

POLICY DIRECTIONS FOR A SUSTAINABLE FISHERIES DEVELOPMENT IN KOREA

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I. Introduction

Korea is one of the major world fishing countries in production and trade; she was the seventh largest producer as well as the fourth largest exporter in 1987.

Korean fisheries sector has had and continues to have a dominating effect on the national supply of animal protein, even though livestock meat and certain non-meat foods have, in recent years, claimed an increasing share in consumer diets, allowing 5 percent waste in the course of distribution and marketing, about 2.5 million tons of supply would be sufficient to maintain the current consumption level for the Korean population of 42 million. In fact, current production is more than enough to meet the total domestic demand for fishery products and substantial portion has sought outside outlets for foreign disposal.

However, the significant declining of the entire adjacent fishery resources, dual structure of fishery economy, and coastal-land use conflictions are expected to put much more constraint on the sustainable development of Korean fisheries than ever before. Furthermore, the introduction of 200-EEZ by most coastal states and the current international forces arising from fishery resource management and trade liberalization issues will have profound impacts on Korean fishery economy.

In this regard, the main purpose of the paper is to address fisheries production, trade, and regulation issues, to identify some important factors affecting the current and future Korean fisheries, and to suggest the national fishery policy areas necessary

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TABLE 1 Fisheries Production
thousand M/T

	1971	1976	1981	1986	1989
Total	1,074	2,407	2,812	3,660	3,319
Adjacent	767	1,257	1,529	1,726	1,510
Sea-Culture	147	411	701	947	848
Inland	1	15	40	57	31
Distant	159	724	542	930	930

Source : Korea Fishery Administration, *1990 Annual Report of Korean Fisheries*.

for a sustainable fishery development in the future.

II. Korean Fisheries Production

1. Adjacent Fisheries and Sea Culture

In spite of Korean fishermen's long association with fishing activities, commercial fisheries have existed only for the last three decades. During the period, there has been a remarkable change in vessel modernization so that fleet modernization increased to 79.2 percent in 1989 from 20.6 percent in 1970. Thus, fishing effort has been drastically intensified on the entire adjacent water.

In 1989 there were 118.6 thousand fishery management units of which 88.4 percent could be categorized as small scale units. The small scale fishing households operated engine-free boats of less than 10 tons. About 52.9 thousand units engaged in shallow-sea culture.

The fishery production including fish, shellfish, and sea weed has increased sixfold over the past 30 years. Most of the 1989 catch, over 73 percent, was derived from the adjacent fisheries and shallow-sea culture. The remainder was made up by the distant water fisheries.

The inshore fisheries have played an important role in Korean fisheries in two ways: one is to serve as a major income source for the small-scale and subsistence-level fishing households; another to supply high quality species fish for

TABLE 2

Sea-Culture Production

	thousnad M/T			
	Total	Shellfish	Seaweed	Others
1971	147	98	49	—
1976	411	219	192	—
1981	701	318	383	—
1986	947	399	524	24
1989	848	353	473	32

Source : Ministry of Agriculture, Forest and Fisheries (MAFF), *Major Statistics of Agriculture, Forest and Fisheries*, 1990.

national consumption, which is obtained from the exploitation of the coastal fishery resources.

In addition, coastal water has been intensively utilized for the sea aquaculture. The Korean shallow-sea culture began to develop since early in 1960's. At the beginning of its development, seaweeds (i.e., brownseaweed and laver) were the most important culture crops. In the early of 1970's shellfish culture technologies were introduced into the Korean cultrure system. Oyster and arkshell were added to the major culture items. Fish culture is just on the germinating stage. As of the end of 1989, Korean sea-culture production accounts for more than 28 percent of the total catch.

The major offshore fisheries comprise otter trawl, angling, long line, and offshore trap. They operate powered-large-scale vessels which require large capital investments and accounts for 22.5 percent of the Korean exploitation. The main species are highly migratory and are considered transboundary international resources that are commonly shared by Japan, China and Korea.

However, since 1974 the increasing rate of the entire offshore fishery production has been much more stagnated over time than that of the coastal fisheries.

