



MINISTRY OF INDUSTRY  
THE REPUBLIC OF INDONESIA

# Edge of Rainbow

Proposal to the World

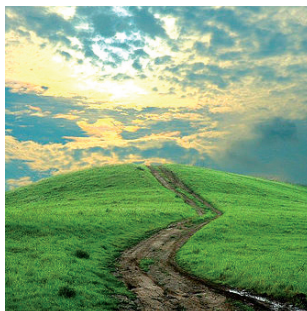
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MINISTRY OF INDUSTRY  
THE REPUBLIC OF INDONESIA

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Investment ...  
like a rainbow  
track the right path  
find the gold pot



## Edge of rainbow

Developed as part of the Ministry of Industry endeavors in ensuring the attainment of national policy objectives of advancing national industry through the promotion of investment in the related field of industries. It is purposed to nurture the investment community comprehension on the status of Indonesia's competitiveness, and to promote the development of industry and investment cooperations between Indonesia and the world community.

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MINISTRY OF INDUSTRY  
THE REPUBLIC OF INDONESIA

Distinguished members of investment community,

Today, there are no countries which can withstand the global financial crisis normally. Nevertheless, I would like to inform you that Indonesia was one of few economies globally to maintain its growth momentum into the third quarter of 2008, whilst growth in most other economies in the region started slowing earlier in late 2007. Despite the tailing effects of the crisis, the Government of Indonesia has strong confidence that in 2009 the trend of investment in the country will be improving, and hopefully will grow by 10 percent in this year of investment. The optimism is justified as we take a closer look to Indonesia's investment record. In January 2009 foreign investment inflow increased by 61 percent with value of US\$ 710 million or US\$440 million higher than in January 2008. In 2008 alone the total realization of the foreign investment recorded the value of US\$ 14.9 billion and domestic investment around US\$1.69 billion.

Our confidence on such positive trend has been supported by no less than four fundamental factors. Firstly, the sustained growing of buying power of its 240 million Indonesian. Secondly, Indonesia is now harvesting from its commitment and consistency to reform in democratization that brought about recovery, consolidation, stability and also an era of sustainable investment. Thirdly, in the Doing Business 2010 survey, Indonesia is praised as the most proactive state doing process and structural reforms for improving business climate. Indonesia is considered of very successful in making the investment process easier and faster. Last but not the least is the fact that Indonesia also has been known as a country with a strong basis of natural resources, fishery in particular.

Promoting investment in Indonesia fishery industry is naturally imperative, both for Indonesia and the world. The global strategic values of Indonesia fishery resources have been growing and to shape the leverage of Indonesia industry and trade in the global supply chains. There have been indications that food prices in global markets may reverse their long-term downward trend, creating rising uncertainties about global food security. Climate change, environmental degradation, rising competition for land and water, and higher energy prices present huge challenges. Added to this is the burgeoning demand for agricultural feed stocks for bio-fuels, which we have seen pushed up world food prices. Therefore, we are convince that it is time to place Indonesia fishery industry and trade capabilities afresh at the center of Indonesia development agenda for 2010-2025.

Immediate and sharply increased investment is especially urgent in Indonesia fishery sectors. To ensure it is happened, the Administration of President Susilo Bambang Yudhoyono has been proactive in ensuring the establishment of conducive investment climate in the fisheries areas. Our aims are: first, to success in optimizing the management of the most riches fishery resources on the earth map; secondly, to increase the productivity, quality, added value and competitiveness of the Indonesia fish processing industry; and third to ensure sustainability of fishery resources areas.

By using the opportunity to invest in Indonesia's fisheries and the related industries means you are ensuring your place in the map of the 21<sup>st</sup> century world's most robust and most sustained business agenda.

**MINISTER OF INDUSTRY  
THE REPUBLIC OF INDONESIA**

**FAHMI IDRIS**



# SPECTRUM



## From the MINISTER OF INDUSTRY

Immediate and sharply increased investment is especially urgent in Indonesia fishery sectors. By using the opportunity to invest in Indonesia's fisheries and the related industries means you are ensuring your place in the map of the 21<sup>st</sup> century world's most robust and most sustained business agenda.



## INDONESIA

In the last five years, Indonesia has been experienced sustained social economic development, the country makes its way of attaining an average of 5.7 percent economic growth. By 2008, the percentage of the GDP of composition by sectors are agriculture 13.5 percent, industry 45.6 percent and services 40.8 percent.



## LARGE marine ecosystem

There are 64 defined Global Large Marine Ecosystems (LMEs) where Indonesia has a direct access to five of them, namely Indonesian Sea Large Marine Ecosystem (within national territory), Bay of Bengal Large Marine Ecosystem, South China Sea Large Marine Ecosystem, Sulu-Celebes Sea Large Marine Ecosystem, and North Australian Shelf Large Marine Ecosystem.



## INVESTMENT in demand

Immediate and sharply increased investment is especially urgent in Indonesia fishery sectors. By using the opportunity to invest in Indonesia's fisheries and the related industries means you are ensuring your place in the map of the 21<sup>st</sup> century world's most robust and most sustained business agenda.

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## CORRECT address for investment

The Government of Indonesia issued a range of policy schemes that ensure its endowed marine resources managed in a sustainable manner for today's and future generation.

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## BENEFICIAL cooperation

The Government of Indonesia places serious concerns and consistent endeavors in preserving the support of environment for sustainable development. Therefore Indonesia has been in support by entering into international agreements regarding environmental issues,

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## CONTACT

The Ministry of Industry of The Republic of Indonesia is ready to assist you in establishing and furthering mutual beneficial cooperation in a common endeavors to advance marine related manufacturing industries.



## INTERACTIVE CD

An alternative media to provide detail investment information and a video presentation as a teaser for global situation of how important to be part of Indonesia Agro Marine Industries.







# INDONESIA

# The world's largest



Largest archipelagic country | Third largest democracy | Fifth largest population





6° 08' N • 11° 15' S [1,888 km]  
94° 45' W • 141° 05' E [5,100 km]



### Three time zones archipelago

Indonesia is known as one of the biggest archipelago countries in the world with 17,508 islands (6,000 inhabited), straddles equator in three time zones (GMT +7,+8,+9), astride strategically along major sea-lanes from Indian Ocean to Pacific Ocean. Located in Southeastern Asia, Indonesia is located in 6° 08' N • 11° 15' S [1,888 km] and 94° 45' W • 141° 05' E [5,100 km]. Indonesia has a total area of almost 7,900,000 square kilometers, which consists of land area of 1,826,440 square kilometers and sea water area of 6,120,673 square kilometers (including exclusive economic zone).

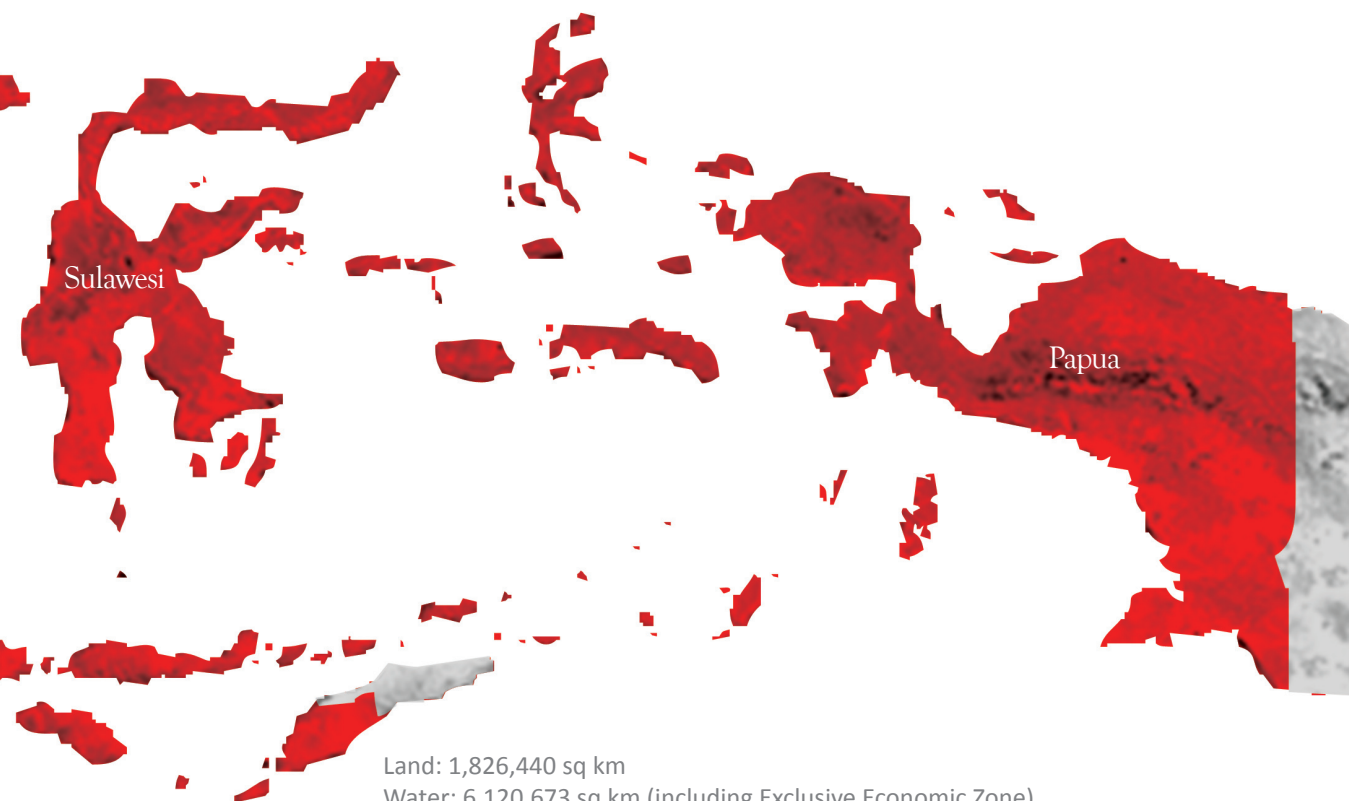
Indonesia is divided into three time zones. Indonesia has a tropical, hot, humid and more moderate climate in highlands where its terrain is mostly coastal lowland and larger island, with interior mountains. The natural resources produced in Indonesia are petroleum, tin, natural gas, nickel, timber, bauxite, copper, fertile soils, coal, gold and silver.



**Population:** total 240,271,522 (July 2009 est.), population growth rate: 1.136% (2009 est.), urban population: 52% of total population (2008), rate of urbanization: 3.3% Annual rate of change (2005-2010 est.).

**Labor force:** 112 million (2008 est.), Agriculture: 42.1%, Industry: 18.6%. Services: 39.3% (2005 est.).

**Administrative divisions:** 33 provinces, 394 regencies, 91 municipals. Following the implementation of decentralization beginning on January 1<sup>st</sup> 2001, the 465 regencies and municipalities have become the key administrative units responsible for providing most government services.



Land: 1,826,440 sq km  
 Water: 6,120,673 sq km (including Exclusive Economic Zone)  
 Coastline: 84,716 km (including Exclusive Economic Zone)  
 Maritime claims: measured from claimed archipelagic straight baselines Territorial sea: 12 nm, and exclusive economic zone: 200 nm  
 Terrain: mostly coastal lowlands; larger islands have interior mountains

**Land use:**

Arable land: 11.03%  
 Permanent crops: 7.04%  
 Other: 81.93% (2005)

Land boundaries: total 2,830 km  
 Border countries and border length:  
 Timor Leste 228 km  
 Malaysia 1,782 km  
 Papua New Guinea 820 km





## Robust and sustained economic growth

### Robust economic growth

In the last five years, Indonesia has experienced sustained social economic development, the country makes its way of attaining an average of 5.7 percent economic growth. Indonesia has continued a broad-based political and economic reform programme aimed at sustainable development and the alleviation of poverty. Despite the challenges emerging from the recent global financial crisis and world economic downturn, Indonesia is still records positive economic growth. The wave of the crisis hit the country's economy later than other economy in the region.

Indonesia political and institutional reforms are central to the modernization of the economy, and in the last twelve years Indonesia has undergone important democratic change, most recently manifested in the direct election that re-elected President Yudhoyono into his second Administration term (2009-2014). Indonesia has now been able to pay increasing attention to addressing social problems. Internationally, Indonesia is a strong supporter of the Doha Development Agenda, and has been an active participant in the WTO negotiations. It has also strengthened its trade and investment ties with neighbors in the Asia-Pacific region.

The Government has also evolved increased authority and responsibilities in the regions, where it has lifted spending to help improve welfare across the country. It has made a major effort to address the issue of corruption, including tax administration, customs and public procurement, by greater transparency and auditing in relation to both process and decision-making. It has sought to improve competition within Indonesian economy, and hence also external competitiveness. The Investment Law (approved by the legislature in March 2007) should contribute to this process.

The Government has made some important advances in the implementation of protection of intellectual property rights. While progress has been made on many fronts, the effort to develop a modern, efficient, more open, and competitive economy is ongoing. Consistent with its broad approach to modernizing the economy, the Government of Indonesia is also progressing on trade policy. Tariffs – now the main trade policy instrument - are in the process of being lowered and made more uniform in line with the ASEAN Tariff Harmonization Program. As a consequence of these changes and the deeper integration in the regional and the world. Moreover, non-tariff measures are continuing to be reduced and eliminated. These demonstrating the openness of the Indonesian economy.

In international trade relations, Indonesia is an active participant in the current WTO negotiations, working together with other WTO Members to achieve a balanced outcome, consistent with the development objectives that are central to the Doha Declaration. Indonesia's principal concerns are to obtain improved access for its key agricultural and manufactured exports, while ensuring obtaining guarantees for its most sensitive sectors objectives and some flexibility to develop its industrial sector. Indonesia, which is the coordinator of G-33 (a group of developing countries), believes that the negotiations in these areas point towards some welcome understanding of its key concerns.

Indonesia's debt-to-GDP ratio in recent years has declined steadily because of increasingly robust



GDP growth and sound fiscal stewardship. The government has introduced significant reforms in the financial sector, including in the areas of tax and customs, the use of Treasury bills, and capital market supervision. Indonesia's investment law, passed in March 2007, seeks to address some of the concerns of foreign and domestic investors. At this point, the investment gross-fixed is 23.6 percent of GDP, purchasing power parity GDP of the country is US\$915.9 billion, official exchange rate GDP is US\$510,8 billion, the real growth rate GDP is 6.1 percent, and per capita GDP is US\$3,900.

By 2008, the percentage of the GDP of composition by sectors are agriculture 13.5 percent, industry 45.6 percent and services 40.8 percent. Indonesia holds 112 million labor forces by means of agriculture 42.1 percent, industry 18.6 percent and services 39.3 percent. As for the unemployment rate is 8.4 percent.

