

BUSINESS DEVELOPMENT PROFILE

INDONESIA

I. INTRODUCTION TO INDONESIA

A. GEOGRAPHY AND DEMOGRAPHY

Geography

- Indonesia is an archipelagic country in South East Asia, extending 5,120 kilometres from east to west and 1,760 kilometres from north to south. It encompasses an estimated 17,508 islands, only 6,000 of which are inhabited. There are five main islands Sumatra, Java, Kalimantan, Sulawesi and Papua. The total areas is 9.8 million sq.km and the sea area constitutes about 81% of the total .
- Lying along the equator, Indonesia experiences two seasons—a rain season and a dry season—with no extremes of summer or winter. Indonesia, is prone to earthquakes and volcanoes because it sits along the Pacific "Ring of Fire," a horseshoe-shaped string of faults that lines the Pacific Ocean.

Demography

- Indonesia is the 4th most populous nation in the world, after China, India and the USA, and the largest economy in Southeast Asia. The country has a total population of some 242 million in 2011.
- Java is the most populous island in the world (136.6 million people in 2010) and one of the most densely populated areas (1,060 / sq km) as compared to 124 people/ sq.km nation wide. The biggest populous cities are Jakarta (9.6 million), Surabaya (2.8 million) , Bandung (2.4 mmillion), and Semarang (1.6 million) which are located in Java island, and Medan (2.1 milion) in Sumatera and Makasar (1.3 million) in Sulawesi.
- The median age of population in 2010 is 27.2 years. Around 55% of the population is under 30 years old. This provides for dynamic labor market participation, growing at 2.3 million per year
- Indonesia includes numerous related but distinct cultural and linguistic groups, many of which are ethnically Malay. There are around 300 ethnic groups with their own languages and dialects range in population from the Javanese (about 70 million) and Sundanese (about 30 million) on Java, to peoples numbering in the thousands on remote islands. About 87% of the population are Moslem and 9.8% are Christians, the rests are Budhist and Hindust.

- The education level of most Indonesians is still low. The population census in 2010 shows that only 3.34% of population aged 5 years and over who have university education attainment, while about 59% only completed primary school or lower, 16.9% secondary school and 16.89% high school.
- Rapid economic development has fundamentally altered the structure of Indonesian labor force over the past four decades. In 1971 over 60% worked in the agricultural sector, while in 2011, only 36% working in agriculture sector. Of the total employment of 109.7 million in August 2011, 13.3% worked in manufacturing sector, 21.3% in trading sector, 15.4 % in service sector, 5.8% in construction sector and 4.6% in transportation/ communication sector.
- With respect to quality of labor, although there have been major improvements in the education of labor force, the overall level of educational attainment is still low, where almost 51 percent of labor force has either an elementary school certificate or lower, 41.6% has only secondary /high school and only 5.6% University graduates.
- The Indonesian government acknowledges that training a sufficient number of skilled workers to meet the growing demands of the rapidly moving economy is one of the greatest challenges facing Indonesia. For illustration, Indonesia needs around 25,000 new engineers to meet the demand for the implementation of MP3EI.

B. THE ECONOMY

Sustainable economic growth under global economic pressures

Indonesian economy was continuously improving amid the turbulent in international financial market dominated by the political and economic challenges of the Euro zone debt crisis. The Indonesian economy expanded 6.5 percent in 2011 from 6.1% in 2010, putting it ahead of emerging-economy peers such as Malaysia and Thailand. In the first semester of 2012, the economic growth was recorded at 6.4% (year to year), making it the fastest growing G20 economy after China.

On the demand side, higher economic growth was supported by robust exports, brisk investment growth and continued rise of household consumption driven by higher public purchasing power .Per capita income rose from US\$ 2,350 in 2009 to US\$ 3,010 in 2010 and US\$ 3,543 in 2011.

Export revenues advanced by 27.5% to USD 201.5 billion in 2011. Resource-based commodities such as coal, crude palm oil (CPO), copper, rubber and metal goods provided the backbone of non-oil and gas export performance during the year.

Manufacturing sector maintains its role as the backbone of the economy . This sector contributed 24.3 % to the overall GDP in 2011. Despite its declining share, agriculture sector remain important sector in the economy as it provides employment to around 42.5 million people in 2011 particularly in rural areas. .