2. Distant Water Fisheries

Since the middle of 1970's Korean overseas fisheries have shown a rapid expansion in prodution and fishing fleets and

TABLE 3 Distant Water Fishing Fleets
(Dec. 31, 1989)

	Total	Pacific	Atlantic	Indian
Total	770	445	213	112
Tuna Longliner				
(home base)	195	102	28	65
(foreign base)	77	44	11	22
Tuna purse seine	30	30	—	—
Tuna gill net	4	—	—	4
Squid angling	70	17	53	—
Squid gill net	157	157	—	—
Trawl				
(home base)	49	49	—	—
(foreign base)	109	39	50	20
Shrimp Trawl	72	—	71	1
Others	7	7	—	—

Source : MAFF, *Major Statistics of Agriculture, Forest, and Fisheries*, 1990.

played an increasingly important role in Korean fishery economy. It is due to several reasons including (i) the fishery promotion and export drive policies, (ii) the demonstrated viabilities of distant water operations, (iii) the existence of unexploited resources on some high seas, and (iv) buoyant domestic and international demand for fish and fish products.

The distant water catch, which was merely 90 thousand M/T in 1970, showed a remarkable increase to 930 thousand M/T in 1989. During the period, fleets were expanded from 298(77 thousand G/T) to 761 (407 thousand G/T). Among the major overseas fisheries are tuna longliner in home port base, squid gill net, and trawl in foreign base.

However, after the 1982 third convention on the law of the sea, the international law of marine fisheries has substantially modified the freedom of fishing on the high sea by subjecting the general principle to a wide variety of specific conditions and restrictions. In recent, the world-wide fishing jurisdiction extended out to 200 mile exclusive economic zone (EEZ) are getting more international forces than ever before. Such international forces dictating either harvest of fish for domestic consumption or the acquisition of foreign exchange through the

export of high value fishery products are prime movers in determining jurisdictional claims on extended fishery resources.

In particular, the 200-mile EEZ declaration of 1977 by the U.S. and the U.S.S.R. severely limited Korean distant water fishing area on the North Pacific Ocean. Since then the Korean north pacific fisheries have gradually moved to the Bering high sea, which at present is the most important distant fishing area.

III. Foreign Trade of Fishery Products

The Korean fisheries development has been much influenced by Korea's outward-looking development policy emphasizing growth of exports. The essence of outward-looking strategy was to make use of the nation's comparative advantage in production of labour-intensive commercial goods.

However, unlike agricultural and forestry sectors, Korean fishery sector has been able to make better progress as an export-oriented industry with its relatively favorable natural resource endowment and abundant labour force.

During the period from the middle of 1970's to the middle

TABLE 4 Exports of Fishery Products
(thousand dollars)

	1976	1981	1986	1989
Total	576,408	931,686	1,282,338	1,690,375
Japan	73,293	655,741	990,084	1,295,726
U.S.A.	73,293	113,816	177,549	185,004
Spain	—	4,966	23,340	34,574
Taiwan	14,303	25,690	5,897	18,473
Saudi Arania	—	6,413	2,049	665
Singapore	2,765	6,221	4,494	6,523
Australia	—	6,115	7,592	14,813
Hong Kong	6,504	5,838	5,324	5,553
Others	124,102	65,886	66,009	129,044

Source : Korea Fisheries Administration, *Export and Import Statistics of Fishery Products*, 1989.

TABLE 5 Imports of Fishery Products

	thousand dollars			
	1976	1981	1986	1989
Total	22,425	58,537	111,764	321,610
U.S.A.	7,275	31,307	42,508	115,128
Japan	3,038	8,948	11,506	40,208
Canada	5,215	2,875	3,881	8,790
Chile	—	2,247	2,314	3,652
New Zealand	—	2,064	1,840	10,103
Argentina	—	209	2,796	3,897
Taiwan	—	605	5,716	11,021
Norway	39	—	2,314	4,370
Others	6,858	10,282	38,889	124,441

Source : Korea Fisheries Administration, *Export and Import Statistics of Fishery Products*, 1989.

of 1980's, Korean government sought to attract large foreign capital. Part of the foreign borrowing was allocated to fisheries sector for modernizing fishing vessels and equipments and for developing distant water fisheries. As a result, the Korean fisheries production in 1989 exceeded domestic consumption by 793,000 M/T.