Indonesia economic indicator

NO	ECONOMIC INDICATORS	2004	2005	2006	2007	2008
1	Economic growth (%)	5.0	5.7	5.5	6.3	6.2
	- Non oil and gas	6.0	6.6	6.1	6.9	6.8
2	Inflation (%)	6.4	17.1	6.6	6.7	11.1
3	SBI rate (3 months)	7.43	12.75	9.75	8.0	9.3
4	Exchange rate (Rp/US\$)	8,940.0	9,713.0	9,050.0	9,130.0	9,691.0
5	External sector					
	- Exchange asset (US\$ billion)	36.3	34.7	42.6	56.9	50.0
	- Current transaction (% of GDP)	1.2	0.1	2.7	2.6	0.9
6	State budgeting deficit (% of GDP)	1.3	0.5	0.9	1.2	0.1
7	Government debt (% of GDP)	55.5	46.5	39.2	35.5	33.3
8	Foreign government debt					
	- % of GDP	53.8	46.5	35.2	32.7	30.4
	- Debt service ratio (% of export)	27.1	17.3	24.8	21.5	17.5
9	Unemployment rate (%)	9.9	11.2	10.3	9.1	8.3
10	Poverty rate (%)	16.7	16.0	17.8	16.6	15.4

**GDP (purchasing power parity):** US\$ 915,9 Billion (2008 est.), GDP - US\$510,8 Billion (2008 est.), GDP - real growth rate 6.1% (2008 Est.), GDP - per capita (ppp) US\$3,900 (2008 est.)

**GDP composition by sector:** Agriculture 13.5%, Industry 45.6%, Services 40.8% (2008 Est.)

**Agriculture products:** rice, cassava (tapioca), peanuts, rubber, cocoa, coffee, palm oil, copra, poultry, beef, pork, eggs.

**Industries products:** petroleum and natural gas, textiles, apparel, footwear, mining, cement, chemical fertilizers, plywood, rubber, food, tourism

**Industrial production growth rate:** 2.8% (2008 Est.)

source: Ministry of Industry, 2009





## Indonesia long-term development policy 2005-2025

### Advancing people

Indonesia is an archipelagic country, hence the use of land and sea natural resources must be managed efficiently and environmental sustainably. Therefore, the industrial development, particularly the national manufacturing industry must be able to achieve the integration among all sectors mainly agriculture and services. The vision of the long range Development of the year 2005 – 2025 is: an INDEPENDENT, a JUST, and a PROSPEROUS INDONESIA, that consists of embedded values of:

- Able to stand at the same level as other nation by relying on its capability and strength.
- Measured by human resources quality, prosperity level and stabilized system and institutional of the politics and laws.
- Non-discrimination of any forms, such as individuals, genders or ethnic.
- The fulfillment of all necessities of the people.

### Mission 2025

The national development towards 2025 has been outlined to achieve the objectives of 8 (eight) national development missions, as followed:

- To establish a civilized society in accordance to Pancasila's values (the 5 principles of National ideology of the Republic of Indonesia).
- To strengthen the national competitiveness environment.
- To establish rule of law-based democratic society.
- To establish Indonesia as a unite, safe and peaceful place.
- To advance the equality and fairness of development.
- To build a harmonious and sustainable development of Indonesia.
- To advance Indonesia as a self reliant, modern and strong archipelagic state based on national interest.
- To nurture the roles of Indonesia in the international.

In the pursuant of the above objectives, the Government of Indonesia has established the national development strategy that encompass values of: integrated and comprehensive development; linkages to the industrial chain and distribution process; stakeholders participation; focus in outside Java as the primary areas of development concern; and land as well as maritime agriculture as the primary resources development. Within economic framework the attainment of the above-mentioned missions indicated among others by:

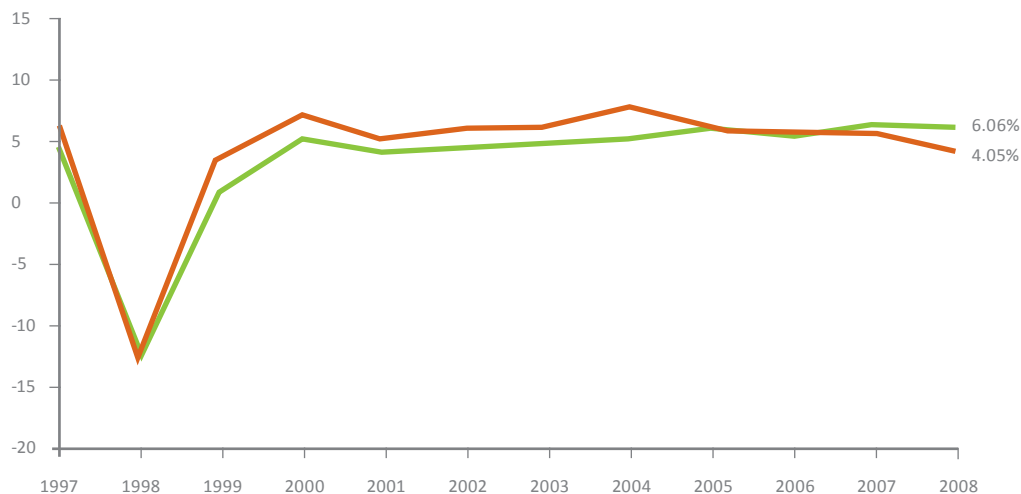
1. The Year 2025's per capita income equals to the revenues of worlds' mid income economy country.
2. The open unemployment level < 5 percent.
3. The poor population < 5 percent.
4. Agriculture and mining sectors are based on efficient economic activities.
5. Good quality commodity, competitive manufacture industry, economic engines.
6. Reliable and integrated communication Infrastructure networks .
7. Reliable Defense industry.



8. Equality in development by means of life quality and prosperity of the society and minimum disparity.
9. Integrated Economic maritime by continuous and optimal use of maritime natural resources.

### Growth of Gross Domestic Product

(based on constant price 1993 and 2000)



source: Ministry of Industry, 2009

Industrial growth Economic growth

### Advancing agriculture

Indonesia has considerable natural resources, both renewable and non-renewable. Managing these resources prudently for sustainable development is a major challenge for any government, and even bigger one for Indonesia because of its many islands. To this end, various programmes are being implemented and improved, including for example the management of its forestry and fishing resources.

Agriculture, the livelihood of a large part of the Indonesian population, has started to benefit from a revitalization programme providing support for infrastructure, financial services, research and development, and institutional reform. Many sectors are developing nowadays in Indonesia. Agriculture sector includes rice, cassava (tapioca), peanuts, rubber, cocoa, coffee, palm oil, copra; poultry, beef, pork and eggs.

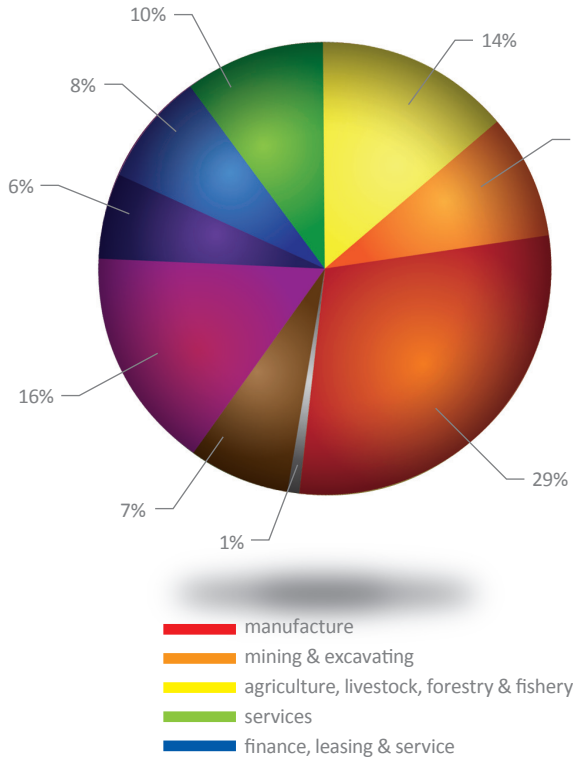
To further develop the agricultural sector, the Government launched the agricultural revitalization programme in 2005. A set of policy instruments on rural infrastructure, financial services, research and development and institutional developments are used in support of this programme. Under the programme, the Government provides subsidies to increase production on food crops such as on fertilizers and hybrid seeds. Subsidized credit to small-holder farmers ("food security credit") is intended to motivate smallholder farmer to have more access to commercial banks, sharing risk between the Government, commercial banks and farmers.



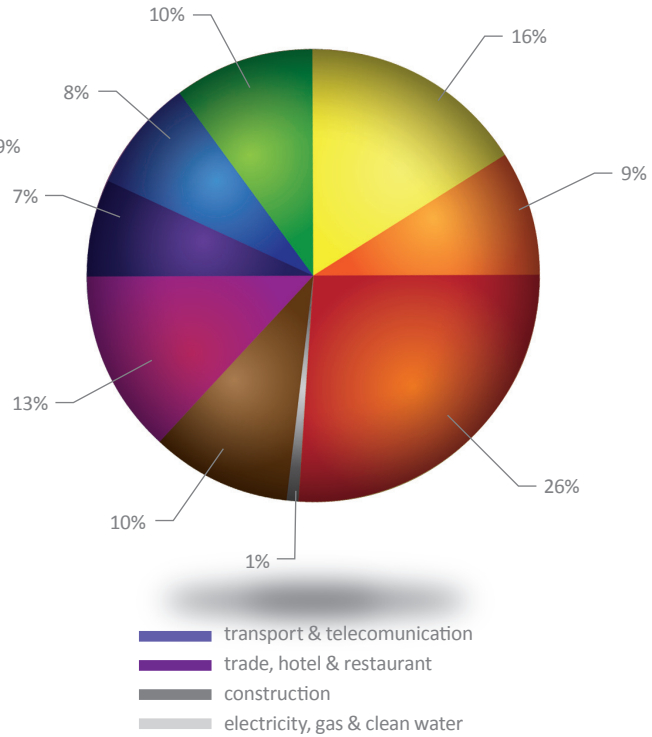


### Structure of Gross Domestic Product

By Industrial sector 2005 (%)



By Industrial sector 2009 (%)a



source: Ministry of Industry, 2009

### Modernizing national industry

Indonesia is visioning that industry will be the primary engine to drive the development of the nation. The advancement of national industry together with science and technology are prerequisite condition to lead the country's economy into 2025 vision. The industrial development of the country is geared by technology that can draw into leverage the Indonesian industries by provision of better technology development, leading toward energy diversification and better technology industries.

Industrial policy is oriented to fostering cluster groups, with selective use of incentives to support the development of Indonesia's regions and deepen and diversify industrial production in the face of international competition and a fast-changing business environment. Indonesia is also seeking to develop a modern services sector to improve national trade competitiveness, particularly exports. The main strategies of the national industrial development are:

1. To strengthen the industrial relation of the value chain in all levels including the supporting industries, related industries, infrastructure industries and other supporting industries. This development is for the building of the domestic and global industrial networks and to increase the innovative competition.
2. To increase the added value along the value chain by building the area's core industrial competence.
3. To increase the productivity, efficiencies and resources in industries and to focus on the renewable resources use.



4. To develop small and medium scale industries through (i) the business reserved and technical and management scheme and also exclusive facilities so it would grow expansively and reliably (ii) creating small medium industry synergies with big scale industries using alliance partnership (iii) creating the supporting environment (iv) the financial scheme development which supports the partnership.

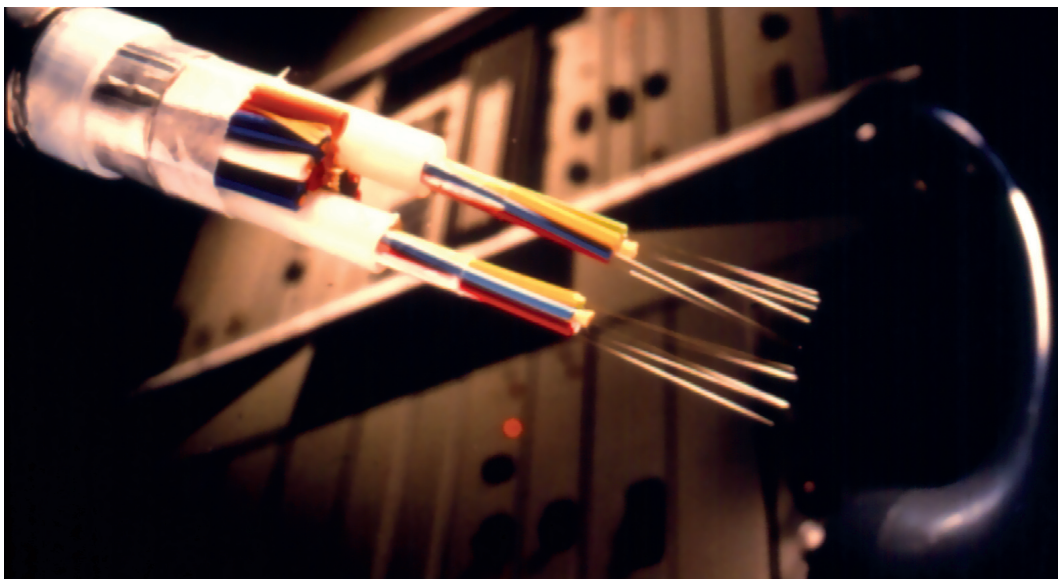
In long-term development, industries are targeted in strengthening and the growth of prioritized industrial clusters, they are as followed:

Basic Manufacturing includes: (1) Basic materials industries which consist of (a) Iron and Steel Industries (b) Cement industries (c) Petrochemical industries (d) Ceramic industries (2) Machinery Industries which consist of (a) Electrical utility and electrical machinery industries (b) machinery and utility industries, (3) labor manufactured industries: the clothing, food, materials, health and pharmacies such as (a) textile and textile product industries (b) footwear industries.

Agro industries include processing industries such as: (a) palm industries, (b) rubber and its product industries, (c) cocoa industries, (d) coconut industries, (e) coffee bean industries, (f) sugar industries, (g) tobacco industries, (h) fruit industries, (i) wood and its products industries, (j) agro marine industries, (k) pulp and paper industries, and (l) milk processing industries.

Transportation industries include (a) motor vehicle industries, (b) ship industries, (c) aerospace industries, and (d) railway industries. Electronic and telematic industries include (a) electronics, (b) hardware telecommunication industries, and (c) computer industries.