Table – 1
GDP and other key economic indicators, 2007 – 2011

Description	2007	2008	2009	2010	2011
GDP Growth by sector (%)					
Agriculture	3.5	4.83	4.13	1.8	3.0
Mining & Quarrying	2	0.68	4.37	2.8	1.4
Manufacturing	4.7	3.66	2.11	4.1	6.2
Electricity, water	10.4	10.92	13.78	3.2	4.8
Construction	8.6	7.51	7.05	6.5	6.7
Trade,hotel,restaurants	8.5	6.87	1.14	8.8	9.2
Transport& communication	14.4	16.57	15.53	13.3	10.7
Financial	5.8	8.24	5.05	6.3	6.8
Other Services	4.3	6.23	6.4	6.4	6.7
Overall Growth (%/year)	6.3	6.01	4.55	5.8	6.5
GDP Distribution (%)					
Agriculture	13.7	14.5	15.3	15.3	14.7
Mining & Quarrying	11.2	10.9	10.6	11.2	11.9
Manufacturing	27.1	27.8	26.4	24.8	24.3
Electricity, water	0.9	0.8	0.8	0.8	0.7
Construction	7.7	8.5	9.9	10.3	10.2
Trade,hotel,restaurants	14.9	14	13.3	13.7	13.8
Transport& communication	6.7	6.3	6.3	6.6	6.6
Financial	7.7	7.4	7.2	7.2	7.2
Other Services	10.1	9.7	10.2	10.2	10.5
Total	100.0	100.0	100.0	100.0	100.0
GDP cur.price(US\$ billion)	419.5	452.1	597.1	715.8	819.0
Household consumption (US\$ bil)	26.66	27.40	35.01	40.52	44.70
Foreign Direct Investment- inflow (US\$mil)	6,928	9,318	4,877	13,771	18,160
GDP per capita(US\$/yr)	1,922	2,245	2,350	3,010	3,543
Population (million)	225	228	231	238	241
Foreign exch reserve (US\$bill)	57	55	66	96	110
Export (US\$ bil)	118	140	120	158	202
Import (US\$ bil)	85	117	89	128	166
BI Interest rate (%/year)	8.00	9.50	6.50	6.50	6.00
Investment loan interest (%/year)	13.00	13.30	12.96	12.28	12.04
Bank's credit (US\$ bil)	11.0	113.2	151.0	194.6	240.7
Rupiah exchange rate/(Rp/US\$)	9,419	10,950	9,400	8,991	9,068
Inflation rate (%/year)	6.60	11.10	2.78	6.96	3.79