In 1989 Korean fishery products were exported to more than 80 countries. The export volume was 473,162 M/T valued at 1,690 million dollars. About 88 percent of the export quantity was concentrated on the pacific basin countries including Japan, the United States, Taiwan, Hong Kong, Singapore, and Australia.

On the other hand, Korea imported 291,640 M/T (321 million dollars) from 33 countries. Of the imports, 43 percent came from the pacific coastal countries : the United States, Japan, Canada, Chile, New Zealand, Argentina, and Taiwan. Approaching the recent years, Korean imports of fishery products have increased at a rapid increasing rate. This upward import trend is expected to continue due to trade liberalization policies on fishery products.

There is no doubt that Korea has put restrictive policies on the importation of fishery products. As of 1990, the import

liberalization ratio of entire commodities amounts to 96.3 percent, while that of fishery products is 57.5 percent which is much lower than those of agricultural and livestock products. The reasons for such import restrictions have been due mainly to small-scale fisheries problems: subsistence level of income, relatively low living standard, and limited off-fishery job opportunities.

It has generally been recognized that small-scale fisheries sector in many countries has serious socio-economic problems, which are tending to become more pressing under the rapidly changing social, technological, trading environments. In Korea, the small-scale fishing sector is still an important source of animal protein supply and provides employment opportunities for large labour force in the fishing communities. In spite of much effort to improve the state of small-scale fisheries, many a fisherman and their families continue to live at the margin of subsistence and human dignity. This reality may not allow Korea to soon liberalize trade for some fish and fish products.

IV. Fisheries Management and Institutional Arrangements

Several important targets for Korean fishery management policies can be spelt out as follows: (i) a commitment to rational management of scarce fishery resources; (ii) the protection of the income and employment of fishing households; and (iii) restructuring of national fisheries over the future years to bring capacity in line with the available resources.

Fishery regulators have found ways to regulate virtually every aspect of the fishing operation for achieving these policy goals. Regulations affecting vessel type, dimensions, horsepower, and tonnage are common, as are regulations affecting the type, size, and construction of fishing gears. Fishermen also face regulations pertaining to the time and place of fishing.

Because of the central importance of the open-access, common property problem in fisheries, a primary consideration is given to exclusiveness of fishing rights. Most of the conventional methods of regulations are: restrictions on the type of gear; limitations on the size of fish; the closure of certain

areas to specific fisheries; certain season closure; and restrictions on the total number of vessels.

Korean fisheries administration has managed most major fisheries under a rigid institutional management regime over the five decades. The current legal system consists of the basic fisheries law, related rules and ordinances. From the legal point of view, fisheries are divided into three categories: fishing right fisheries, license fisheries, and other fisheries just requiring report. Coastal fisheries such as sea aquaculture are under the fishing right arrangement. The adjacent and distant-water fisheries are managed by the license fisheries system. Others are conventional free-fisheries comprising of primitive small-scale fisheries.

The fishing right and license fisheries system are the fundamental institutional arrangements of the fisheries management in Korea. Entry into the commercial activities is controlled by both systems. Virtually all methods of fisheries management mentioned above have been adopted in Korea. In 1965 the joint control zone between Korea and Japan was established and some offshore fisheries utilize the joint fishing ground.

Concerning the institutional arrangements, it appears that they themselves do not have serious problems for rational fisheries management. However, from the operational point of fisheries management, a number of problems are present.

In operating the fishing right and license fisheries systems, an important problem is related with the coordination of a variety of fishing activities to maintain the order of fishing operations. Another is associated with less attention to the conservation of fishery resources (Park 1979).