Creative industry is the process of enhancing the added value from intellectual property exploitation in the form of creativity, skills, talents of individuals to become a product that can be sold hence, increasing the prosperity of the people involved. Creative supporting and certain creative industries include the software and content multimedia, fashion and art and crafts. Small and medium scale industries include processing industries: jewelry industries, salt industries, decorative ceramic and earthenware industries, ether oil industries and snack industries.





## Indonesia's fisheries industry: The future happening

Promoting the development of Indonesia industry leverage through fishery sector is naturally imperative. Providing employment for directly over 45 million people and being the main source of protein for most Indonesian, regardless urban or rural population, fishery plays important role in the Indonesian economy.

The strategic values of marine-based fishery as Indonesia endowed natural resources and economic pillar will increasingly shape Indonesia's industries as well as trade leverages in the global supply chains. Since the significant of marine based commodities as global trade food commodities as well as world's protein sources is now increasing. The fact that today more than 1 billion people remain food insecure has lead FAO to its prediction models that project food prices in global markets would reverse their long-term downward trend. This certainly create rising uncertainties about global food security.

Climate change, environmental degradation, rising competition for land and water, higher energy prices, and doubts about future adoption rates for new technologies all present huge challenges and risks that make world food resilience difficult to sustain. The impact of climate change is expected to be large with little capacity to cope, and progress continues to be slow in raising per capita food availability. To meet projected world's demand, cereal production will have to increase by nearly 50 percent and meat production by 85 percent from 2000 to 2030. Added to this is the burgeoning demand for agricultural feedstocks for biofuels, which have already pushed up world food prices. The combination of these factors leads the Government of Indonesia to place marine fishery industry afresh at the center of Indonesia development agenda.

To enable Indonesia industry beneficially exploiting its access to the sea resources in optimal ways, significant investment is required in the fishery-related industries including but not limited to open ocean catchment, fish processing, port and logistical capacities as well as the related supporting industries. Therefore in the national long-term development plan 2005-2025, the Government of Indonesia clearly defines its commitment to develop maritime economy within integrated, comprehensive and coordinated manners. This include endeavors of accelerating maritime capacity and technology development through investment.

A key milestone in the Indonesia fisheries development was the establishment of the new Fisheries Law Number 31/2004. The Law provides the national mandate and legislative support for the government to pursue fisheries development. The new Law on fisheries aims at a new direction for fisheries management intended to achieve optimal utilization of fisheries resources, areas for fish culture and fish resources environment. The Law also aimed to increase government revenues and foreign exchange earnings by increasing the productivity, quality, added value and competitiveness of Indonesia's fish commodities. At the same time, the Law is opening the way for national industry to increase the supply of raw materials for the fish processing industry, which also mean spurring the expansion of job opportunities in many related industrial activities in the country.

Further more, in order to improve fisheries management, the Government issued Government Decree number 17/2006 on Fisheries Management. The Government Decree applied new scheme of fisheries management which eliminates foreign vessels from operating in the Indonesian Economic Exclusive Zone or build Land-Based Industry through Integrated Fisheries Investment





Management Unit in Indonesia by joint venture. The main goal of this particular policy is directed to remediate the integrity of Indonesia sea fish stocks and protect the resourceful sea areas from illegal fishing of domestic and foreign operators. This will in turn increase the productivity of the legal sea-fishing industry while over-fishing in some areas eliminated, fish stocks integrity reached and marine environment remediated. To ensure the attainment of the fore mentioned objectives, the Minister of Marine Affairs and Fisheries has also published Ministerial Decree number: KEP.34/MEN/2006 regarding the establishment of coordination team on illegal fishing measures and fisheries processing industry revitalization.

High among the Government's priorities is to continue to build on the existing reforms, further lifting economic growth to increase employment opportunities. Among the newer reforms, investment legislation that was approved by the legislature on March 29, 2007 and the accompanying implementing regulations should further help to improve the climate for investment and improve the competitiveness of business more generally. Despite the challenges of global financial crisis, Indonesia faces the future with greater confidence than at any time in recent years, and looks forward to working with its trading partners to build a more open, secure and stable environment for a mutual trade and investment.









# Large Marine Ecosystem

Indonesia direct access





There are 64 defined Global Large Marine Ecosystems (LMEs) where Indonesia has a direct access to five of them, namely Indonesian Sea Large Marine Ecosystem (within national territory), Bay of Bengal Large Marine Ecosystem, South China Sea Large Marine Ecosystem, Sulu-Celebes Sea Large Marine Ecosystem, and North Australian Shelf Large Marine Ecosystem.





## Global Large Marine Ecosystem

The LME approach to the assessment and management of marine resources and their environments was first introduced at an international symposium convened at the annual meeting of the American Association for the Advancement of Science in 1984. At the outset, it was understood that the LME approach would provide a framework for utilizing ecologically defined Large Marine Ecosystem as place-based areas around the globe, to focus the methods of marine science, policy, law, economics and governance on common strategy for assessing, managing, recovering, and sustaining marine resources and their environments.

There are two important features in the LME approach. The first is the physical extent of the LME and its boundaries based on 4 linked ecological rather than political or economic criterias. These are: (a) bathymetry, (b) hydrography, (c) productivity and (d) tropic relationship. Based on the 4 ecological criteria, 64 distinct LMEs have been delineated around the coastal margins of the Atlantic, Pacific, and Indian Oceans.

All LMEs are relatively large areas of ocean space, of approximately 200,000 kilometers square or greater, adjacent to the continents in coastal waters where primary productivity is generally higher than that in open ocean areas. It is within the boundaries of the LMEs that 80 percent of the world's annual marine fish catch is produced, degraded habitats are most prevalent and the frequency and effects of pollution and eutrophication of ocean waters are most severe. The LMEs also centers of marine gas and oil production; mining for sand, gravel, diamonds, and other extractive minerals, coastal shipping and tourism.

A second important feature of the LME approach is the use of a 5-module strategy to measure the changing states of the ecosystem and to take remedial actions toward recovery and sustainability of degraded resources and environments. From management perspective, it is essential to establish a baseline condition against which to measure the success or failure of management actions directed toward recovery of degraded condition within the LMEs. The 5 modules are focused on the application of suites of indicators measuring LME: (1) productivity, (2) fish and fisheries, (3) pollution and ecosystem health, (4) socioeconomics and (5) governance.

### **Intrinsic of the Indonesia “mother” seas**

Indonesia's coastline, estimated to be around 81,000 km long, is ranked as the second longest in the world. Approximately two-thirds of the Indonesian coastline is protected by coral reefs. All types of reefs are present in Indonesia, including fringing reefs, which are the most common, barrier reefs, and patch reefs. These reefs also represent most of the morphological types, such as sloping reef faces, steep 'drop offs' and pinnacles. Although Indonesia's population is not equally distributed, it has been estimated that between 60 percent to 95 percent of Indonesians live within 100 km of the coast. It is estimated that 80 percent of Indonesians living in coastal areas engage in marine resource-dependent activities, such as fishing and mariculture or related activities. Fish products are important food source and, on average, contribute two thirds of animal-based protein uptake in Indonesia.

Globally, coral reefs cover 12 percent of the ocean area, fringe one-sixth of the world's coastlines and contain hundreds of thousand of species of fauna and flora. Southeast Asia is recognized as



having the world's richest marine biodiversity at the genetic, species and ecosystem level. The "coral triangle" is an area including northern Australia, the Philippines, Indonesia, and Papua New Guinea that has the highest coral diversity on Earth. The region contains more than 2000 species of near shore fishes, sea snakes, and marine mammals, and contains critical habitats and large rookeries of four species of sea turtles, all of which are on the endangered species list. For all taxa, species richness peaks in the "coral triangle" of Southeast Asia, then falls off moving east toward the Pacific.

Indonesia has about 15 percent of the world's coral reefs and lies at the center of the world's diversity of corals, mollusks and reef fishes. Indonesia has the highest number of coral species in the world, with more than 77 general and 450 identified species of scleractinian (stony) corals. Of the 25 marine sites recommended for certification as Natural World Heritage Marine sites, seven are located in Indonesia. Indonesia has around 5.8 million km<sup>2</sup> of marine area, and its fisheries represent more than 37 percent of the world's total species. The most diverse marine sites in Indonesia are those least impacted by humans. These are near Ambon and Sulawesi in eastern Indonesia, and they are about 20 percent more diverse than sites in the Java Sea, (e.g., Pulau Kecil, G. Cembra and Karimun Jawa). This is attributed to both biogeographical differences and to greater over-fishing activities in the Java Sea. Five of the seven regions surveyed are in Indonesia, and they show the global importance of the diversity of coastal and marine regions within Indonesia to global sustainable development of marine resources.

Since Indonesia is located at the equatorial line, its seas which are also located at the complex under sea topography, have the ability in balancing the physical and chemical condition which does not have extreme seasons as other seas at the non-equatorial line. The strong upper and lower current neutralizes destructive water condition. The temperature of Indonesian Seas is relatively stable. In average, the surface of the Indonesian sea has temperature of 25 degree Celsius up to 30 degree Celsius. Since the threat towards the coral bleaching is more to the natural temperature change, not the absolute temperature change, therefore, the period of adaptation of nature is longer. The warm sea temperature, which affects the atmosphere temperature creates El Nino Southern Oscillation (ENSO) in Indonesia. This phenomenon together with La Nina contributes the climate change that affects the world agricultural cycles.

## Fishery assets and accesses in Indonesia

Indonesia has significant access to the resources in territorial based marine ecosystem as well as Global Large Marine Ecosystem.

### 1<sup>st</sup> Indian Ocean Marine Ecosystem (IOME)

The 1<sup>st</sup> Indian Ocean Marine Ecosystem is mainly based on Indonesia territorial water and beyond. Indian Ocean 1 corridor has no bordering countries surrounds it and is located in the western coastal Sea of Sumatra. It covers the area of Simelue archipelago, Nias archipelago, Siberut Island, Enggano Island, and southern part of Sunda Strait with total coverage area of 1,800,000 km<sup>2</sup>. The sea surface temperature has been 0,40°C Linear since 1957 and: 0,17°C Linear since 1982.



It is relatively shallow embayment in the east Indian Ocean encompassing water region of the west part along the coasts of the Sumatera island. The Marine ecosystem covers area of no less than 500.000 kilometers square, of which, and contains world's coral reefs and seamounts, respectively. It is influenced by the Sumatera's hydrologic basin.

Located in tropical monsoon belt, the IOME is strongly affected by monsoon, storm surges, and tsunamis. Fresh water and sediment discharged into IOME have contributed to the formation of the mangrove system. The Bay of Bengal LME can be considered a Class I, highly productive ecosystem ( $>300 \text{ gCm}^{-2}\text{yr}^{-1}$ ). Secondary production is highest in the post-monsoon period (October-January) and lowest during the monsoon period from June to September. The coastal-forested areas of Sri Lanka and Malaysia are biodiversity hotspots, with a large number of threatened endemic plants and animal.

Fisheries in the Indian Ocean Marine Ecosystem target a wide range of species, including Sardine, anchovy, scads, mackerel, snapper, emperor, grouper, pike-eel, tuna, shark, ornamental reef, shrimp, bivalve shellfish, and seaweed. During the last decade, Indonesia has developed offshore fishing for tuna and most of the tuna catch comes from coastal fisheries while offshore fisheries provide the majority of export grade Tuna. Indonesia is a major producer of farmed shrimps.

The IOME and its natural resources are of considerable social and economic importance to the community in the west coast of Sumatera, with activities such as fishing, shrimp farming, tourism, and shipping contributing to food security, livelihoods, employment and national economy

#### **Current productivity**

Current productivity is estimated around 360,000 ton where export consumed fish such as sardine, anchovy, mackerel, shark, snapper, tuna, shad, scad, and seaweed can be found in this





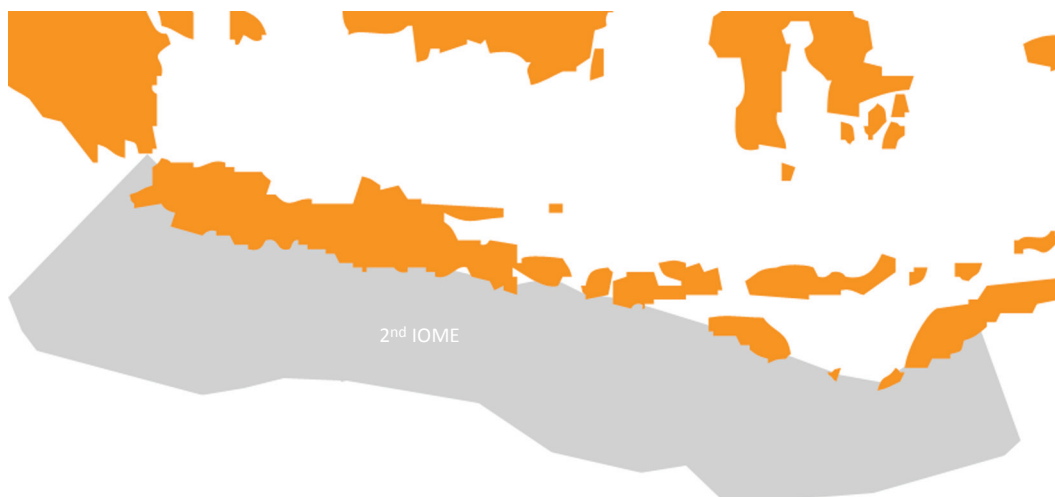
area. Indonesia's main fishing ports within this region are Sibolga, Teluk Bayur, and Panjang (cross region).

#### **Intensification productivity (est.)**

Lowest estimate for ocean fishing intensification in the 1<sup>st</sup> IOME provide the opportunity of additional volume figure of 600,000 - 800,000 tons.

## **2<sup>nd</sup> Indian Ocean Marine Ecosystem**

As for the 2<sup>nd</sup> Indian Ocean corridor is bordered partly with Christmas Island (Australia) and located in southern coastal sea of Java and Sumatra Island. It covers area of southern part of Sunda Strait, Pelabuhan Ratu Bay, Nusakambangan and southern part of Bali strait where anchovy, mackerel, shark, snapper, and tuna can be found in this area. The estimate of the Ocean fishery operational territory radar is 200 mil from the boundary of the outer island of Indonesian Ocean.



It is a tropical ocean region influenced by the dynamic of Indian Ocean and the dynamic of LME 39 North Australian Shelf (see page 27). The 2<sup>nd</sup> IOME covers an area of no less than 340.000 kilometers square. It helps warming the sea surface of Indian Ocean and is a major driver of climate in northern Australia. The region has a monsoonal climate and tropical cyclones are common seasonal events.