Source : BI, CBS

Figure -1

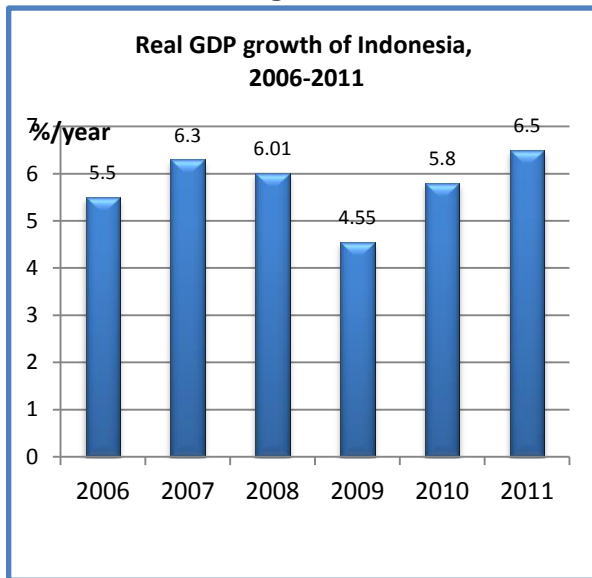


Figure - 2

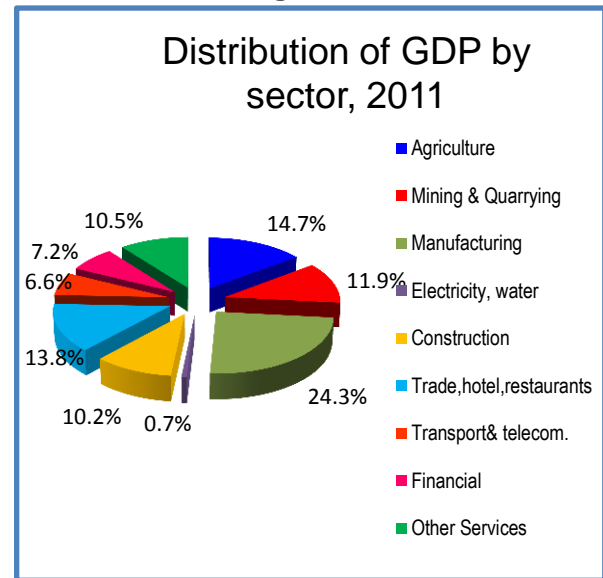
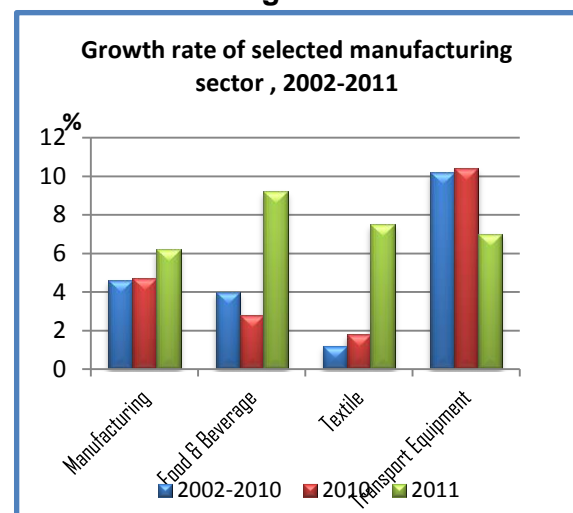


Figure -3



Figure -4



MP3EI to accelerate economic development

In 2011, the Indonesian Government launched the “*Masterplan for Acceleration and Expansion of Indonesia Economic Development*” (MP3EI). The masterplan is expected to drive the realization of high, balanced and sustainable economic growth to transform Indonesia into one of the 10 major economies in the world by 2025. It aims to take GDP to \$4.5 trillion and increase the per capita income from the present \$3500 to \$15,000 in 2025.

The master plan seeks to raise average annual economic growth to 8-9 percent between 2015 and 2025, from around 6 percent now. The Government will act as a regulator and a facilitator to support economic growth and will provide fiscal and non-fiscal incentives. The private sector will be given a major role in economic development.

MP3EI divides the economic development into six economic corridors based on the comparative advantage of the different regions of Indonesia. Each of the six economic development corridors has different development theme as follows :

- **Sumatra**, as a “center for production and processing of natural resources and as the nation’s energy reserve”
- **Java**, as a “driver for development of manufacturing industry and service provisions”
- **Kalimantan**, as a “center of mining and processing of mineral and energy resources ”
- **Sulawesi**, as a “center for production and processing of agricultural, plantation, and fishery products , mining and processing of mineral ,oil and gas ”
- **Bali – Nusa Tenggara**, as a center for tourism and production and processing of primary food products”
- **Papua – Maluku Islands**, as a “center for development of food, fisheries, energy, and mineral mining”

The strategic initiative of the Masterplan is to encourage large-scale investment in 22 primary activities: shipping, textiles, food and beverages, steel, defense equipment, palm oil, rubber, cocoa, animal husbandry, timber, oil and gas, coal, nickel, copper, bauxite, fisheries, tourism, food agriculture, the Jabodetabek area, the Sunda Straits strategic area, transportation equipment, and information and communication technology (ICT).

A total investment of Rp 3,348 trillion (US\$ 372 billion) is needed to develop infrastructure and economic activity. Around 44 percent of the funding is expected to come from the private sector. The government claims that up to July 2012, 135 projects have done the ground breaking with a total planned investment of around US\$ 39 billion.

Despite the steady progress, several problems have been identified as hampering the MP3EI projects as follows:

- Complex land acquisition process
- Overlapping concession permits relating to the use of forest areas and a change in land status to reserve areas for nature.
- Lack of coordination between government ministries, agencies and local administration
- Slow progress in determining spatial planning regulations for provinces.
- Overlapping mining permits (IUPs)
- Lack of energy sources, particularly gas for industry in Java.

C. INVESTMENT ENVIRONMENT

Better investment climate

After a long period of difficult political and economic transformation, Indonesia’s investment environment has greatly improved .Two international rating institutions “Fitch Ratings” and Moody’s Investors” raised Indonesia’s sovereign debt rating to “investment grade” in early 2012. Moody’s raised the nation’s foreign and local currency bond ratings to Baa3 from Ba1 with a stable outlook. The upgrade is expected to boost

long-term capital inflow that could be used to finance urgent infrastructure needs and help nurture economic growth

A number of new laws and regulations have been introduced to clarify rules for investors, of which the Investment Law of 2007 is the most important. The Law enshrines national treatment for foreign investors and investments and provides standard protection for investors. The Law has also set an overall framework of providing investment incentives, and an institutional arrangement to administer and support investment projects. The government of Indonesia set up the following institutions for supporting investments:

- *PT PII (also known as the Indonesian Infrastructure Guarantee Fund – IIGF)* which operates as an infrastructure guarantee fund. PT PII aims to reduce the risk of financing for infrastructure investors by providing essentially “sovereign guarantees” or “letters of comfort” for a fee.
- *Infrastructure Financing Fund* to help investors obtain domestic finance in terms of lending through two agencies, PT Sarana Multi Infrastruktur (SMI) and PT Indonesia Infrastructure Financing (PT IIF).