Such failure of the legal arrangements led to: decline of coastal and offshore fisheries resources (in particular, drastic decline of the stocks of high-value species); prevailing illegal fishing activities; the existence of overcapacities in some fisheries; the environmental degradation of fishing grounds, primarily caused by toxic pollutants and tide-land reclamation; and international overexploitation of the high sea surrounded by Japan, China and Korea.

V. Some Changes Affecting Present and Future Korean Fisheries

1. The Persistent Tendency toward Depletion

The significant characteristic of adjacent fisheries is a persistent tendency toward depletion of fish stocks accompanied by a high level of capital intensity, comparatively low catches and poor economic returns. Before 1980's the trend to depletion was slow. As fishing grounds close to ports were depleted and catch declined, fishermen continued to move further afield working new areas. Such expansion of fishing areas could not have continued indefinitely. Eventually, the overall adjacent catch per unit effort began to fall since the middle of 1970's.

FIGURE 1 CPUE of Major Adjacent Water Fisheries
Catch (M/T) per vessel (G/T)

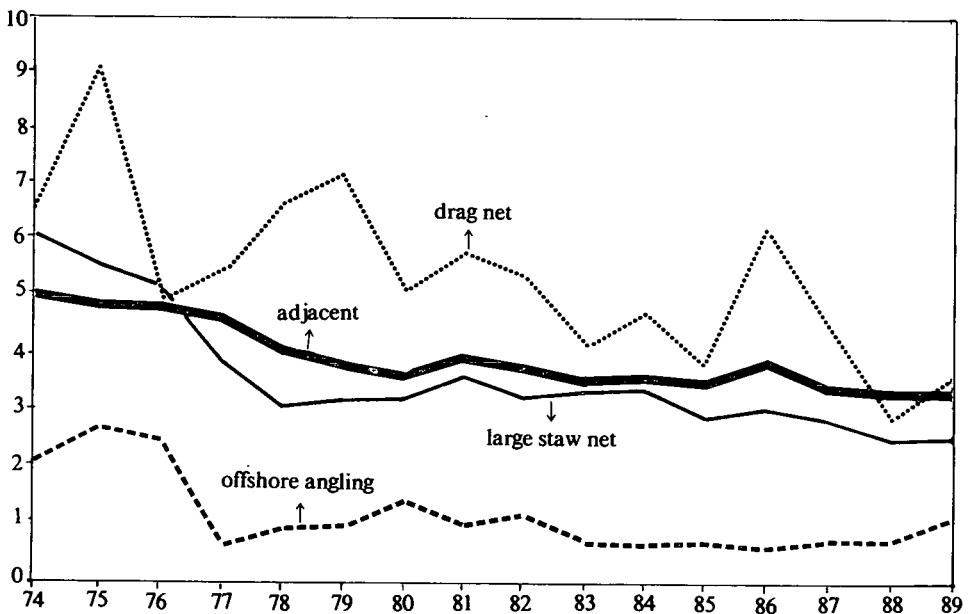


TABLE 6 Catch Composition of Major Commercial Size Fish of Adjacent Water Fisheries (%)

year	mackerel	sardine	file fish	yellow corvenia	hair tail
1971	77.3	—	—	20.4	47.8
1975	91.9	100.0	—	10.1	19.3
1981	65.0	81.8	48.9	14.9	22.8
1986	28.0	86.1	12.3	—	—

Source : Kang, Young-Ju, *Directions and Policy Issues for Ocean and Fishing Community Development : Rational Management of Korean Adjacent Fishery Resources*, 1987, Korea Rural Economic Institute.

In the depletion process a reduction in the fish population was followed by a smaller size of individual fish caught. With the increased fishing pressure the population of larger fish is depleted and the proportion of smaller fish increased over time.