The IOME is most likely to be considered a Class II, moderate productivity ecosystem (150-300gCm<sup>-2</sup>yr<sup>-1</sup>). Nutrient discharge from the rivers of the island of Java. Tidal mixing is a major contributor to the nutrient dynamics of this generally deep ecosystem. The tropical rainfall that accompanies cyclonic weather systems can be a major source of freshwater to the region. These flats concentrate salt and nutrients for extended periods following tidal inundations and on rainfall, the flats releases salty, nutrient-laden water into the coastal zone. The quantitative contribution of these processes to the coastal zone is not well known.



Fish stocks in the IOME are small but diverse. The level of endemism in the IOMEs is low with most species distributed widely in the region. Commercial fish species in the LME include prawns, skipjack tuna, sardine, anchovy, mackerel, shark, snapper, tuna, shad, and scad.

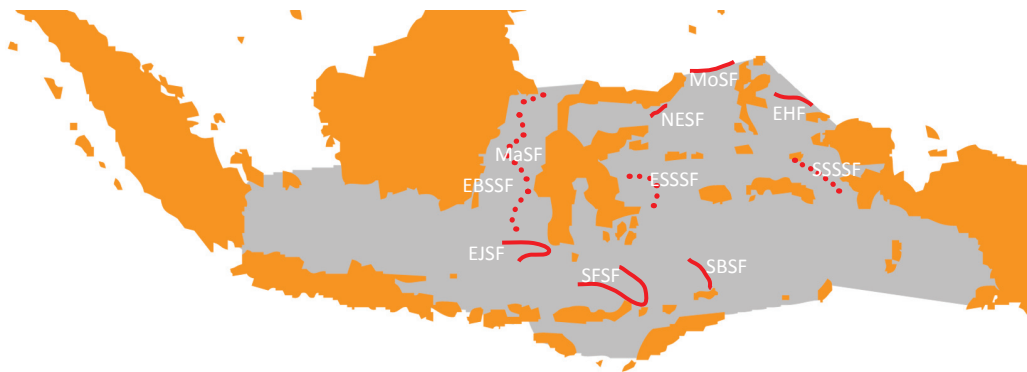
### Current productivity

Current productivity is estimated around 200,000 ton where most are consumed for domestic use. Indonesia's main fishing ports within this region are Panjang (Lampung), Pelabuhan Ratu, Pangandaran (West Java), Cilacap, Muncar (East Java), Banyuwangi (East Java) and Benoa (Bali).

### Intensification productivity (est.)

Lowest estimate for ocean fishing intensification in the 2<sup>nd</sup> IOME provide the same opportunity as the 1<sup>st</sup> IOME of additional volume figure of 600,000-800,000 tons.

## LME 38 - Indonesian Seas



EBSSF (East Borneo Shelf-Slope Front); EJSF (East Java Sea Front); ESSF (East Flores Sea Front); EHF (East Halmahera Front); EJSF (East Java Sea Front); ESSSF (East Sulawesi Shelf-Slope Front); MoSF (Makassar Strait Front); NESF (Northeast Sulawesi Front); SBSF (South Banda Sea Front); SSSSF (Seram Sea Shelf-Slope Front)

— LME boundary    ● ● ● ● most probable location of shelf-slope front

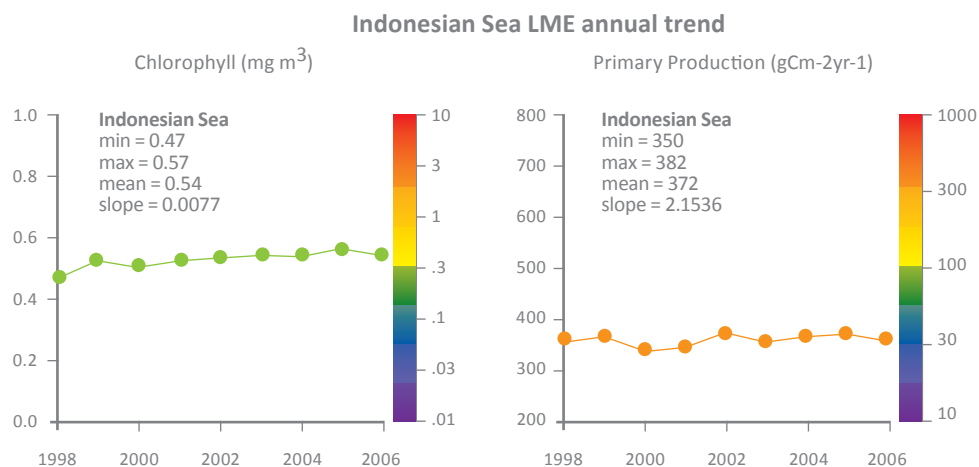


Figure courtesy of J. O'Reilly and K. Hyde  
Source: UNEP 2008



LME 38 - Indonesia seas is situated at the confluence of the Pacific and Indian Oceans and bordered by Indonesian and East Timor.

The LME-38 region is located in the Indo-West Pacific centre of biodiversity, supporting mega diversity. The pelagic realm is an important habitat, which supports high biodiversity of large and small migratory marine species, including a wide variety of cetaceans, the blue, fin, humpback whales, and other species that frequently migrate through the region. It covers an area of 2.3 million kilometers square, of which 1.49 percent is protected and contains 9.98 percent and 0.75 percent of the world's coral reefs and seamounts, respectively. Indonesia is one of the world's largest archipelagic nations with a territorial coastline exceeding 54,000 kilometers. The warm ocean acts as a "heat engine" of global atmospheric circulation with complex ocean-atmospheric dynamic. The convergence of three tectonic plates-the Eurasian, Indo-Australian and Pacific Plates make the region geologically as well as topographically diverse. Many of Indonesian islands are subject to tectonic instability including volcanic activity. Seasonal monsoons, during which ocean currents reverse direction, exert a significant influence on the LME.

The Indonesian Sea LME is considered a Class I ecosystem with high productivity ( $>300 \text{ gCm}^{-2}\text{yr}^{-1}$ ). The Banda Sea and Aru Basin in particular, are areas of extensive seasonal upwelling and down welling related to the monsoonal system. During upwelling periods, biomass and productivity at all levels in the food chain are greatly enhanced. Stocks of small pelagic fish were also found to be considerably higher during the upwelling period. The changing of oceanographic condition in this LME also influences phytoplankton and zooplankton species composition.

The fisheries of the Indonesian Sea LME are very complex and diverse, reflecting the region's extraordinary heterogeneous geography and species variant. While most of the catch comes from its artisanal sector, industrial fisheries contribute considerably more in terms of value, since they target high-value shrimp and tuna stocks. Major species caught in the LME include tuna, sardines, anchovy, mackerel, as well as a range of reef fishes. Reef fisheries are vital to subsistence fishers and their families in the region but are also important in supplying high value products for expanding international, national and local markets. Aquaculture of shrimps in coastal ponds has also increased rapidly during the last two decades.

Subsistence farming and fishing of the approximately 6,000 coastal communities are directly dependent on the sea as their primary source of food and income. Coastal and marine industries, including oil and gas production, transportation, fisheries and tourism, account for 25 percent of the nation's GDP, in addition to employing a significant percentage of Indonesia's workforce. The reefs of Indonesia provided annual economic benefits of US\$1.6 billion per year in 2002, based on their value in food security, employment, tourism, pharmaceutical research, and shoreline protection.

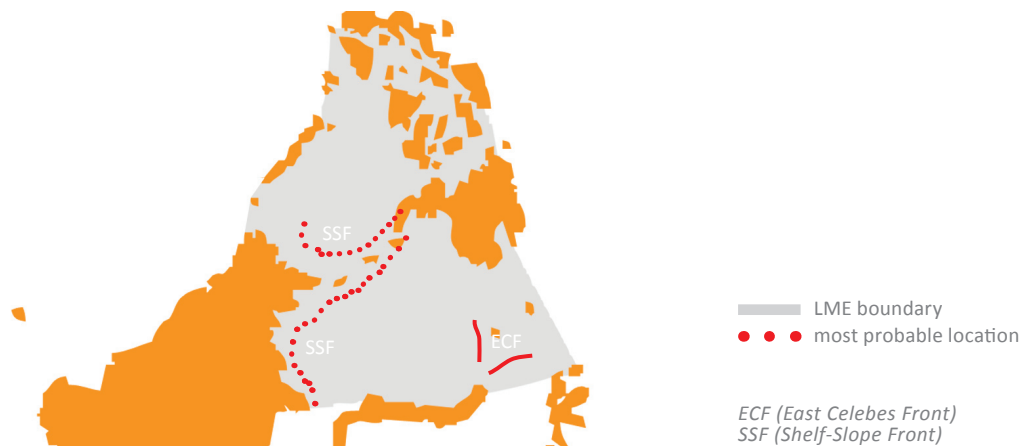
The Indonesia Sea LME is governed by Indonesia and the recently independent state of East Timor. By using "archipelagic Doctrine" to define Indonesian territorial waters, most of this LME is within archipelagic waters. Marine governance in Indonesia is very complex as there are three levels of government – district, provincial and national – with marine jurisdiction. The Government has sponsored the Coral Reef Rehabilitation and Management Program, a 15-year initiative aimed at strengthening the management of the country's coastal resources while considering the needs of coastal communities. Since 1980's, there have been major advances in the regional capacity for



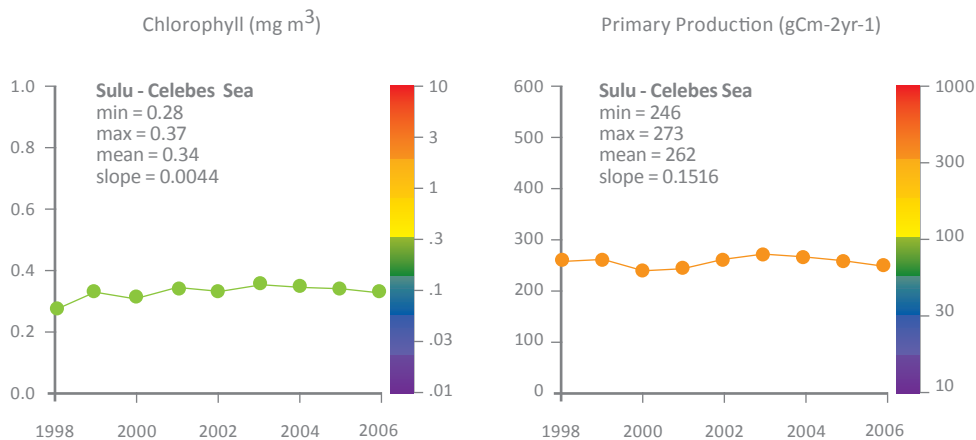


development of policy and legislation based on sound science. For example, a “critical mass” of regional expertise now resides in government, inter-governmental agencies, academic institutions, and NGOs. There are also extensive literatures on marine environment in Indonesia that is published locally in Bahasa Indonesia.

## LME 37 - Sulu-Celebes Sea



### Sulu - Celebes Sea LME Annual trend



LME 37 is comprised of the Sulu and Celebes Seas, which are separated from each other by a deep through and a chain of islands known as the Sulu Archipelago. The LME is bounded by northern Borneo (Malaysia), the southwest coast of Philippines and Sulawesi Island (northern coast of Indonesia), but most of this LME falls within the archipelagic waters of either Philippines or Indonesia. It covers an area of about one million kilometers square, of which 1.03 percent is protected, and contains 6.17 percent and 0.22 percent of the world's coral reef and Sea mounts, respectively. A complex oceanographic results from the Celebes' strong currents, deep-sea trenches, seamounts and active volcanic islands. The LMEs tropical climate is governed by the monsoon regime. During the southwest monsoon months, the northern and central parts of the region are



affected by typhoons, which bring intense rains and destructive winds to coastal areas. There are more watersheds and 14 major estuaries in the region.

The Sulu-Celebes Sea LME is considered a Class II, moderate productivity ecosystem (150-300gCm<sup>-2</sup>yr<sup>-1</sup>). The tropical climate, warm waters, ocean currents and upwelling make this LME one of the world's most biologically diverse marine environments. Located near the confluence of three major biogeographic zones and within the Indo-West Pacific centre of biodiversity, the region supports mega-diversity. A significant proportion of the total coral reef area of Philippines (about 20,000 kilometers square) is located in this LME. This forms a part of the 'coral triangle', which has the highest coral diversity together with Indonesia and New Guinea (more than 500 reef-building species). In addition, 2500 species of marine's fishes, 400 species of algae, five species of sea turtles and 22 species of marine mammals are found in this LME.

The total population of the Sulu-Celebes Sea LME region is approximately 33 million. The region has diverse economic activities, with major export earners including fisheries, marine-culture, agriculture and mining. Service industries, including coastal tourism, also make a substantial contribution to GDP. There is significant offshore oil and mineral exploration, with a potential for substantial expansion in the coming decades. Subsistence farming and fishing are major activities of large number of people outside the main urban centers. The Sulu-Celebes Sea LMEs fisheries are an important source of foreign exchange earnings for the three countries in 'coral triangle'.

In addition, the countries obtain a significant percentage (up to 70 percent) of their animal protein from fish consumption. Marine fisheries including fish farming are also an important source of employment in the region. In 2001, the reefs of Indonesia and Philippines provided annual economic benefits of US\$ 1.6 billion and US\$ 1.1 billion per year, respectively.

In theory, extensive policy and regulatory frameworks already control marine resource management and exploitation. Both Philippines and Indonesia have moved to decentralized management of marine resources. Several hundred protected areas have already been designated and over one hundred more are currently being gazette. Several small community-based management initiatives have proven to be very successful at protecting coral reefs as well as facilitating replenishment of reef-based fisheries.

### **LME 34 - Bay of Bengal**

LME 34 is a relatively shallow embayment in the northeastern Indian Ocean encompassing the Bay of Bengal, Andaman Sea and Straits of Malacca. It is bordered by Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand. The LME covers area of about 3,660,130 kilometers square, of which 0.49 percent is protected, and contains 3.63 percent and 0.12 percent of the world's coral reefs and seamounts, respectively. It is influenced by the second largest hydrologic region in the world, the Ganges-Brahmaputra-Meghna (GBM) Basin, which covers nearly 1.75 million kilometers square spread over five countries (Bangladesh, Bhutan, China, Nepal and India).



