures on waterways and tidelands, the project must follow some regulations.

1) Federal level

a) The River and Harbor Act of 1899 prohibits the altering or obstruction of navigable waters unless such activities are permitted by Army Corps.

2) State level

a) The Waterways Act gives the Massachusetts Department of Environmental Protection (DEP) the authority to issue waterways licenses, and dredging and filling permits for any dredging or dredged material disposal in Commonwealth tidelands.

b) The Massachusetts Environmental Policy Act (MEPA) requires project proponents to prepare an environmental impact report for significant projects involving state agencies.

c) The Massachusetts Coastal Zone Management (MCZM) program policies, based on the Federal Coastal Zone Management Act of 1972, gives Massachusetts, through the office of MCZM, the option of reviewing any Federal permit, licensing, or funding actions, or Federally-conducted activities in the coastal zone, to determine whether it is consistent with the state's coastal policies. Furthermore, in this program, the municipality can voluntarily apply to the MCZM office for the office to designate a large-scale harbor as a Designated Port Area (DPA) and to create a DPA master plan to promote port activities.

3) Local level

- a) Land Use Ordinance regulates the land use of coastal areas and the development of coastal areas.
- b) The Wetlands Protection Act authorizes local conservation commissions to review dredging, landfill, and construction activities, and to issue orders of conditions.

4) Other Regulations

Furthermore, the national marine Fisheries Service is responsible for managing and conserving living marine resources, including endangered species, within the U.S. territorial waters. Hence, it is also responsible for reviewing Army Corps permits and EPA designations to ensure that the potential impact of such actions on living marine resources is fully considered. FWS is also responsible for reviewing Army Corps permits and EPA designations to ensure that the potential impact of such actions on fish and wildlife is fully considered.

B) For Structure construction including dredging or landfilling

In the case of a project which includes dredging or landfill, the project must follow these additional regulations, besides the regulations necessary in the case of A:

1) Federal level

- a) The Clean Water Act (CWA) requires fill activities in territorial waters to receive permits from Army Corps. Furthermore, it requires projects discharging any dredged or filled materials into estuary waters to receive permits from Army Corps, except in certain circumstances.
- b) The Marine Protection, Research, and Sanctuaries Act (MPRSA) requires any disposal activities

in ocean waters to receive permits from the Army Corps. Furthermore, it sets the criteria that the EPA and Army Corps use to designate dredged material disposal sites in ocean waters.

2) State level

- a) The Massachusetts Solid Waste Management Act (MSWMA) requires projects employing upland disposal of nonhazardous dredged material in sanitary landfills to receive permits from the Division of Solid Waste Management within DEP.
- b) The Massachusetts Hazardous Waste Management Act (MHWMA) requires projects employing upland disposal of hazardous dredged material in hazardous waste landfills to receive permits from the Division of Hazardous Waste within DEP.
- c) The Water Quality Certificate requires applicants for Federal permits or for licenses to conduct activities that might result in the discharge of pollutants into state wetlands or waterways to obtain a water quality certificate, issued by DEP under authority of Section 401 of CWA.

Appendix-B

Organizational Framework for Fishing Port Developments

1) Federal level

a) The United States Army Corps of Engineers (Army Corps)

As for its roles in fishing port developments, Army Corps manages and executes the Civil Works Programs, which include research, development, planning, design, construction, operation and maintenance, and real estate activities related to rivers, harbors, and waterways (Office of the Federal Register). Furthermore, it administrates Section 10 of the Rivers and Harbor Act to regulate structures and work in navigable waters; Section 404 of the Clean Water Act to regulate the discharge of dredged or fill material into wetland and territorial waters; and Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 to regulate the transportation of dredged material for the purpose of disposal in the ocean out to the 200 miles EEZ, for the protection and preservation of navigable waters and related resources such as wetlands (New England Division). It also has the responsibility to coordinate the NEPA procedure, and issue the permission or projects. Furthermore, it is responsible for finding out whether projects comply with the Massachusetts Coastal Zone Management Program (301 C.M.R. 20.03) under the Coastal Zone Management Act of 1972.

b) The Environmental Preservation Agency (EPA)

As for its roles in fishing port developments, EPA reviews the impact of projects on water quality, and issues water-related permission.

EPA is responsible for developing guidelines to restrict the discharge of dredged or fill material where less environmentally damaging, practicable alternatives exist under Section 404 of the Clean

Water Act. These guidelines are used by Army Corps to evaluate the project's dredging and landfilling. EPA also has jurisdiction to designate dredged material sites in ocean waters pursuant to Section 102 of the Marine Protection, Research, and Sanctuaries Act of 1972. It also has the responsibility of coordinating the NEPA process of issuing the permission for projects. EPA is also responsible for obtaining draft and final environmental impact statements filed by proponents, and publishing the statements pursuant to 40 CFR, Section 1506 of the NEPA regulation.

c) The National Marine Fisheries Services (NMFS)

As for its roles in fishing port developments, the National Marine Fisheries Services is responsible for reviewing projects using a NEPA process in order to preserve the living resources in an ocean.

d) The U.S. Fish and Wildlife Service (FWS)

FWS is responsible for reviewing projects using a NEPA process in order to preserve fish and wildlife in wetlands.

e) The Council of Environmental Quality (CEQ)

CEQ is located in the Executive office of the President. As one of its important roles, CEQ has jurisdiction to oversee Federal agencies' implementation of NEPA and intervene in disputes about NEPA procedures among agencies, pursuant to 40 CFR Section 1506 (Regulation of NEPA).