Foreign Direct investment (FDI) realization rose 20 % in 2011

Realization of foreign investment fluctuated with upward trend from US\$ 14.87 billion in 2008, and following the global economic crisis dropped to US\$10.8 billion in 2009 but rose sharply to US\$ 19.47 billion in 2011. The main sectors for foreign investment in 2011 are mining , transportation and communications ,electricity ,food industry, chemical industry, metal based industry and financial services .

Singapore is the single biggest investor in 2011, amounting to US\$ 5.1. billion followed by Japan (US\$ 1.5 billion). Other major countries investing in Indonesia in 2011 are USA, UK , South Korea, and the Netherlands .

Figure – 5

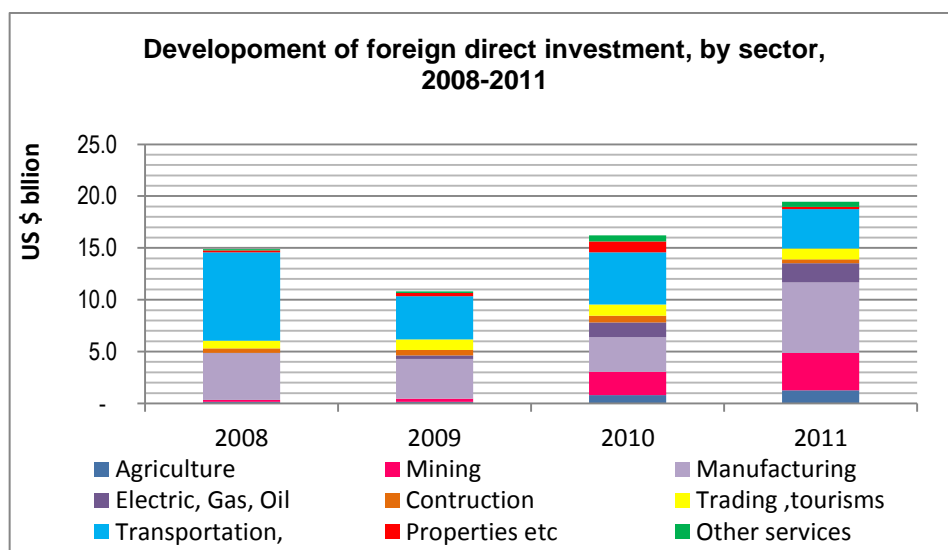
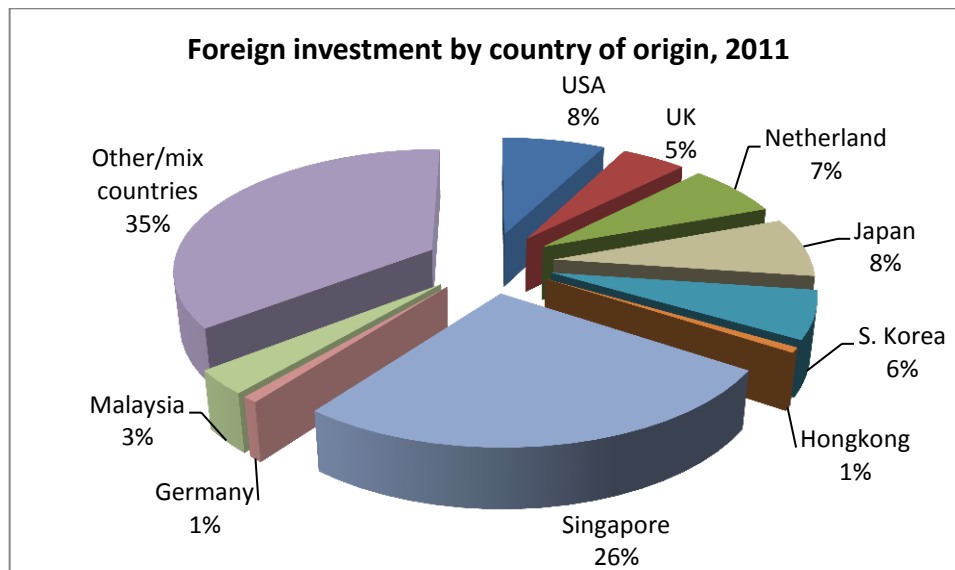