— LME boundary      . . . . . most probable location of shelf-slope front

### Bay of Bengal LME Annual trend

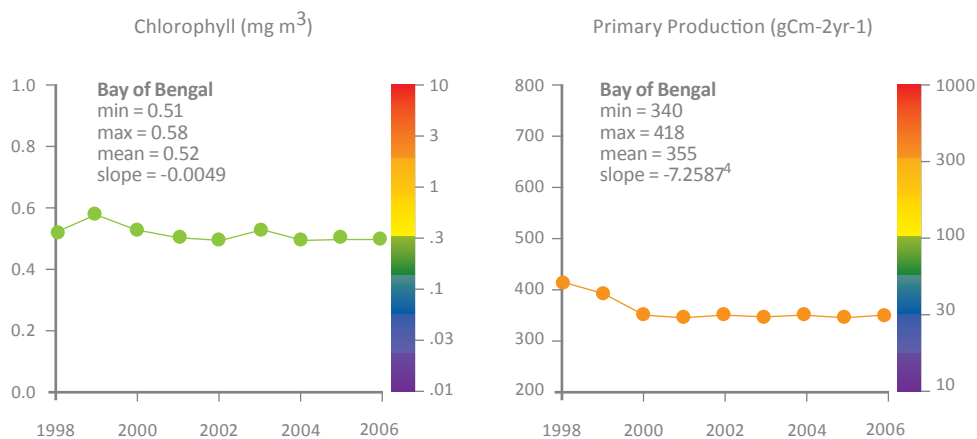


Figure courtesy of J. O'Reilly and K. Hyde  
Source: UNEP 2008

The Bay of Bengal LME can be considered a Class I, highly productive ecosystem ( $>300 \text{ gCm-2yr-1}$ ). Secondary production is highest in the post-monsoon period (October-January) and lowest during the monsoon period from June to September. The coastal-forested areas of Sri Lanka and Malaysia are biodiversity hotspots, with a large number of threatened endemic plants and animal.

Fisheries in the Bay of Bengal LME target a wide range of species, including Sardine, anchovy, scads, mackerel, snapper, emperor, grouper, pike-eel, tuna, shark, ornamental reef, shrimp, bivalve shellfish and seaweed. During the last decade, some countries have developed offshore fishing for Tuna, notably Indonesia, Thailand, and Sri Lanka, while most of the tuna catch comes from coastal fisheries, offshore fisheries provide the majority of export grade Tuna. Most of the countries are major producers of farmed shrimps, with Thailand and Indonesia ranked among the world's top producers.





The eight countries bordering the Bay of Bengal LME include some of the most populous in the world, India, Indonesia and Bangladesh being among the world's top ten. An estimate 400 million people live in the LMEs catchment area. The LME and its natural resources are of considerable social and economic importance to the bordering countries, with activities such as fishing, shrimp farming, tourism and shipping contributing to food security, livelihoods, employment and national economies.

## **LME 36 - South China Sea**

LME 36 is bordered by China, Indonesia, Malaysia, Philippines, Taiwan and Vietnam. It covers an area of 3.2 million kilometers square, of which 0.31 percent is protected and contains 7.04 percent and 0.93 percent of the world's coral reefs and seamounts, respectively. Coastal waters are relatively shallow (less than 200 meters) and are influenced by marine as well as by river and terrestrial inputs.

The South China Sea Basin and Palawan Trough are deeper than 1,000 meters. Numerous rivers (120) drain a total catchment area of 2.5 million kilometers square into the LME. Most of the region lies within the sub-tropical and equatorial zones and the climate is governed by northeast and southwest monsoon regimes. The northern and central parts of the region are affected by typhoons during the southwest monsoon months, bringing intense rains and destructive winds to coastal areas. The South China Sea LME is a biologically diverse marine ecosystem with a tropical climate. It is considered as Class II, moderate production ecosystem (150-300 gCm<sup>-2</sup>yr<sup>-1</sup>). The Indo-West Pacific marine biogeographic province, which includes the South China Sea LME, is well recognized as a global center of marine-shallow water, tropical biodiversity. Approximately 2 million hectares of mangrove forest or 12 percent of the world total are located in the countries bordering the South China Sea LME.

The marine fisheries are important to the food security and economy of the bordering countries with targeted group including flying fishes, tunas, bill fishes, mackerels and sharks for the pelagic species, and a large array of demersal fish and invertebrates, especially penaeid shrimps. There is also a high percentage of reef fish and other small coastal pelagic fishes such as herring, sardine and anchovy in the landings. Because of their proximity to shore, fringing reefs are heavily exploited by subsistence fishers and about 70 percent of the coral reefs in the broader region (including Sulu-Celebes Sea and Indonesian Seas) is heavily depleted, producing less than 5 tones per kilometers square per year in comparison with the remaining 30 percent of reefs that produce about 15-20 tones per kilometers square per year.

Moreover, adult fish are scarce in some reefs in the region. Reduction and loss of reef fish populations may have trans boundary consequences if reefs of the South China Sea LME are considered. Oceanic migratory species such as Tuna, bill fish, sharks and other pelagic species are also overexploited, with potential trans boundary impacts. Some shark species that migrate throughout the South China Sea LME are also targeted and often caught as by catch in the tuna and swordfish fisheries.

High levels of suspended solids are found in coastal waters throughout most of the region. This has resulted from activities such as extensive deforestation in many watersheds, logging, mining, land reclamation, dredging and urban development, compounded by high rates of erosion. There have



GTF (Gulf of Tonkin Front); SCISF (South China Inner Shelf Front); SCOSF (South China Outer Shelf Front); SSF (Shelf-Slope Front); VCF (Vietnam Coastal Front); WLF (West Luzon Front)

— LME boundary    . . . . . most probable location of shelf-slope front

### South China Sea LME Annual trend

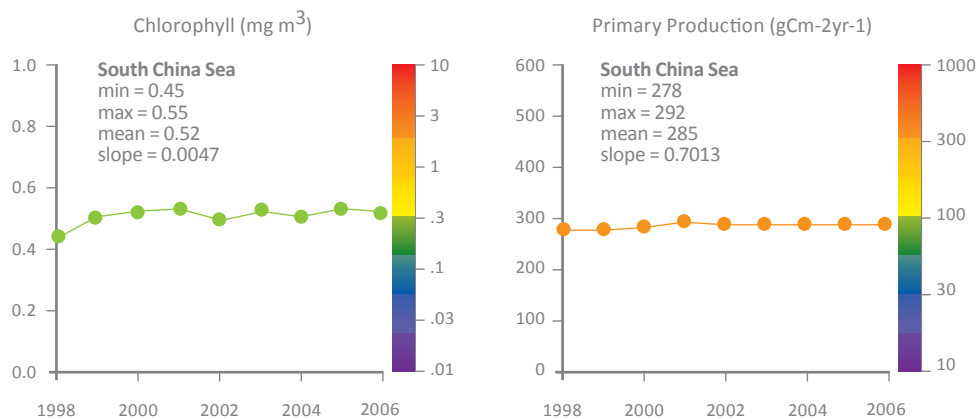


Figure courtesy of J. O'Reilly and K. Hyde  
Source: UNEP 2008

been major changes in turbidity and levels of suspended sediments in Malaysia, Vietnam, Philippines, Indonesia (Sumatra and Kalimantan) and Thailand. Suspended solid have caused major changes in biodiversity of benthic communities.

Ecological goods and services provided by mangrove systems are estimated to be worth about US\$ 16 billion per year. Southeast Asian reefs are estimated to be worth more than US\$ 2.4 billion per



year based on their contribution to food security, employment, tourism, pharmaceuticals research and shoreline protection, while the estimated value of sea grass and coastal swamp areas in the South China Sea region is about US\$ 190 billion per year.

The South China LME contributes to the livelihood of millions of people engaged in trade, tourism, industry, fisheries and oil exploitation. Fisheries remain a significant source of revenue and food. Economic activities include fisheries, mariculture, tourism and mining. The region is a globally important source of minerals, with considerable oil and gas reservation.

## **LME 39 - North Australian Shelf**

LME 39 is a tropical sea lying between Pacific and Indian Oceans. It extends from the Timor Sea to the Torres Strait and includes Arafura Sea and Gulf of Carpentaria. The LME covers an area of nearly 800,000 kilometers square, of which 2.17 percent is protected, and contains 0.70 percent of the world's coral reefs. A broad continental shelf links Australia with eastern Indonesia and Papua New Guinea. Despite high local currents, there is very little net exchange of water between the Pacific and Indian Oceans through the shallow Torres Strait.

It is bordered by Timor trough to north Indonesian Through flow, a warm-water current flowing from Pacific into Indian Ocean, crosses the north-western part of this LME and plays a vital role in driving the world's climate system, carrying up to 10,000 cubic meters per second from Pacific Ocean into Indian Ocean. The Through flow is of particular importance to Australia since it helps warming the sea surface of Indian Ocean and is a major driver of climate in northern Australia. The region has a monsoonal climate and tropical cyclones are common seasonal events.

The North Australian Shelf LME is a Class I, high productivity ecosystem ( $>300 \text{ gCm}^{-2}\text{yr}^{-1}$ ), although offshore areas are more oligotrophic. Northern Australian waters are dominated by pico-plankton sized cyanobacteria, although the large colony forming N-fixing cyanobacterium *Trichodesmium* is often abundant in these waters. Nutrient discharge from the rivers is restricted to the summer-wet season and is highly variable within and between years. Tidal mixing is a major contributor to the nutrient dynamics of this generally shallow LME. Bottom friction acts in a manner analogous to wind stress on the surface to mix the water column. Monsoonal winds and tropical cyclones also contribute to nutrient enrichment of shelf waters in this LME.

Well-developed mangrove creeks occur along much of the coastline, which is characterized by fine sediment and low relief. Tropical cyclones have pronounced effect on the continental shelf and on the coastal ecosystems. The episodic rainfall that accompanies cyclonic weather systems can be a major source of freshwater to the region, causing widespread flooding. Supra-tidal mud flats are found along coastal areas throughout the Gulf of Carpentaria. These flats concentrate salt and nutrients for extended periods following tidal inundations and rainfall, these releases salty, nutrient-laden water into the coastal zone. The quantitative contribution of these processes to the coastal zone is not well known.



Fish stock in the North Australian Shelf LME are small but diverse. The level of endemism in the Northern Australia LME is low with most species distributed widely in the Indo-West Pacific region. Commercial fish species in the LME include northern prawns (Gulf of Carpentaria and Joseph Bonaparte Gulf), threadfin bream, and skipjack tuna.



ASF (Arafura Sea Front); CAF (Cape Arnhem Front); CYPF (Cape York Peninsula Front); JBCF (Joseph Bonaparte Gulf Front); GCF (Gulf of Carpentaria Front)

— LME boundary

#### North Australian Shelf LME Annual trend

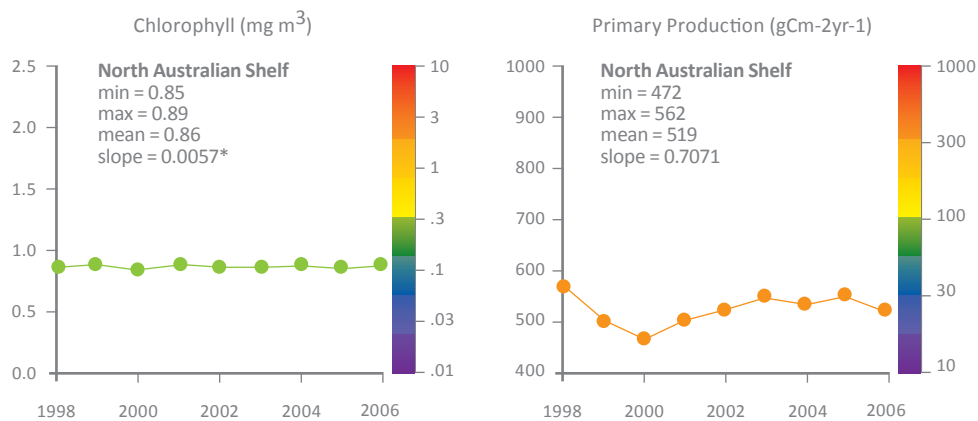


Figure courtesy of J. O'Reilly and K. Hyde  
Source: UNEP 2008





# Investment in Demand

Proposal to the World





The Government of Indonesia issued a range of policy schemes that ensure its endowed marine resources managed in a sustainable manner for today's and future generation.

This include the fisheries management scheme which eliminates foreign vessels from operating in the Indonesian Economic Exclusive Zone and shift to a joint cooperation in developing Land Based Industry through Integrated Fisheries Investment Management Unit in Indonesia.

## The national imperative: Ship building industries

The development of strong national ship industry is an imperative for Indonesia. This justified by Indonesia's geographical, demographical, and logistical characteristic, as well as the need of projecting Indonesia's economy into global supply chain. The target of the ship industries development within medium term is to focusing the investment to build the national ship yards and to increase the domestic industrial capabilities in making the components of the "mother" ship. As for the long term, the national industrial strategy targeted the national ship yards to have the capability to build up to 150,000 DWT ship. In doing so the national fleets will be able to serve future demand of domestic and international logistic markets.

Based on the national present and future need, Indonesia requires to have capability to build passenger ship, ship, ferry, tanker, cargo ship, barge ship, bulk ship, tug boat, fishing boat and naval ships for the armed forces. The ship industries development needs to be supported by sufficient economic infrastructures such as technology, human resources, infrastructures, industrial financing and market.

In 2008, there were estimated no less than 971\* ships of merchant marine servicing Indonesian economy. By type they comprised: bulk carrier 54, cargo 514, chemical tanker 35, container 80, liquefied gas 7, passenger 44, passenger/cargo 68, petroleum tanker 143, refrigerated cargo 2, roll on/roll off 10, specialized tanker 10, vehicle carrier 4 - Owned: 41 (China 2, France 1, Germany 1, Japan 6, Norway 1, Philippines 1, Singapore 27, UEA 2). Registered in other countries: 111 (Bahamas 2, China 1, Hong Kong 7, Liberia 2, Panama 31, Singapore 66, unknown 2).

Indonesian market share in international shipbuilding ranks 15<sup>th</sup>, with 0.17 percent of market share. Meanwhile, in South East Asia, Indonesia ranks 4<sup>th</sup>, below Vietnam, Philippines, and Singapore. Observing our enormous waters territorial, Indonesian market still has a big chance to

\* processed from various sources





develop. According to UNCTAD data, by 2005 Indonesian positioned 25 in the rank of merchant ships present (based on territory). Total shipping units recorded in Indonesia consist of 82 percent ships registered under Indonesian flag that servicing 64 percent of shipping volume, whilst the rest 18 percent registered under foreign flag that servicing 46 percent of shipping volume.

Therefore, the share of non Indonesia registered ships in Indonesia logistic demand remains high. Despite Indonesia shares the biggest number of ships that are registered under national flag compared to other countries of ASEAN. In term of age, most Indonesian ships are more than 20 years old (82 percent).

The characteristic of shipping industry in the world trade development leads to an upward trend for shipping market services. The figure increase by no less than 25 percent in volume per year. This encompass projection for cargo type; dry and liquid cargo; and expected to reach about 1,400 billion ton in 2010. The trend also showed the high need for bulk carrier type service ships.