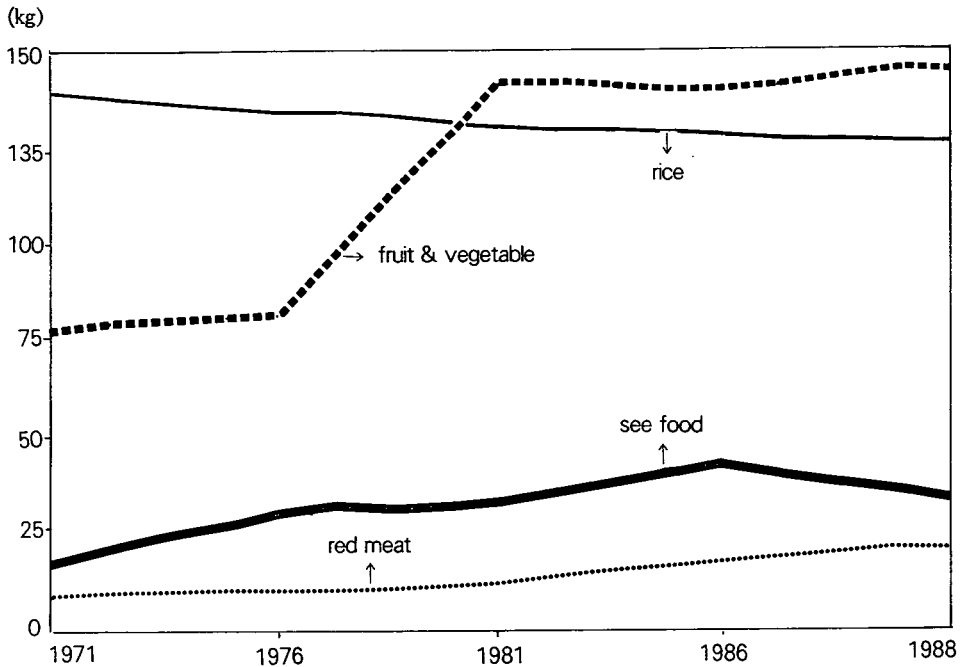
Prevailing stock depletion in Korean adjacent water implies that a new fishery policy should be designed to control fishing effort and that it should be effectively implemented before fishery resources reach a critical point (e.g. bio-economic threshold).

2. Changes in Domestic Food Consumption

There is a shift from cereals to animal products in domestic food consumption. The major components of cereals are rice, wheat, and soybeans while the key components of animal products are fishery and livestock products. The per capita annual consumption of rice (which is the main staple of Korean people) reached a high of 136 kilograms in 1979. Since then the total kilogram per capita declined approximately 6.7 percent. The per capita consumption of all cereals began to fall from 1987.

However, the per capita consumption of fishery and livestock products, fruits, and vegetables are on the increasing trend. In particular, fishery products are among the major animal protein foods consumed domestically. During the last 15 years (1974-1988), the per capita consumption of sea food products increased by 20.9 percent. For the current Korean

FIGURE 2 Food Consumption Patterns, 1971-88



pulation of 42 million, the increase in per capita fishery products translates into 243,600 M/T of marine products.

Regarding some factors affecting food consumption, income and relative prices are crucial economic variables influencing food demand and consumption. Park and Ock (1987) estimated the price and income elasticities for fishery products which are 0.59 and 0.65, respectively. Historically, Korean fisheries expansion also has relied upon a growing population to increase the demand for fishery products. Furthermore, there are changes in demographic characteristics of the population, such as an increasing proportion of older people and regionally changing distribution.

In recent years the Korean population has become more health-conscious. This has affected the demand for sea foods. Health considerations include nutrition, weight, and consumption of substances associated with blockages of the blood circulatory system, heart conditions, and strokes (Park et al. 1988). This health consciousness will persist in the future.

3. Macroism and Internationalism

The Korean fisheries sector has become an integrated part of Korean economy, which is part of the world economy. Fisheries are directly affected by changes in macroeconomic policies which affect factors such as coastal land use and exchange rates. The impacts of changes in some macroeconomic policies dwarf the effects of fishery policies. Merely two decades ago this would never have been considered possible. Most macroeconomic policies are exogenous forces which alter the economic environment which fisheries operate. They also introduce additional uncertainty into the fisheries sector. But fisheries have little influence on macroeconomic policies.