Figure – 6



Negative Lists

Indonesia continues to review the 2007 investment law and “negative list” of restricted sectors. In 2010 Indonesia issued Presidential regulation no. 36 of 2010, long-awaited changes to its negative list delivering legal clarifications alongside limited liberalization. The clarifications include protections from retroactive implementation and promise a continuous review of closed sectors for increased market access. The revisions included some modest changes to investment limits for individual sectors, but also maintained or increased restrictions on others.

This government regulation also stipulates many business sectors which are open under certain conditions. These includes business fields allocated for small and medium size companies, business fields opened for partnership and those opened for foreign direct investment in certain locations.

Despite the fact that one of the intended purposes of the new law is to enhance transparency, it is unclear whether the negative list represents the full range of sectors where investment restrictions apply. Several ministries, including the Ministry of Communications and Informatics, the Ministry of Health, and the Ministry of Culture and Tourism, have issued decrees that introduce additional new investment restrictions in their respective sectors.

Regional autonomy, bureaucratic and red tape

An ongoing process of decentralization which started in 2001, intended to reduce burdensome bureaucratic procedures by moving decisions to provincial and district-level governments, has led to some improvements but has also resulted in new restrictive measures that appear to conflict with other national laws.

Doing Business Survey by the World Bank indicated that “business start up period” of Indonesia has improved from 154 days in 2008 to 47 days in 2012. This period however, still longer than the process in East Asia and Pacific (average) which is only 37 days and only 12 days in OECD countries. Obstacles still cited in the survey findings were tax regulation, labour regulations and the legal system for investor protection.

In the global competitiveness index, Indonesia’s performance has been improving over the past 7 years . The country moved up 10 places to 50th of 144 countries in the latest Global Competitiveness Report (GCR) for 2012-2013, published by the World Economic Forum . Indonesia compares favorably with the BRICS, with the notable exception of China (29th) and Brazil (48th).It precedes India , Russia and South Africa. In the macroeconomy competitiveness, Indonesia (ranked 25th) precedes Malaysia (35th) and Thailand (27th).

Still combating widespread corruption

One of the major concerns in the country is corruption which remains widespread at all levels of the administration, and bureaucracy. With the formation of Corruption Eradication Commission (KPK) and the Corruption Court in 2003, there are some improvement in the reduction of corruption, but still much lower than expected . In 2011, the country’s perceived corruption index was 100 (score 3) out of 183 countries, 10 points improve compared with 110 in 2010.

KPK which coordinates anti-corruption efforts and has the authority to investigate and prosecute high-level corruption cases, continues to address the widespread corruption problem in the country.

D. IMPROVING, BUT POVERTY STILL AN ISSUE

Official poverty in Indonesia has fallen from 23.4 percent in 1999 to 12.36 percent or around 31 million people in 2011, but nearly 60 percent of this amount live beneath 2 times the poverty line. Thus living standards remain low for many Indonesians. In 2011, the statistic office set the poverty line at Rp 233,700 per capita per month or around US\$ 1.19 per day.

As Indonesia matures into a middle income country, the government is trying to improve social assistance as part of its plan to reduce poverty to 8-10 percent by 2014. There are now a number of household social assistance programs in Indonesia, including the subsidized rice, health fee waivers, cash transfers for poor students, a conditional cash transfer, and micro credit program (KUR).

Employment growth has been slower than population growth. Open unemployment was recorded at 6.6 % in 2011. Public services remain inadequate by middle income standards. Indonesia is also doing poorly in a number of health and infrastructure related indicators, and as a result, may fail to reach some Millennium Development Goals (MDG) targets. The goals include reducing the proportion of people whose income is less than US\$1 per day by 50% from 1990 to 2015, achieving full and productive employment and decent work for all, including women and young people . MDG also includes target to ensure that 50% of population has access to clean drinking water.

E. FUTRURE GROWTH

Indonesia is well positioned for accelerated economic growth. Investors are drawn to it by its rapid urbanisation of some 240 million population, and the rising purchasing power of its bigger middle-class consumers.