A research conducted for Indonesia's Investment Coordinating Board projected that until 2025, domestic dry cargo volume will grow by 2.8 times, liquid cargo becomes 1.4 times bigger, and in general domestic cargo will be doubled. The most growing cargo type is container. Its volume will be 5.2 times bigger, from 11 million ton (2004) become 59 million ton (2024). Dry cargo growth is in line with economic growth. On the next 20 years, volume of oil cargo will decline though consumption is increasing. Nevertheless the LNG (Gas) cargo will grow to a large extent replacing the need for tankers in domestic energy logistic system. Some of domestic crude oil volume will be replaced by imported oil. As the impact, liquid cargo growth (which is dominated by oil) will





Indonesian Market Share in international shipbuilding ranks 15th, with 0.17% of market share. Within regional area of South East Asia, Indonesia's ship building ranks 4th, below Vietnam, Phillipines, and Singapore. Observing our enormous waters territorial and the embedded natural resources, development of maritime based industry is crucial for Indonesia.

The contribution of maritime sector in Indonesia gross domestic product structure is around 20 percent. The fishing sub sector alone in 2008 contribute 2 percent to Indonesia's GDP. In several countries such as China, Norway, and United States, contribution from maritime sector to PDB reach no less than 30% of their GDP.

With its large territorial water area of 5.8 million km<sup>2</sup> and its access to five world's Large Marine Ecosystems Indonesia possesses huge opportunities to become one of the major maritime economic power in the world, particularly in marine based fishing and food processing industries.

not be as high as dry cargo. Passenger growth (both aircraft or water transportation) will be in line with GDP growth (Gross Domestic Product). The higher GDP gets the higher the number of aircraft passengers reaches. With the exception of trans island (ferry- Ro and Ro), passenger of water transportation will be lower. Hence, it is predicted that air-water transportation passenger ratio will change from 60-40 (2001) to 51-49 (2024) with growth rate of 1.5 times.

The Government of Indonesia is projecting that until 2025, to ensure the attainment of the objectives of national development, the "archipelagic" economy is in needs to be serviced by no less than: bulk carrier 110 ships, cargo 550 ships, chemical tanker 35 ships, container 80 ships, liquefied gas 33 ships, passenger 33 ships, passenger/cargo 68 ships, petroleum tanker 70 ships, refrigerated cargo 40 ships, roll on/roll off 66 ships, specialized tanker 50 ships, and vehicle carrier 22 ships. To fulfill such requirement, the GoI has underlined its strong commitment to focus resources toward the formation of national modern ship building industries.

## The making of modern fishing fleets

As for the development of the fishery industries, and to exploit the expansion of production capacity of 3.8 million ton per year. In addition to the present aging fishing fleets, for next 15 years, the country is in demand of building up modern ocean going fishery ships. Such new ships are projected to enable the country to conduct long distance operation of no less than 200 nautical miles of Indonesia Exclusive Economic Zone in effective and efficient manners.

To accommodate such expansion production figure, roughly no less than 4,000 ships of 200 GT should be built at once. Through a progressive building and procurement schemes, the country should be able to realize around 250 fishery ships of 200 GT per year. The number does not include



the refurbishing and/or revamping of the existing ships in the fleets. Based on the progressive procurement scheme, up to 2025, for the fishery ships, the investment in demand will be around US\$ 350 million per year.

The national industry policy document stated there are 86 center of ship industries, they are: Nanggroe Aceh Darussalam (2), North Sumatra (6), Riau (6), Jambi (3), Bengkulu (1), South Sumatra (3), Daerah Khusus Ibukota Jakarta (1), West Java (4), Central Java (3), East Java (3), West Kalimantan (1), South Kalimantan (4), Central Kalimantan (9), East Kalimantan (16), South Sulawesi (9), Central Sulawesi (2), Southeast Sulawesi (5), North Sulawesi (1), Maluku (7). The document also specifically indicated the location for the development of the ship industries cluster, namely: Riau, Sulawesi, Papua, Maluku, Bali, NTT, and South Sumatra.

The realization of such number of ships is difficult to attain by solely relying on the existing production capacity of 16 modern and 70 traditional shipyard industries in the country. Significant investment of technology, human resources and infrastructure are required for both the development of new modern ships yards and modernizing the existing in need. The level of success of the approached cluster structures in developing the industries depends on the effectiveness of public and private partnership, both domestic and foreign.

## Marine based food processing industry

The Government of Indonesia realize that the development of food processing industry is vital for not only securing national food resilience of Indonesia but also beyond that contributing to the fulfillment of present and future global food demand. Investment in fishery resources based processing industry in Indonesia is not only commercially profitable but also sustainable in the framework of global increasing demand for alternative protein sources. Ocean based protein demand is clearly increasing due to the fact that land based feedstock supply is now becoming alarming.





The target of agro-marine processing industries development is small, medium and large scale industries where the basic process of increasing the added value of fishery processing and other agro-marine products for further processes is done. Main action to be executed within the medium term is to hold partnership among fishers, farmers and processing industries and to provide incentive credit for the by catch fishing and its modern process, as for the long-term action is to build public and international alliances. Meanwhile target to be achieved in long-term is to increase export in food processing up to 50 percent by increasing the utilities capacity up to 65 percent with average of 5 percent increment per year. The export of the fishery processing is expected to increase in average of 5 percent per year and is expected to give Indonesia its own branding image in international market.

### Current fishing harvesting status

At present, statistic showed that around 2.1 million tons out of Indonesia's national fish production of 5.2 million tons, are exported. Today, the average per capita consumption of fish is 17 kg per year. This is higher than the world average of 16 kg per capita per year. Within the next 20 years the protein sources retrieved from the fish is expected to double to 30 kg per capita.

#### Available processing estimate up to 2030 by LMEs and non LMEs access

LMEs and non-LMEs	Estimate available supply for processing per year (tons)
LME 34 The Gulf of Bengal	200.000 – 400.000
LME 36 South China Sea	500.000 – 800.000
LME 37 Sulu -Celebes Sea	250.000-400.000
LME 38 Indonesia Seas	800.000 -1.000.000
LME 39 - North Australian Shelf	50.000 – 80.000
Java Sea - Indonesia Seas Non LME	NA
Pasific Ocean Corridor - Non LME	NA
Indian Ocean Marine Ecosystem – 1 - Non LME	600.000 – 800.000
Indian Ocean Marine Ecosystem – 2 - Non LME	300.000 – 500.000

At present out of the total volume of 5.2 million tons, 900.000 tons are processed and most are subjected for export. Presuming that the processed volume will be doubled to no less than 2 million tons in 2025, the Government of Indonesia is projecting an additional investment of US\$ 2.5 billion for the ocean fishing food processing industry. Such investment figure stands for the processing industry only and does not include investment for its support industries, such as packaging, fine chemicals, machineries, etc.

The Document of National Industrial Policy (KIN) explicates that Indonesia has 301 agro-marine processing industrial centers: Nanggroe Aceh Darussalam (6), North Sumatra (17), West Sumatra (12), Riau (7), Jambi (7), Bengkulu (2), South Sumatra (3), Lampung (7), Daerah Khusus Ibukota Jakarta (3), West Java (39), Central Java (2), East Java (16), Bali (14), NTB (10), NTT (16), West Kalimantan (4), South Kalimantan (23), Central Kalimantan (6), East Kalimantan (14), South Sulawesi (21), Central Sulawesi (4), Southeast Sulawesi (9), North Sulawesi (18), Maluku (36), Papua (5).



### Industry development strategy

The strategy of the marine based food processing industry is directed to increase the growth of Indonesia fish export by ocean-going fishing technology modernization and agro-marine based food processing. This to be implemented within the framework of partnership of related sector to increase the capacity and capability of the fishing boats, improvement of fish surveillance technology, improved fishing zones management, port development, agro-marine processing and its derivative needs (such as chemical and waste processing). In addition, the development of the agro-marine based processing industrial cluster needs to be supported by sufficient economic infrastructures such as technology, human resources, infrastructures, market accessibility, and policy support. The success of the cluster development is determined by the effectiveness of public and private sectors through certain and continuous partnership.

The Government of Indonesia attempts to hold partnerships between the fishing communities and the agro-marine processing industries. The development of the ocean going and marine biotechnology and the integrated development of the agro-marine processing industries are performed in line with development of domestic supporting industries to manufacture fishing machineries and utilities. Hence, the added value and the quality of the agro-marine processed products would increase.

### Fishery port industries

The fishery ports will be developed based on the fishing allocation zones, catchment capacity, the presence of hub into supply chain, fish processing industries and other resources that will be made available in the location. Based on the presence of 5 Large Marine Ecosystems on which Indonesia has accesses to, and Decree of Minister of Marine and Fishery No 01/2009 that divide Indonesia Fishery Management into 11 (eleven) regions, locus for the fishery ports are as follow:







### Locus fishery of port development

Large marine ecosystem	Fishery management regions	Main fishing port locus
LME 34 The Gulf of Bengal	WPP-RI 571 covering Malacca Strait and Andaman Sea and surrounding.	Sabang Lhoksemauwe
LME 36 South China Sea	WPP-RI 711 covering Karimata Strait, Natuna Sea, and South China Sea.	Pontianak
LME 37 Sulu Celebes Sea	WPP-RI 716 covering Sulawesi and northern region of Halmahera Island Seas.	Bitung
LME 38 Indonesia Seas	WPP-RI 713 covering Strait of Makasar, the Gulf of Bone, Flores Sea, and Bali Sea.  WPP-RI 714 covering Tolo Bay and Banda Sea.  WPP-RI 715 covering The Gulf of Tomini, Maluku Sea, Halmahera Sea, Seram Sea and The Gulf of Berau.	Makasar (South Sulawesi) Bima (Flores) Kalianget (Madura) Ambon  Kendari
LME 39 North Australian Shelf	WPP-RI 718 covering Aru Sea, Arafuru Sea, and the eastern part of Timor Sea.	Kupang – Tenau Area
Java Sea - non-LME	WPP-RI 712 covering Java Sea.	Not Proposed
Pacific Ocean Corridor- Non LME	WPP-RI 717 covering the Gulf of Cendrawasih and Pacific Ocean.	Jayapura Area
1 <sup>st</sup> Indian Ocean Marine Ecosystem – non-LME	WPP-RI 572 covering Indian Ocean areas at the west part of Sumatera Island extend from West Sumatera to Sunda Strait.	Padang Area Bandar Lampung Area
2 <sup>nd</sup> Indian Ocean Marine Ecosystem – non-LME	WPP-RI 573 covering Indian Ocean areas extending from the Strait of Sunda to the Sea of Sawu and Sea of Timor.	Banyuwangi Area Benoa Area Mataram-Teluk Lembar

Note: (WPP) Wilayah Pengolahan Perikanan - Fishery Management Regions



The development of the centre of the coastal fishery port processing industries is based on 3 main parameters, they area: Proximity and or access to the fishery port towards the catching area, access to the processing industries centers, and the third is access to the domestic or international hub supply chain port. The requirement specification for the respective ports to be developed in the locus is port carrying capacity to accommodate fishery ships up to 200 GT with handling capacity to manage minimum 60 -120 tons per days. Among others, basic infrastructure required for the fishing port are:

- Quay and water break - as necessary
- Fuel facility
- Water supply facility
- Water well
- Auction or market facility
- Processing and handling facility
- Packing and storing facility
- Ice plant and storage facility
- Ice storage facility
- Medical facility
- Office facility
- Laboratory and/or quality control facility
- Forklift
- Fishermen's meeting room
- Surface of land area
- Waste installation
- Sanitation - WC and washroom
- Drainage and fences

The Government of Indonesia estimates that the capital requirement for the modernization and/ or construction of fishery ports until year 2025 is US\$ 400 - US\$ 600 million. The capital investment demand for the modernization or construction are varied between one port to another. It depends on the area location and condition of the existing ports.

As part of fishery industries development, the Government of Indonesia has lay-outed the plan to modernize the existing fishery ports spread in the archipelago. The modernizing processes encompass standardization, capacity, hygienic, and management. The government also regulate and provide parameters for ports development. Some of the parameters are: port function to the national logistic plan, including its connection to the supply chain and its access to agro-marine processing industries.



## The supporting industry for ship building industry

From industrial point of view, the Ministry of Industry focused on industrial products in demand for the development of the agro-marine based industry.

The supporting industries are iron and steel industry, non-ferrous metal industry, wired welding industry, shipping equipments, navigation industries, electrical machines industry, telecommunication industries, and the components of Design and Engineering services. As for the related industries are the shipping services, trans boundary services, insurances, maintenance and workshop services. Supporting factors for ship industry are technology, infrastructure and human resources.

In year 2004 – 2009, Indonesia initialized making the ship with capacity more than 50.000 DWT using the existing manufacturing technology. In year 2010 – 2025, the plan is to modify and develop the technology and the final plan for year 2016 – 2025 is upgrading industry and technology used. Steps to be undertaken in infrastructure to support this industry are developing ship-building, providing affordable incentive to build new ships and providing affordable industrial area for the ship yards. Last but not least, to support this industry, an increased amount of Research and Development activities and infrastructure for under water technology.





## Ferrous metal: Steel industry

With population of 240 million, total national production of steel of 8.2 million tons and imported steel around 3 million tons, present Indonesian per capita steel consumption is around 56 kg per year. In year 2025, the per capita consumption is estimated around 1,000 kg of steel per year. This will make the national demand figures of 140 million tons per year. Such demand figure will construct a total investment need of US\$ 450 billion

To support the ocean fishing industry and its processes, the 2010-2014 investment focused on providing national necessities of iron ore/pellet and scrap and also the recovery of natural gas supplies, which support the steel industry. Indonesia has a relatively good quality steel industry, however, for some steel products, there are technological, financial and capacity investment required to facilitate the development of the sufficient and solid national modern ship industry.

The target of the steel industry is the medium and big scale industry, where operation such as optimizing the rough steel industry of 6 million tons per year and development of the HRC steel products that are required for ship construction, petroleum and natural gas pipes and construction. As for the long-term, the target achievement is the integrated of smelted steel for producing stainless (slab, HRC and CRC) local nickel ores basis.

The Government attempts to increase the capacity of its gas basic iron-making industry, applying SNI steel to empower national steel industries alliances with the new proven steel process-technology sources. As for the accomplishments, long-term plan is to build and develop iron-making process technology with 1 million tons per year by local coal and iron basis.

The development of the steel industries should be supported by sufficient economic infrastructures such as technology, human resources, infrastructures and market. The successful cluster approach in developing steel industries depends on the effectiveness of the public and private partnership.