2) State level

a) The Massachusetts Department of Environmental Protection (DEP)

DEP has jurisdiction to issue the waterways license for structures, filling, and dredging, and to permit change in use and structural alternation in tideland and filled tideland under the Waterways

Act. It also has jurisdiction to develop the Massachusetts Wetland Act and supervise the conservation commissions of municipalities pursuant to this act. It is also responsible for the review of dredging and landfill activities, and for the appropriateness of these activities in terms of the preservation of water quality under Section 401 of the Clean Water Act (Federal Law) and 314 C.M.R. 9.00. Furthermore, DEP has the responsibility of regulating the disposal of dredged material for landfill under the Massachusetts Solid Waste Management Act (111 M.G.L.A. 150 A, 310 C.M.R. 16.00 and 310 CMR 19.00) and of regulating the disposal of hazardous dredged materials for landfill under the Massachusetts Hazardous Waste Management Act (M.G.L.A. 21c, 310 C.M.R. 30.00)

b) The Massachusetts Coastal Zone Management Office (MCZM Office) in the Executive Office of Environmental Affairs (EOEA)

The MCZM office is responsible for the comprehensive administration of the state's coastal zones, including Federal activities. Although EPA and Army Corps are required getting the consistency with the MCZM Program from EOEA, the MCZM office actually reviews projects. Furthermore, it conducts a variety of reviews and local assistance relating to harbor management and development. It also has the jurisdiction to designate DPAs pursuant to 301 CMR 25.00 and to approve and review Municipal Harbor Plans pursuant to 301 CMR 23.0, and to designate Areas of Critical Environmental Concern pursuant to 301 CMR 12.00

c) Massachusetts Environmental Policy Act Unit (MEPA Unit)

MEPA unit has jurisdiction of conducting MEPA under the Secretary of EOEA. Any fishing port development is subject to MEPA and is required to get the permission of the Secretary of EOEA.

d) **The Massachusetts Development of Management (DEM)**

DEM is responsible for reviewing projects, including disposal and fill activities, in or near designated ocean sanctuaries in order to preserve the sanctuaries pursuant to the Massachusetts Ocean Sanctuary Act (132 A MGLA 13-16, 18, 302 CMR 5.00) and MEPA. Furthermore, it owns fish piers at some harbors.

e) **The Massachusetts Land Bank**

The Land Bank has a leasing agreement with DEM to manage the Gloucester State Fish Pier (Terkla).

f) **The Massachusetts Division of Marine Fisheries (DMF)**

DMF is responsible for reviewing projects in order to preserve marine living resources pursuant to MEPA.

3) Local level

a) **Zoning Board/City Council**

The Zoning Board administrates the municipal zoning code in order to achieve effective land use. The land use and developments on the waterfront are affected by their decisions (Terkla and Wiggin). The City Council has the authority to promulgate and amend the Zoning Ordinances. It also reviews large-scale commercial developments and special permits (ICON Architecture Inc., "Gloucester Scope for Port Development Plan:Phase1"). Besides this, it may comment on the project pursuant to NEPA, MEPA, and the Waterway Act. It is also responsible for reviewing the Waterway Act license in compliance with 310 CMR 9.34.

b) The Conservation Commission

This commission is appointed pursuant to the Conservation Commission Act (M.G.L. c.40. section 8C) in order to review projects, including landfills or dredging in the wetlands or their surrounding areas under the Wetlands Protection Act (Chapter 131, section 40). The Commission's concern is to protect public health and safety from flooding, to minimize the impact of coastal storms, maintain the natural flow pattern of water courses, and protect the wetland areas. Furthermore, it may comment on the project pursuant to NEPA, MEPA, and the Waterways Act.

c) Planning Board

This board is responsible for reviewing the permission of licenses to develop the tidelands in compliance with 310 CMR 9.07 and 310 CMR 9.13 based on the Waterways Act.

d) Water Ways Board/Harbor Master

The Waterways Board is responsible for overall management of the waterways including 1) enforcing the Waterways Act, 2) as necessary, revising the City of Gloucester Harbor Plan, 3) promulgating rules, 4) establishing fees, 5) overseeing the use of mooring areas, public launch ramps, landings, and marinas, 6) overseeing the policies and operation of the Harbor Master's office (Terkla and Wiggin). The Harbor Master is responsible for: enforcing state and municipal laws, ordinances, rules, and regulations related to the harbor including: 1) patrolling the waterways; mooring assignments, 2) operating and maintaining public launch ramps, landing, marinas and other public facilities, 3) repositioning vessels as required, 4) providing technical support to the Board. The Harbor Master is also responsible for reviewing Waterways Act license in compliance with 310 CMR 9.07.

e) The Shellfish Commission

This Commission is responsible for managing the shellfish resources in Gloucester waters. Shellfish beds within the Inner Harbor have been closed for approximately 40 to 50 years. Shellfish beds in the Outer Harbor, from Ten Pound Island to the breakwater, are currently closed but hopefully will be reopened in about five years, when the effects of the sewer at Rocky Neck and septic system management in east Gloucester result in substantially improved water quality.