However, against the bleak outlook for the world economy, Indonesia is not left unhurt. The country faces the challenges of managing volatility in the rupiah currency and coping with falling exports amid the global slowdown.

Domestically, the country also faces a number of challenges. Recently, a string of policies and regulations targeted at foreign investment heightened the risk of economic nationalism and protectionism. With general election due in 2014, political tension is rising as factions already begin to coalesce around hopefuls for the next presidential candidacy.

According to a World Bank's report, effective spending on infrastructure and education, along with measures to improve the business climate, could potentially boost Indonesia's growth rate up to 7 percent or higher. The World Bank growth projection for 2012 is 6.1 percent, based on continued support from domestic drivers of growth, and moves up to 6.4 percent in 2013.

The government estimates in its 2013 state budget draft (RAPBN) that the growth is estimated to stand at 6.8 percent. The ministry of finance believes that a massive market with significant growth in the middle-class segment will enable Indonesia to spur growth via consumption and investment.

II. SECTOR OVERVIEWS

A. ENVIRONMENTAL SERVICES

1. Current situation

Over the years, rapid economic growth has paid rich dividends to Indonesians. However, Indonesians are paying a high price in terms of human health, environmental degradation.

Today in Indonesia, only 44% of the population has access to decent clean water for drinking, of which 16% from PDAM (City drinking water companies). The rest still depend on rain water, river water and other unprotected water sources. Few Indonesian cities have ever a rudimentary sewerage system. Severe air pollution in the city impacts the health of over 70% of urban population, causing premature death, reduced child brain development, cancer, and upper respiratory disease. Cities such as Jakarta have been recognized by the World Health Organization (WHO) and others as having heavily polluted air.

The World Bank report on Indonesian Environmental Analysis in 2010 indicated the followings environmental costs :

- Inadequate water and sanitation constitute the largest short-term cost to the Indonesian economy, estimated at about \$7.6 billion in 2007 or more almost 2 percent of GDP.
- The economic consequences of climate change represent the highest potential cost to Indonesia's economy in the long term, amounting to between 2.5 percent and 7.0 percent of GDP by the end of the century.
- The health impacts of outdoor and indoor air pollution have been estimated at \$5.5 billion per year or about 1.3 percent of GDP.

Responsibility for environmental management lies within each of the two level of Government in Indonesia: national and regional. The national level has overall responsibility for setting goal, coordinating integrated environmental management, and providing the legal framework and technical guidance for control. The regional or provincial governors are responsible for implementation of pollution control and natural resource management, within the policy and guidance of the central level.

Water and waste water

- Drinking water consumption for household in 2010 is mostly (50.4%) covered by ground water, 12.4% by drinking water company(PDAM), 2.7% by rainwater, 19.4 % by packed water, 2.4% by river, 12.6% by spring water and 0.2% by other sources.
- The average requirement of clean water per capita is 110 lt per day, meaning that with a total population of 240 million, Indonesia needs 9.5 billion m3 clean water a year.
- Water pollution in Indonesia, especially in Java, is severe and represents a serious threat to public health and economic prosperity. Increased usage of ground water

has implications of water table depletion. Drastic volume of depletion mainly occurs in Bandung basin which lowers about 2-5 m annually.

- Industrial pollution in Indonesia has been led by rapid growth of manufacturing output and led to serious environmental degradation due to low level of concerns in environmental protections. In 2009, there were around 14,000 large and medium industries and around 95,000 small industries that have the potential to pollute ground and surface water.
- Industrial pollution from large industries in Java constituted 25 to 50 percent of the total pollution load in terms of Biological Oxygen Demand (BOD). The pulp and paper, food and beverage, chemicals and textile sectors together account for over 90 percent of BOD effluent generation.
- Domestic sewage, factory wastes, and agricultural runoff are responsible for ground-water pollution; lack of an appropriate pricing policy and slow and declining aquifer recharge have led to over-exploitation of groundwater beyond sustainable yields and to saline intrusion in coastal areas. The environmental damage to water resources is also caused by degradation of forest, catchment areas, river borders, areas nearby dams and springs.
- Mining activities which are very aggressive over the last 10 years have generated tailing wastes that raised the risk of costly accidents, and contaminated rivers with pollutants