## Non-ferrous metal: Aluminium industry

2007 statistic showed that Indonesia is in demand of 350,000 tons of aluminium ingot input per year. By 2008, national aluminium ingot production of the country estimated 250,000 tons per year, on which 60 percent of them or around 150,000 tons were exported. The remaining demand was imported from India, Middle East, China, and other countries. Today, there are no less than 76 companies involved in aluminium downstream industries with total production capacity of 644,000 tons. By the year of 2008, Indonesia exported of aluminium products recorded US\$ 700 million.

At present national per capita consumption of aluminium products remain low. The figure stands for 1.3 kg per capita per year. This is comparably far lower than the consumption of aluminium products of Thailand that reach 10 kg per capita per year. Presuming that by 2025 projected aluminium and related product consumption will reach 5 kg per capita per year, thus the country should have the capacity to produce no less than 1 million tons of aluminium ingot per year.

To fulfill the attainment of Indonesia development up to 2025, the country is in need to increase its aluminium ingot production as well as its downstream miscellaneous aluminium related





industries production capacity. These include billet, sheets, foils, extrusion, etc. Those products are needed to accommodate the high domestic demand for ships, aeroplane, automotive, housing, pharmaceutical, packaging and other industrial needs.

The Government of Indonesia projects that investment requirement for aluminium smelter in next 15 years will form a figure of no less than US\$ 5 billion. This figure excludes the investment requirement to revamp the existing aluminium smelter of Indonesia Asahan Aluminium (INALUM).

### **Current status of aluminium industry**

Located in Kuala Tanjung, Batubara Regency of North Sumatra Province. Indonesia has an aluminium smelter that produces 250,000 tons per year. The smelter is now an integrated complex with anode carbon factory producing 149,000 tons per year. Today the smelter is the largest aluminium smelter in South-east Asia. There are also infrastructures for the two projects, such as a seaports, roads, employee housing, schools, places of worship, hospitals, and others. The smelter is equipped with reduction furnaces and support facilities, such as rubber wheeled cranes to lift the raw materials, alumina and coke warehouses, and a waste gas cleaning system. The electrolysis plant has three reduction units, each with 170 pre-baked anode furnaces of 170,000 amperes. The 510 furnaces have a combined capacity of 225,000 tons of aluminium per year.

### **Energy supply**

One of the vital factor to support the smelter aluminium is its need for continuous substantial energy supply. Within this particular issue the Government is now considering to allocate new investment of aluminium industry in the area that endowed with substantial clean energy reserves, such as the Province of Papua.

### **Raw material**

In addition, aluminium industries require bauxite materials that will be processed into aluminium, where afterwards it will be processed into ingot aluminium by smelting process. Indonesia is endowed with substantial amount of bauxite deposit in West Kalimantan. This deposit if properly extracted and processed can ensure a continuous smelter business operation for no less than 100 years. Indonesia State Owned Enterprises, PT Petrokimia Gresik and PT Pertamina, already have the capabilities to support other additional materials for aluminium production process.

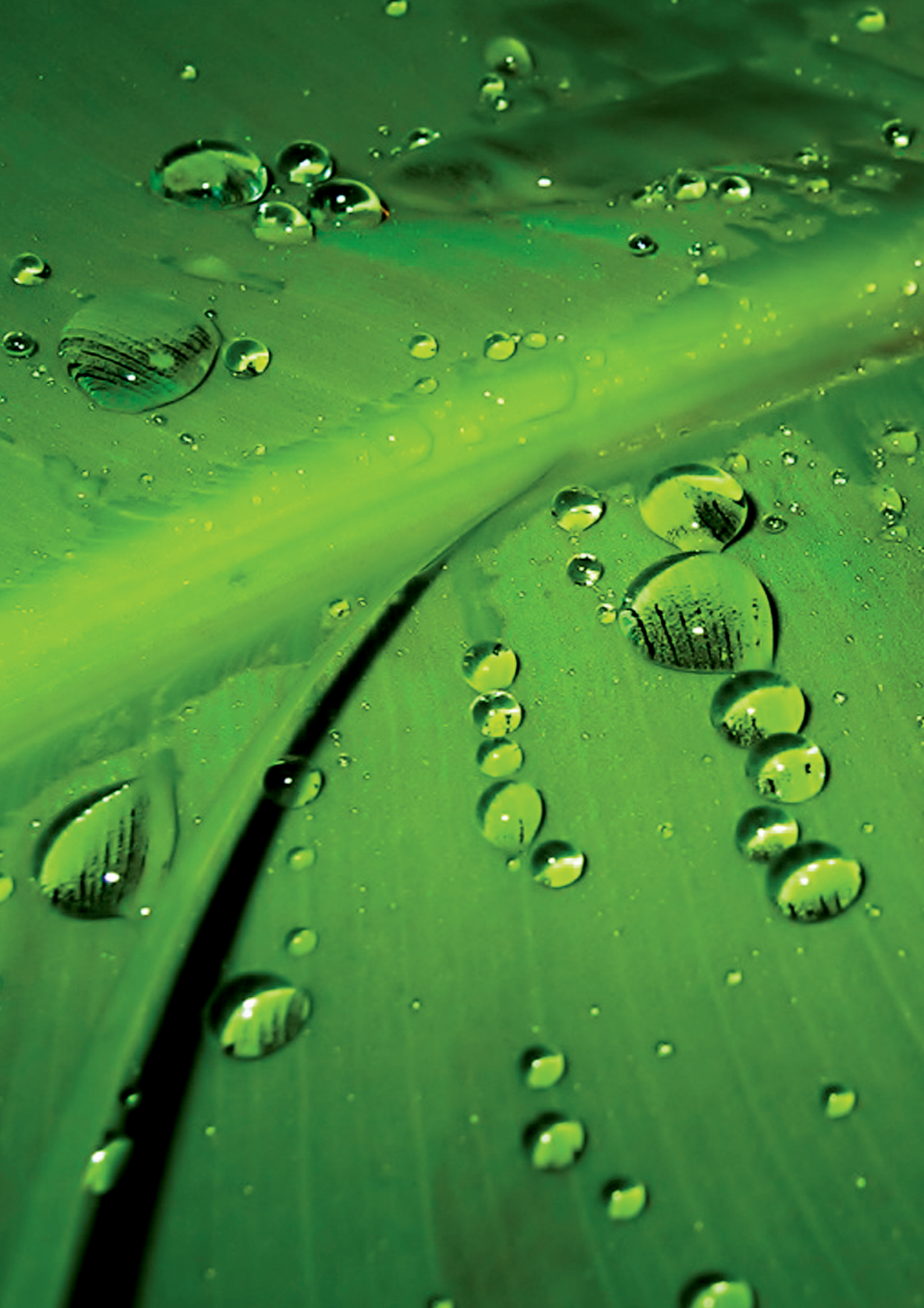
### **Going green - Non-ferrous metal aluminium derivative industries**

The Government of Indonesia is also considering to integrate the presence of aluminium smelter industries with other aluminium related industries. Particularly those that require substantial amount of energy supply. The investment for high consumption electricity industries in Java for example, will be relocated to the other region of Indonesia, that are still full with the necessary sources to support the development of those industries.

As for other industries, especially billet industries, profile/extrusion al strip, and slug will obtain significant benefits of energy saving if within industrial process metal gets molten directly from the smelter. Therefore, immense energy will not be necessary for the industrial process. Other benefit is the transportation energy to central in Java Island and other area in Indonesia. The people in that area would get imminence benefits from those industries.











# Sustainable Investment

Being your correct address



## Endowed resources for sustainable investment

### Indonesia's national spatial plan

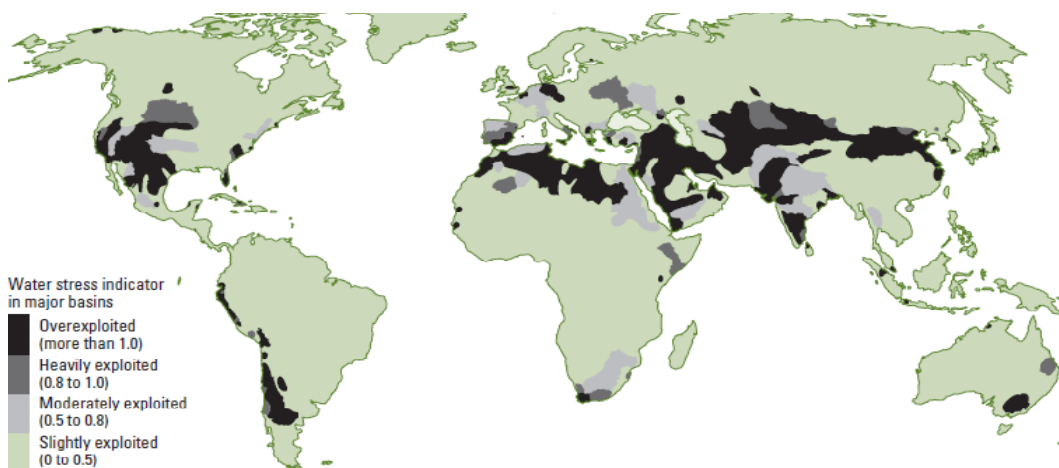
The national spatial plan is the guideline to plan the national long term development, the national medium term development, national zone benefits and its management, to achieve integration, relation and balance of provincial development and among sectors, to determine location and zone function for investment, to plan national strategic zone, provincial and cities or regency. The period of the national spatial plan is 20 years where it can be reviewed once in 5 years. The National Spatial Plan was promulgated by Law No. 26/2007 and Government Decree No. 26/2008. In the Decree the Government of Indonesia outlined some sea areas within the territory of the country that are dedicated as protected sea areas for any fishing and or any form of exploitation. These areas function as “plasma nutfah” to ensure fishing sustainability of Indonesia seas.

### World's biggest per capita water availability

Indonesia has the highest water supply per capita in the world. It is estimated that Indonesia's water supply is 2,800 km<sup>3</sup>. There are 521 lakes where 14 of them have more than 100 m depth, 8 of them with 200 m depth and 3 of them with more than 400 m depth. Toba Lake, which is 1.130 km<sup>2</sup>, is the biggest volcanic lake in the world with 590 m depth. Indonesia has more than 5.500 rivers. As for the water resource of groundwater is relatively limited and can only accomodate the rural and urban area. The water consumption of 98% is dominated by agriculture sector.

The total renewable water resource is 2,838 cubic kilometers; as for its total fresh water withdrawal for the domestic is 82.78 cubic kilometers/year (8 percent for the domestic, 1 percent for industrial and 91 percent for agricultural purposes).

### Global water exploitation



Source: Smakhtin, Revenga and Doll 2004, UNEP map 2006



The Government of Indonesia places serious concerns and consistent endeavors in preserving the support of environment for sustainable development. Therefore Indonesia has been in support by entering into international agreements regarding environmental issues, such as Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Decertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands and last but not least the Marine Life Conservation that has been signed although has not been ratified yet.

Access to water and irrigation is a major determinant of land productivity and the stability of yields. Irrigated land productivity is more than double that of rainfed land. With climate change leading to rising uncertainties in rainfed agriculture and reduced glacial runoff, investment in water storage will be increasingly critical. Even with growing water scarcity and rising costs of large-scale irrigation schemes, there are many opportunities to enhance productivity by revamping existing schemes and expanding small-scale schemes and water harvesting.

### Moderate impacts of climate change

Indonesia has an important role in climate change because of its location and oceanographic. According to the IPCC Third Assessment (IPCC 2001) and Commonwealth Scientific & Industrial Research Organization Australia (CSIRO), below is the scenario of climate change for Indonesia until 2010:

- There will be changes in climate variability, however no extreme condition will be faced.
- Temperature will be raising around 1.4 degree Celsius and 5 degree Celsius, in average the temperature in Indonesia will increase around 2.8 degree Celsius. The increase of the temperature in Indonesia is considered low.
- The sea surface temperature of Indonesia is estimated less than 2 degree Celsius.

Climate change scenario for Indonesia

1980s Temp degC	1990s Temp degC	Scenario	CO2 ppmv	2002s Temp degC	Sea- level cm	CO2 ppmv	2050s Temp degC	Sea- level cm	CO2 ppmv	2080s Temp degC	Sea- level cm
0,13	0,28	B1-low	421	0,6	7	479	0,9	13	532	1,2	19
0,13	0,28	B2-mid	429	0,9	20	492	1,5	36	561	2,0	53
0,13	0,28	A1-mid	448	1,0	21	555	1,8	39	646	2,3	58
0,13	0,28	A2-high	440	1,4	38	559	2,6	68	721	3,9	104

Therefore, Indonesia is competent to have significant role in global food scheme in the future. As of all required investment components in land agro industries, Indonesia basically has tremendous potential to transform this investment opportunities into realized investment.



## Sustained energy supply

### Oil and gas

Indonesia's oil production reached 977,000 bbl/day in 2008 where 1,564 million bbl of it are consumed by domestically. As for the oil export in the same year, Indonesia reached 85.000 bbl/day and imported 67,000 bbl/day. Indonesia ranked 27<sup>th</sup> in the world for having huge reserved oil. Indonesia's reserved oil is estimated around 3,99 trillion barrel in 2007. In addition, the country also produces natural gas with 2,659 billion m<sup>3</sup>, reserved gas in 2008. Gas production for the energy supply and fertilizer reached 56 trillion m<sup>3</sup> in 2007. The gas production used to provide local needs is around 23.4 trillion M3 and the rest around 32.3 m<sup>3</sup> used for export.

Indonesia energy reserve 2005 (Fossil)

Energy Types	Resources	Reserve	Production	Reserve Ratio (Years)
Oil	86,9 bn barrels	9,1 bn barrel *)	387 miobarrel	23
Gaz	384,7 TSCF	185,8 TSCF	2,95 TSCF	62
Coal	58 bn tons	19, 3 bn tons	132 mio tons	146

Source: Indonesia Ministry of Energy and Mineral Resources, 2006

### Electricity

The total capacity of national energy plant in 1995 reached 27.803,53 MW (National Electricity Company, private sector, industry and Cooperative). 53.6 percent of the total capacity which is 14.894,9 MW run by the National Electricity Company and 72.16 percents of the total capacity run by the National Electricity Company are used in Java Island. It increased in 1997 up to 39.290,82 MW including 20.344,98 kVA captive power. In year 2007, the national electricity company produced 142,4 billion kWh with 121,2 billion kWh of it was consumed. Up to year 2025, the national energy consumption will decrease in average of 2.80 percent per year. Total energy consumption in 1994 – 1999 was supplied by electricity where it will increase in the year 2024 – 2029 up to 16 percent.