From the international fisheries perspectives, interdependence among the coastal countries is getting more important. The Korean overseas fisheries are expected to make a greater contribution to the entire Korean fisheries development in the future. This would require far more cooperation between Korea and other coastal states for a better management of international fishery resources and less trade friction in fishery products.

Given the current trend of fishery resource nationalism, it would appear that extended jurisdiction would provide a valuable windfall to the fortunate countries gaining more exclusive fishing rights, and penalize those countries now operating in the 200-mile zones of others (O'Rourke 1977).

Being part of international fisheries will make the Korean fisheries sector susceptible to instability and uncertainty. Foreign fishery policies will be quite different from the past. Volatility will also continue; in fact, it may become more intense if the Korean distant-water fisheries production and trade are expanded.

4. Technological Change

Presently most fishery experts would agree that Korean fishermen and fishery businesses will have a wide range of new biotechnologies and informational technologies available at least until the turn of the century. Emerging and potential new

technologies could completely revolutionize fish and sea weed production, marketing, and decision-making processes. Biotechnologies may not only expand fishery resource bases substantially through artificial hatchery systems but may also ocean-culture potential through gene manipulation skills.

Naisbitt(1984) predicts the advanced economies are in transition from an industrial to an informational economies. Informational needs for complex decision making exist in all parts of fisheries. The generation of technology and information is being accomplished somewhat differently than in the past. Although opportunities remain for individual inventors, there is a movement away from the crude inventor who tended to develop technologies based on just need with little advanced knowledge. Biotechnologies based on knowledge rather than need are being developed by research teams in think tank types of environments. The research is conducted with targeted objectives and goals and with substantial government supports. Biotechnologies tend to accelerate change over a short period. Thus, large impacts occur rapidly, and economic and social impacts are likely to be substantial.

The informational needs for complex decision making are increasing at all levels in fisheries. The use of computers for automated collection, assembling, and processing of data to provide information for control and management of fishery resource stocks and marketing is increasing. Many computers will soon be linked to data bases throughout the nation and provide instant access to a large quantity and wide range of data. Informational technologies will make it possible to send and receive large amounts of data across markets throughout Korea and the world. It will also provide the capability for using more and better data and information, but at various stages of development there is a potential of generating more data and information than human minds can use for meaningful decision making.

5. Growing Environmental Concern

There has been a growing concern by the fishermen as well as the public about environmental degradation of coastal regions

surrounding Korean peninsular. Fishing communities are insisting on coastal fishing grounds that are free from pollutants, discharged from the industrial complexes and the rear cities. There is a changing attitude of the fishermen towards stewardship of coastal natural resources.

These concerns and attitudes combined with individual and local group behavior may result in new guidelines and limits for developing industrial belts on the coastal area. The public is growing less tolerant of certain types of industrial activities which lead to ocean water pollution and endangerment of fishery resources and wild life.

In addition, there is an increasing concern about wide-range spillover problems of oil, often caused by huge oil tankers. The influence of these concerned part of Korean society is reflected in the newly reinforced anti-pollution law.

The concerns about these issues will not diminish. Rather, participation in political and decision-making processes by those interested in these issues will create limits on permissible industrial activities and practices. Some of these limits will impose binding constraints which will tend to increase costs of industrial production and marketing, and in some cases of industrial research (Clark 1977). In the short run these limits and their consequences likely will be viewed quite negatively by manufacturing firms. In the long run the influence of this part of the general public can lead to resource conservation and preservation. Eventually, improved coastal environmental quality will pay much to fishing communities and the rest of the Korean society.

VI. Towards the Future National Fishery Policies

1. Need for Reducing the Number of Adjacent Vessels

Efficient management of Korean fisheries requires, if economic gains are to be obtained and improved, more tight control and limitation of the amount of fishing effort.

The first step in such a policy would be an effective freeze in the number of vessels in general and of trawlers in particular

through prohibition of the construction of new vessels. The next step is to specify a larger mesh size for a badly depleted resources. Licenses would need to be made non-transferable without exemptions and be retracted upon the retirement of either the owner or the vessel, whichever comes first, until the fleet is reduced to its optimum size. The license fees which are now none would need to be introduced at the estimated market value of the license. As effort is being reduced, the license fees should be revised upward to cream off the newly created rents and reduce the incentive for expansion of fishing effort.