Air pollution

- Air pollution, caused mostly by automobiles, is the most severe energy related environmental problem affecting Indonesia. The World Bank has identified lead emissions from gasoline as the greatest environmental danger to Indonesians, especially to children. Motorized vehicles responsible for approximately 70% of the total emissions causing air pollution in the agglomeration. The total population of motorized vehicles were 50.8 million units in 2010, and every year around 600-800 thousands cars and 5 million motor bikes were sold in the market
- Main causes of air pollution are rapid motorization, inadequate infrastructure development, insufficient traffic management, fuel formulation / low fuel prices, outdated vehicle technology, poor engine maintenance, inadequate public transport systems, and poor urban planning.
- Two other sources of air pollution in the country are stationary sources (power stations, industrial fuel-burning processes, and domestic fuel burning) and the burning of municipal and industrial wastes.
- Report of the Ministry of Environment, stated that Indonesia emitted at most 1.38 gigatons of carbon dioxide equivalent (CO₂e) a year in 2010. That is significantly lower than the previously accepted figure of 3.01 gigatons of CO₂e in 2005 stated in a 2007 report published by local environmental consultancy Pelangi Energi.

- Indonesia has committed to the ambitious target to reduce CO₂ by 26% in 2020, mostly from the forestry sector and through the development of renewable energy. At least Rp 83 trillion (\$8.88 billion) would be needed to finance this efforts. Presidential Regulation (PP) No. 61/2011 on the national action plan on reducing greenhouse emissions (RAN-GRK) set measures to achieve the country's 2020 emission reduction target.

Solid waste

- Solid waste generation has increased significantly over the past five years in Indonesia; its largely uncontrolled disposal to the environment is seen as a growing threat to the quality of water, air and land. Informal dumps contaminate surface and ground waters as well as encourage pests and pathogens that spread communicable diseases. This threat is compounded by the lack of environmentally sound waste disposal and treatment facilities
- Solid waste originates from a wide range of residential, industrial, agricultural, institutional, municipal, and commercial sources including, manufacturers, and hospitals . In Indonesia, the predominant sources of solid waste are household and commercial activities. The average per capita generation of solid waste in major cities in Indonesia ranged between 0.66 to 0.90 kg per capita per day In 2000, Jakarta alone was generating over 25,000 m³ of garbage daily, which is estimated to double by 2010.
- According to the Jakarta public work office, the Jakarta population of roughly 9 million people is capable of producing around 6,250 tons of waste per day, with only 1,200 waste drop off stations — that is, one station for waste disposal per 7,500 residents. It is estimated that only 6.5% of the waste are recycled.
- The operation cost to manage solid waste final disposal in Indonesia is low namely around US\$ 10 in Jakarta and US\$ 2-3 per ton outside Jakarta, while in international cities around US\$ 20-25 per ton .
- Despite controversial issues that Indonesia imported hazardous waste (B3), the country is also a big producer of B3 , estimated at about 7-8 million tons annually. Of this total, about 1.2-1.5 million tons were not managed properly. While the rest are managed , recycle, re-used or being recovered.
- There are around 30 companies involved in management services of B3 including PT PPLI which operates waste landfill and disposal facilities.

2. Business opportunities

Due to increasing environmental awareness within the industry, the government institutions and community , there are opportunities in various fields of environmental services in Indonesia. These services include the followings:

Table – 2
Field of environmental services

Segment	Description	Potential users
Environmental Services		
Environmental Testing & Analytical Services	Provide testing of "environmental samples" (soil, water, air and some biological tissues)	Regulated industries, Government, Environmental consultants Hazardous waste and remediation contractors
Wastewater Treatment Works	Collection and treatment of residential, commercial and industrial wastewaters Facilities are commonly know as POTWs or publicly owned treatment works.	Municipalities, Commercial Establishments & All industries
Solid Waste Management	Collection, processing and disposal of solid waste	Municipalities & All industries
Hazardous Waste Management	Manage on-going hazardous waste streams, medical waste, nuclear waste handling	Chemical companies, Petroleum companies, hospitals, government agencies
Remediation/Industrial Services	Physical cleanup of contaminated sites, buildings and cleaning up of soil, groundwater or operating facilities	Government agencies, Property owners, Industry
Environmental Consulting & Engineering (C&E)	Engineering, consulting, design, assessment, permitting, project management, O&M, monitoring, etc.	Industry, Government Municipalities, Waste Mgmt. companies, POTWs

In the private sector, centralized water supply and treatment systems for large industrial facilities and housing estates, as well as tourist development projects, are lucrative areas for private investment.

Industrial estates / parks are sprouting throughout Indonesia, especially in the Jakarta, West Java, Central Java, and East Java. Regional government which have been competing for foreign investments by developing sophisticated communication and transportation systems, are also investing in comprehensive water treatment infrastructures. Housing estates also increasingly require more sophisticated systems, such as oxidation ponds and mechanical-biological package treatment plants.