Power generated by sources

Non-fossil	Resources	Equivalent	Installed
Hydro powered	845 million BOE	76.57 GW	4.2 GW
Geothermal	219 million BOE	27 GW	0.8 GW
Mini/Micro Hydro	0.45 GW	0.45 GW	0.206 GW
Biomass	49.81 GW	49.81 GW	0.3 GW
Solar power	-	4.8 kWh/m <sup>2</sup> /day	0.01 GW
Wind power	-	9.29 GW	0.0006 GW
Uranium deposit (11 years)	24,112 ton*	3 GW	-

Source: Indonesia Ministry of Energy and Mineral Resources, 2006



## Energy

### Electricity

production: 142,4 billion kwh (2007 est.)

consumption: 121,2 billion kwh (2007 est.)

### Oil

production: 977,000 Bbl/day (2008 est.)

consumption: 1,564 Million bbl/day (2008 est.)

exports: 85,000 bbl/day (2008 est.)

imports: 672,000 bbl/day (2008 est.)

proved reserves: 3.99 Billion bbl (January 1, 2007 est.)

### Natural gas

production: 56 billion cu m (2007 est.)

consumption: 23,4 billion cu m (2007 est.)

exports: 32,6 billion cu m (2007 est.)

proved reserves: 2,659 trillion cu m (January 1, 2008 est.)

The biggest consumer of the electricity of all time is industrial sector, followed by household, commercial use, the Government and the smallest is transportation sector since it is only used by the electric train. It is hoped that in the future, a lot of people will be more interested in using electricity as energy since it does not have negative impact toward environment.

## Global hub to the world market

The position of Indonesia, which is located between 2 oceans and 2 continents can accommodate surrounding countries' interests and build good partnerships. The Malaka Strait is one of the crowded international routes since it can shorten the length of the journey and is one of good factors for Indonesia's economy. Indonesia geography has global significance for global communication purpose, that benefits Indonesia with best communication satellite lines connecting the archipelago with the rest of the world.

Indonesia consists of the international sea line and national sea line. The 3 Indonesian Sea Line of communications is North – South where the other two are located in Eastern part of Indonesia. These sea lines of communications give an export opportunity for natural resources including Indonesian agro-marine. Basically, there are some strategic straits; they are Malaka, Sunda, Lombok and Makassar straits in Southeast Asian and Tsushima, Tsugaru, Osumi and Soya (La Perouse) strait in East Asia. Most of the main marine lines go through those straits and make use of them, therefore the global maritime community considered them as checkpoints.





## Sea Line of Communications (SLOCs)

By the Sea Line of Communication incorporated in the development concept, information and access on the condition of the world market has become an important matter. The market condition can be indicated by how big is the demand of other countries on certain commodity of export value. Data on Indonesian international commerce, especially in agricultural products, show most of Indonesian export is directly for the Asia Pacific countries, mainly Southeast Asian (Singapore and Brunei) and East Asia (Japan, Korea, Hongkong, RRC, and Taiwan). Secondly is for the North America including Canada and the third is for European continent, mainly Western Europe and only few is for the Australian and African countries.

The main ports which are the destination of Indonesian quality products are Taipei port in Taiwan, Hong Kong and Southeast Asia (mainly Singapore). As for the European market it goes to Southampton (England), Marseille (France), Hamburg (Germany), Rotterdam (Netherlands) and Antwerpen (Belgium). American destinations are the San Francisco and Washington ports. Temporarily, Oceania (Australia and New Zealand) destinations are Darwin, Sidney and Auckland ports.

### Malaka Strait

The length of it is 600 miles with 2.18 meter depth. International Maritime Organization (IMO) can only allow ships with not more than 19.8 meter of draught passing through this strait. The route is relatively narrow, with only 1.5 miles on that will east-southern of Singapore strait, therefore many long lines occur and potential of collision which cause high sea pollutions are possible. It is the main corridor to connect South China Sea and Indian Ocean. There more or less 300 ships pass through this strait, around 50 of them are tankers including VLCC (Very Large Container Cruiser) delivering oil to Asia from Persian Gulf.

### Lombok and Makassar Straits

Lombok Strait is 150 meters deep and 150 mile long with width of 18 kilometers. There is no limitation of draught in this strait, therefore ship with more than 100,000 DWT can pass through this strait. Almost all routes using this trait go pass the Makassar strait that has more than 18 kilometers width and 600 kilometers length of route. The depth of it is around 830 – 3400 meter which makes this route a very safe route for the submarines and heavy ships.

### Sunda Strait

It is located between Java Island and Sumatra Island and also an alternative of Malaka strait. The length of it is 50 kilometers and the entrance width is around 23 kilometers. However, since its northern entrance is relatively shallow and has dangerous current, this strait is rarely used by big ships, especially with more than 100,000 DWT.

Based on the outlet/port development principals, it is expected the development of ports in Indonesia can use the Indonesian Sea Line of Communications. In other words, the main ports which can deliver the commodities to the world market are main ports closed to the Indonesian Sea Line of



Communication. Considerations that have been undertaken for the sea line communication to be a safe line for the ships is the national defense and security and the hydro condition – oceanographic (depth of the ocean, sea current, wind, the rise and the ebb tide, dangerous position of corals, etc). There are 3 sea line communications Indonesia that need to be used comprehensively, so they can create multiplier effect not only to the close areas of sea line communication but wider range up to the forward and backward linkage. The use of Indonesia Sea Line Communications for the national and economical development in 2025 development targets is as followed:

- To increase the national territories and economy management in global geo-economy and geo-strategy with continuous competition;
- To increase the capability of the national defense and security management through the increase of capacity of the sovereignty territory.
- To increase the sector and territory development to facilitate the prosperity gap in some areas by accelerating the development of the central strategic development outside Java Island.
- To increase the acceleration of the Indonesian's economy competition through the strengthening of the national industry with integrated agricultural, agro-marine and other natural resources basis.
- To force acceleration of national development stakeholders partnerships by focusing on the global competition territory and industry.
- The increase of the industrial development, which will support the development of logistic network, infrastructure, transportation and distribution, domain and world market coverage.
- To develop agro-marines which cover marine communication, agro-marine industry, fishery, marine recreation, energy and mineral resource.
- To reduce the need of geo-economy accesses toward international relationship of certain countries which will give impact on Indonesian social leverage, politics, economy and diplomacy in international world.

## Strong accesses to supply chain

### 2025 Toll roads

Up to the year 2025, there will be 96 lanes of Trans cities toll road, 51 lanes of inner city toll road and 1 Trans island bridge (Sunda Strait Bridge) developments.

### Sunda Strait bridge

This development would change the Indonesian national and international logistic map, especially for the Western part of Indonesia. This would connect the Western part of Java Island with the Southeastern part of Sumatra Island (Lampung Province). The change will not only occur for the people and commodity's mobility but also would cause the economy movement from Java Island to Sumatra Island. Also, it would reduce the ecology pressure in Java Island. As for the national supply chain, this bridge would reduce the logistic burdens of ports in northern part of Java Island such as Bojonegara and Tanjung Priok ports and open the Panjang Port as Marine International Logistic Hub. Panjang port has the ecological characteristic to accommodate VLCC (Very Large Container Cruiser).



### **The 2029 national checkpoint marine transportation port**

According to the national spatial plan, there are public and exclusive ports. Public port consists of international hub, international port, national port, regional port and local port. The international hub and international port is developed to serve the marine activities and big scale national and international trans container and to become the checkpoints of the international marine network. Meanwhile, the national port is developed to serve the marine activities and medium scale of national and international transport.

### **Indonesian international hub development**

Within the development period up to year 2025, 75 projects related to the sea ports, 14 among them are categorized as the port development and the rest 66 are related to the port improvement. For booth, port developments and port improvement mean that industrial products of many kind and type on significant amount are required.

By ocean fishing investment has immediate and comprehensive benefits and push towards every phase of Indonesia's industrial development policy within period of 2010-2014 and period afterwards. The supporting industries, required related industries, and built infrastructure have made agro-marine fishery as a strong economic locomotive which has coherent and convergent impacts towards most of all short, medium or long term national plans. Agro-marine industries development is related to many kinds of Indonesia's existing industries, however, it demands all kinds of components in supporting industrial cluster or related industries.

According to the coastal-based marine industry basis, Indonesia is required to build strategic structures and postures national fishery industry as followed:

1. Indonesia is required to have the strong capability in providing mobility, logistic, transportation and communication for the ocean based marine industry.
2. Indonesia is required to have the transportation for the ocean based marine industry which can access the marine natural resources within Indonesia's territory and its exclusive economic zone with maximum production and safety.
3. Indonesia is required to have the capability to manage the productions of the fishery transportation with maximum and continuous added value.
4. Indonesia is required to have maximum access and capability in delivering the fish production industries to domestic and international market due to the food sustainability as national income.

### **Health and education**

The use of lands in Indonesia are: 11.03 percent of arable land, 7.04 percent of permanent crops and 81.93 percent of other use. The irrigated lands can be found as many as 45,000 square kilometers in Indonesia. While land and water are critical assets in rural areas, education is often the most valuable asset for rural people to pursue opportunities in the new agriculture, obtain skilled jobs, start businesses in rural nonfarm economy, and migrate successfully. Yet education levels in rural areas tend to be dismally low worldwide. Improving basic rural education has been slower than in urban areas.



Consistent with the goal of protecting social investment from the economic slowdown, the government is budgeting to significantly increase spending on education, agricultural support and 'other' categories, as well as infrastructure. National spending on education and on agriculture in 2009 is projected to be increased by around 40 percent in real terms from 2008; spending on infrastructure by all levels of government is projected to be increased by about one-quarter.





### **Food security**

As an economic activity agriculture can be a source of growth for national economy, a provider of investment opportunities for the private sector, and a prime driver of agriculture-related industries and rural nonfarm economy. Two-thirds of the world's agricultural value added is created in developing countries. In agriculture-based countries, it generates on average 29 percent of the gross domestic product (GDP) and employs 65 percent of the labor force. The industries and services linked to agriculture in value chains often account for more than 30 percent of GDP in transforming and urbanized countries. Agricultural production is important for food security because it is a source of income for the majority of the rural poor.

Agricultural production accelerated to 4.8 percent y-o-y in Q1 especially in crop production. The annual growth rate in 2008 of 4.8 percent is the fastest since 1992. Food crop production growth increased to 5.6 percent in March quarter on a year earlier. The national accounts reported growth in the real volume of non-food crop production, which includes crops especially affected by the fall in commodity prices, of almost one-quarter y-o-y, but this is likely to be biased upwards by price movements.

Until mid-2008, commodity prices boomed and Indonesia's emerging trading partners of China, Malaysia and India grew strongly. This lifted Indonesia's exports to new levels. Total exports reached US\$ 136 billion, 20 percent above 2007's exports, which in turn were 13 percent above 2006 levels. Agricultural and natural resource goods contributed most to export growth – notably, crude palm oil (CPO), rubber, ores, minerals, petroleum, and natural gas. Exports of certain manufactured products such as clothing, footwear, and automotive parts also increased considerably, as Indonesia built a niche as a mid-market producer.



## Infrastructure

### Telephones

main lines in use: 17.828 Million (2007)

mobile cellular: 81.835 Million (2007)

Global telecommunication links: Country code - 62

landing point for both the sea-me-we-3 and

sea-me-we-4 submarine cable networks

satellite earth stations - 2 intelsat (1 indian ocean and 1 pacific ocean)

Radio broadcast stations: AM 678, FM 43, shortwave 82 (1998)

Television broadcast stations: 54 local tv stations, 11 national tv networks (2006)

Internet country code: .id

Internet hosts: 753,200 (2008)

Internet users: 13 million (2007)

Airports: 669 (2008)

Railways: total length: 6,458 km

Roadways: total length: 391,009 km

Waterways: 21,579 km (2008)

Merchant marine: total 971 (2008)


By type: bulk carrier 54, cargo 514, chemical tanker 35, container 80, liquefied gas 7, passenger 44, passenger/cargo 68, petroleum tanker 143, refrigerated cargo 2, roll on/roll off 10, specialized tanker 10, vehicle carrier 4 - Owned: 41 (China 2, France 1, Germany 1, Japan 6, Norway 1, Philippines 1, Singapore 27, UAE 2). Registered in other countries: 111 (Bahamas 2, China 1, Hongkong 7, Liberia 2, Panama 31, Singapore 66, unknown 2)



Together with Fishery, the Industry sector have been stated as the primary development sectors to drive Indonesia's economy until 2025. Beyond that, the industry sector will play vital interfacing roles in providing the necessities for development process and activities of sectors as well as regions in the country.

Indonesia direction to promote marine based manufacturing industry is no less than imperative for meeting its national agenda of the 2015's Millennium Development Goal of food security whilst making contribution to strengthen global food demand for decades thereafter.

Managing the marine based manufacturing industry will require good policy and sustained as well as considerable investments. Immediate and sharply increased investment is especially urgent in Indonesia fishery sectors, from where the global demand on fish commodities are predicted to be no less than double by 2030.





# Beneficial Cooperation

Message to the World

The success in optimizing manufacturing industry roles in the management of Indonesia's fishery resources is to be achieved by promoting a conducive business and investment environment, prioritizing industries and their distribution, and technological innovation.

These in turn, will be constructive to the establishment of strong business equity and sustainability, as well as contribute to the leverage of Indonesia's global supply chain of the 21<sup>st</sup> century.







# Appointment

with the Future



The Ministry of Industry of The Republic of Indonesia is ready to assist you in establishing and furthering mutual beneficial cooperation in a common endeavors to advance marine related manufacturing industries. You may also contact us directly through:

BUREAU OF PLANNING  
SECRETARIAT GENERAL  
MINISTRY OF INDUSTRY REPUBLIC OF INDONESIA

Jl. Gatot Subroto Kav. 52-53  
Jakarta 12950 - INDONESIA  
Tel & Fax (62 21) 525 3278  
[rainbow@depperin.go.id](mailto:rainbow@depperin.go.id)

To assist you with convenience contact and communication within the proximity of your domicile please do not hesitate to contact The Republic of Indonesia representatives world wide. The complete point of contact of Indonesia representatives world wide can be accessed from:

**[www.deplu.go.id](http://www.deplu.go.id)**

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www.kbri-kabul.go.id

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Fax (27-12) 342-3369  
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www.indonesia-pretoria.org.za

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Indonesia in Cape Town  
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Fax (27 21) 761 7022  
postmaster@indonesia-capetown.org.za  
www.indonesia-capetown.org.za

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www.indonesia-dz.org

#### **The United Nations**

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#### Italy, Cyprus and Malta

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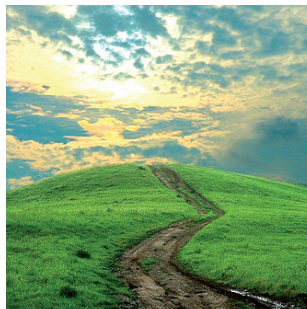
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