4) Other parties

Other involved municipal parties are: a) the Massachusetts Historical Commission, to review projects affecting historic resources listed on the National Register of Historic Places, b) the Historic District Commission, to review projects affecting architectural characteristics in Gloucester's Historic District, c) the Gloucester Historic Commission, to review projects affecting Gloucester's historic resources listed on the National Register, d) the Gloucester Tourist Commission, to review projects affecting Gloucester's tourism, and e) the Gloucester Redevelopment Authority, to administrate the redevelopment of the Gloucester Harbor.

Besides these, there exist a) the Cape Ann Chamber of Commerce, which monitors developments, b) the Fishermen's Cooperative, to promote maritime industries, c) the Fishermen's Wives Association, to advocate all issues pertaining to fishing and Gloucester's role as a major port, d) the Rocky Neck Neighborhood Association, to speak on behalf of the interests of the Rocky Neck neighborhood; these interests need to be taken into consideration by the Harbor management, and e) the Massachusetts Audubon Society, to advocate the protection of environmental resources in and around Gloucester Harbor (Terkla and Wiggin).

Works Cited

Berzok, Lisa A. "The Role of Impact Assessment in Environmental Decision Making in New England: A Ten-year Retrospective." Environmental Impact Assessment Review. New York: Elsevier Science Publishing Co., Inc., June 1986.

Division of Waterways, Massachusetts Department of Environmental Management. Final Environmental Impact Report of EOE #5781: State Fish Pier. Boston, Massachusetts: MEPA Unit File, 1990.

Gloucester State Pier. Pamphlet of The Gloucester State Pier. Gloucester, Massachusetts: Gloucester State Pier, 1996.

Grosslein, Marrin D and Thomas R. Azarvoitz. Marine Ecosystem Analysis Program. Albany, New York: Sea Grant Institution, 1982.

ICON Architecture Inc.. Gloucester Scope for Port Development Plan: Phase 1 Reconnaissance Technical Memorandum: Draft Findings. Boston, Massachusetts: ICON Architecture Inc., 1996.

- - -. Gloucester Scope for Port Development Plan: Phase 2 Port Planning Issues Draft Technical Memorandum. Boston, Massachusetts: ICON Architecture Inc., 1997.

- - -. Gloucester Harbor Survey. Boston, Massachusetts: ICON Architecture Inc., 1997.

Japan, Department of Fishing Port, Fisheries Agency. Fishing Port Guidebook. Tokyo, Japan:
Japan, Department of Fishing Port, Fisheries Agency, 1994.

Japan, Division of Planning, Department of Fishing Port, Fisheries Agency. Guidebook for The
Developments of Pleasure Boat Facilities in Fishing Ports. Tokyo, Japan: Japan, Department
of Fishing Port, Fisheries Agency, 1995.

Japan, Environmental Protection Agency. The Second Environmental Census. Tokyo, Japan :
Japan, Environmental protection Agency, 1983.

Japan, Fisheries Agency. The Statistics of Fishing Port of Japan. Tokyo, Japan: Japan, Fisheries
Agency, 1995.

Japan, Ministry of Agriculture, Forestry, and Fisheries. Fisheries Annual Report. Tokyo. Japan:
Ministry of Agriculture, Forestry, and Fisheries, 1994.

JICA. Course for Management and Administration of Fishing Port. Japan: Japan International
Cooperation Agency, 1989.

Management Division, Habitat Conservation Branch, National Marine Fisheries Service. Comment
of The Draft Environmental Impact Report of EOEA #5781: State Fish Pier. Gloucester,
Massachusetts: Management Division, Habitat Conservation Branch. National Marine

Fisheries Service, 1987.

MEPA Unit, Executive Office of Environmental Affairs. Public Comment during the Review Period of EOE #8101: Studio deck and lounge, Inc. 49-51 Rocky Neck Ave, Gloucester. Boston, Massachusetts: MEPA Unit File, 1990.

Office of the Federal Register, National Archives and Records Administration. The United States Government Manual, 1995/1996. Washington DC: Office of the Federal Register, National Archives and Records Administration, 1995.

Pendall, Rolf. "Environmental Impact Assessment: the State of the States, and Some Issues for Local Government." Environmental Planning Quarterly Vol 13 (1996).

Strategic Assessment Branch, Ocean Assessment Division, Office of Oceanography and Marine Serving, National Ocean service. Maps Showing Spawning Areas of Important North Fish and Invertebrate Species. Rockville, Maryland: Strategic Assessment Branch, Ocean Assessment Division, Office of Oceanography and Marine Serving, National Ocean Service. NOAA, 1983.

Terkla, David G and Jack Wiggin. Gloucester Water Front Study: Land Use and Economics. Boston, Massachusetts: Urban Harbors Institute, University of Massachusetts, 1994.