The government could speed up the attrition process by offering to buy back and cancel the licenses of fishermen who choose to leave the fishery, using the proceeds from the license fees. This option could be made more attractive by offering to retain and/or relocate those who leave the fishery as well as by developing alternative employment opportunities.

The ultimate success of an adjacent fishery policy lies in the right and timely mix of fisheries management and nonfisheries development. The fisheries management should be supported by a concrete data base including biological and economic components. Under the dual structure of Korean economy, nonfisheries development policy may provide marginal fishermen with alternative job opportunities to leave the fishery and hence may help restructure the Korean adjacent fisheries.

2. Need for Directing Heavy Industry away from Ecologically Sensitive Coastal Areas

Local governments considering coast-industrial development options tend to view new employment and financial sources as an added economic benefit, and commercial interests sense the potential for increased profits. But the commitment of coastal lands for heavy industry sites may endanger a wide variety of oceanic environmental problems with impacts that extend considerably beyond the direct, localized impacts of the plants.

The choice of location for heavy industry depends to some degree on the extent of effluent discharge and the anticipated degree and type of waste treatment. In the past national

development process industrial pollutants discharged from the coast-industrial complexes have endangered on- and near- shore ecosystems during the last two decades.

Although pollution matters will be controlled to some extent through the currently strengthened anti-pollution law, provincial authorities will have an essential role through controlling coastal land use. By establishing provincial coastal land-use control mechanism, provinces can influence the type and location of agricultural and industrial developments, and hence the type and location of waste discharges to local waters, as well as encroachment into vital culture grounds and fish habitat areas.

Industrial facilities with difficult discharge problems such as petrochemical, steel processing, and food processing plants should not be located on confined onshore waters. Moreover, tidal streams, dead-end harbors, and poorly flushed water bodies should be completely avoided because of their extremely limited capacity to accept and assimilate even small amount of contaminants.

3. Need for Development of Fishery Resource Management and Ocean Culture High Technologies

In recent, the world coastal states are much more concerned about fishery resource stock management than exploitation. Most commercial fish stocks tend to show their biological limitations and ocean biologists agree that the current state of human resource exploitation capability is being far exceeding than the natural growth rate of resource stock. Korea has more serious overexploitation problems than any other coastal countries in the world.

Japan, the United States, and European coastal countries have already used remote sensing technologies for fishery resource management and stock-monitoring, supported by the artificial satellite network. Also, those advanced countries are operating large stock-monitoring vessels with high-tech equipments, which are able to provide large amounts of precise biological, ocean-climatic data necessary for analyzing dynamic resource behaviors and designing a sustainable fishery

development policy. In this regard, Korea should develop an scientific fishery stock monitoring system which is supported by computer-aided information technologies and large public investments.

In efforts to increase ocean culture productivity of sea weed, shellfish, and ground fish, researchers and extension agents in Korea have typically promoted a conventional technological package consisting of a number of components such as variety, culture method, and disease control. Recently, Korean ocean biologists began to develop biogenetic engineering technologies for new varieties of culture fish species and sea weeds. Government financial supports are increasing substantially. The biotechnological development policy in fisheries should be extended and strengthened for promoting comparative technological advantages under the international trade liberalization pressure.

However, these new technologies are being developed by biological scientists to achieve biological or production ends with little or no regard to economic and social objectives. The economic and social aspects of new biotechnologies are not appreciated or even understood by many biological scientists and policy makers. An unresolved critical issue in the development of biotechnologies is the consideration and integration into research of socio-economic science objectives along with the ones of the biological sciences.

New fishery biotechnologies should be developed and adopted with regard to socio, economic, environmental impacts so that they do not incur a large social cost because of unexpected externalities.

4. Need for Increasing Cooperation with Other Coastal Countries

Korean major distant water fishing grounds include the East Chins Sea, the North Pacific, the South Atlantic, and the South Pacific.

The East China Sea is still international water and fishery stocks are under joint utilization by Japan, China, Taiwan, and Korea. None of those countries introduced the new regime of

the sea (200-mile EEZ). They established no rules on sharing the common stocks. The common resource management is more complicated by the biological behavior of many fish species (e. g, spawning in the coastal waters; living in the international water). Thus, each country's adjacent fisheries heavily depend on the joint fishery resources.

The proclamation of 200-mile EEZs by the U.S. and the U. S.S.R. extended their jurisdiction over the almost entire North Pacific Ocean except for the Bering high sea. In addition, the expansion of processing capacity and exports of U.S. fishery products in recent years is attributed in larger measure to the growth in the U. S. domestic harvest which has occurred at expense of foreign harvesting and processing of groundfish (i. e., Alaska Pollock) in the U.S. EEZ of Alaska (Pereyra 1989). Such U.S. fishery policy confined Korean fishing freedom in the North Pacific to the Donut Hole in the Bering area.

Moreover, because of a recent comprehensive fishery agreement between the United States and the Soviet Union, the Korean overseas trawlers are expected to face an additional hardship in the Bering sea operations. The two superpowers also agreed on establishing Bering Fisheries Authority primarily aiming at enhancing Bering fishery resource management. Even though the authority establishment would be necessary for bettering the stock management, the creation process should follow the international law of the sea so that their propose is able to obtain positive cooperation from othe major fishing nations.

From the Korea's point of view, cooperation would be made in two ways: one way is to actively participate in joint scientific research on Bering fishery resources; another is to voluntarily control fishing effort based upon the research results. This modality of cooperation would also be applicable to the South Atlantic squid fisheries.

Finally, the South Pacific, which is dominated by the Pacific Island Nation (PINs), is the most important tuna fishing area for the Korean distant water longliners. Until recently, fisheries in the PINs have been entirely concerned about the exploitation of their coastal resources for subsistence consumption. This situation has been changing, though, with the

declaration by most Island States of their EEZs (Lawson 1980).

The bulk of South Pacific tuna catch is still taken by distant water fishing fleets, mainly Japanese, Korean, Taiwanese and Russian. Most overseas fleet activity is now conducted under terms of access agreements between the distant water fishing countries and the individual coastal states, with economic benefits received by the South Pacific Island States from such foreign access agreements plus substantial amounts of related fishery development assistance including provision of vessels, shore facilities, gear and training. However, there seems to be no better option for the developing Island States because factors like lack of capital, less availability of technologies, and lack of education and training, constrain their increased involvement in their own tuna fisheries (Kearney 1984).

Thus, reciprocal cooperations between the major distant fishing states and the PINs are necessary for a sustainable fisheries development in this region. As one of the major distant fishing nations benefiting from the regional resource exploitation, Korea has to increase her responsibility for a cooperative regional-fishery-resource management. Furthermore, Korea should be able to make a substantial contribution to the regional economic development through expansion of fishery product imports and increased assistance for research, technical training, and infra-structural promotion.

VII. Concluding Remarks

Over the past three decades Korean fishery policies have placed more emphasis on production and export promotion than fishery resource management. Coastal regions were widely reclaimed to expand agricultural land and to build up seashore industrial complexes with little consideration on the coastal biosphere. Importation of fishery products has been managed under the tight government controls for protecting domestic fishery sector.

However, the fishery development-trade strategies made a little contribution to structural improvement of Korean fishery industry. As a result, Korean fisheries face three important

problems: overcapacity of resource exploitation, degradation of coastal environment, and international trade frictions. These problems demand substantial changes in the existing fishery policies.

First, adjacent fisheries related to serious overexploitation should be adjusted to a desirable stock level (e. g., maximum biological sustainable yield). Ocean surveillance system has to be reorganized to effectively enforce the fishery resource management rules. Second, tide-land reclamation policy should be exercised, considering ocean-biological impacts, changing food consumption pattern, and rapid development of agricultural land-saving production technologies. Third, since most coastal countries relate their trade practices to high sea resource conservation policies, Korea must act more positively in concert with world common fishery resource management.

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