Key demand/market drivers

- Growth of manufacturing and other business sectors such as mining , forestry, energy and industrial estate business.
- Public environmental expenditure which consist of environmental programs and projects implemented by several ministries and departments

- Government's Stricter Legal Enforcement.. Cases of violation are referred to the provincial governors. The regional governments and the courts treat pollution cases as priority, and such cases are processed promptly. The Indonesian Investment Coordinating Board (BKPM) do not issue licenses for industries that produce hazardous waste unless there is adequate assurance that proper treatment facilities will be installed.
- International Pressure From Importing Companies. The foreign market for Indonesian products could decline substantially if producers do not adopt "eco-labeling" practices, because approximately 50% of Indonesia's total exports are targeted toward countries that already recognize and encourage eco-labeling criteria or plan to do so
- Existence of soft loan or investment incentives for environmental projects.

Challenges

- As Indonesia's population of 240 million continues to grow, the country's main environmental challenge will involve meeting the needs of this huge number of population.
- The Ministry of environmental still faces the challenge of enacting and enforcing environmental legislation
- Lack of environmentally-sound technology
- Lack of coordination among sectors and between public and private institutions.
- Lack of incentives/stimulus packages
- Lack of capable human resources

B. FOOD INDUSTRY

1. Current situation

- With a total population of some 240 million and a per capita income of US\$ 3,540 in 2011, Indonesia provides a huge market for food and beverage (F & B) products. The country has emerged as one of the rapidly growing food and drinks industry in the South East Asia. Various factors, such as economic growth, increasing urbanization, young affluent population, and food health and safety concerns have led to a surge in the industry. The market is also boosted by aggressive advertisement of large F&B manufacturers particularly attacking the medium income group.
- The domestic market value of F & B has grown steadily by 14.6% a year, from about US\$ 43 billion in 2007 to US\$ 76 billion in 2011. Domestic industry contributes around 75 % to this market.

- Contribution of F&B industry to the country's GDP rose from 6.7% in 2007 to 7.4% in 2011, while to manufacturing sector rose from 23% in 2006 to 30% in 2011. This sector provided employment to 965,000 people in 2010 (excluding home industries).
- The production value has grown steadily from US\$ 28 billion in 2007 to US\$ 61 billion in 2011. The industry has enjoyed an average growth rate of 6.7% in 2007-2011, with substantial growth of 9.19% in 2011.
- The Indonesian F & B industry encompasses most types of processed food found in a developed market. The main industries include cooking oil (10.2 million tons in 2010), Animal feed (12.3 million tons), wheat flour (5.2 million tons), instant noodle (1.3 million tons), sugar (760,000 tons), frozen fish/shrimp (913,000 tons), canned fish (264,000 tons), processed beef (69,000 tons), cocoa (179,000 tons), Coffee (152,000 tons), processed milk (678,000 tons), canned fruit (389,000 tons), softdrink (1.5 billion lt), bottled water (14.6 billion lt), biscuit (303,000 tons), confectionary (73,000 tons), sauces (78,000 tons) and others.
- Being an agricultural based country, F & B industry largely gets the supply of materials from local sources. The country's main agro commodities are rice (production 41.2 million tons in 2011), corn (17.6 million tons), CPO/Crude Palm oil (14.3 million tons), Cacao (71 thousand tons), Coffee (28.7 thousand tons), Sugar cane (2.3 million tons), Tea (109,000 tons), various tropical fruits etc.
- Despite the abundant supply of local raw materials, certain F&B industries still depend strongly on imported raw materials. For instance, the processed milk industry still strongly depend on imported raw milk powder (2.7 million tons in 2010), flour industry is also entirely dependent on imported wheat (4.67 million tons). Indonesia also still imports large volume of corn (1.5 million tons in 2010) and soybean (900,000 tons in 2010).
- In terms of number of players, the F&B industry is dominated by Small and Home Industry accounting for 99.5%, however they only contributed less than 15% to total output. According to the economic census in 2008, there were 1.1 million home industries, 66,200 small industries and 6,300 medium and large size companies in food and beverage sector. In 2010, the number of medium and large size companies rose to 7,476 units. This represents, food industry employing 20 people or more.
- Several large local companies including Indofood Sukses Makmur (ISM), ABC group, Wings Group, Mayora, Garuda Food, Sinar Mas, Musim Mas, Sosro, etc. Most of them involved in various type of foodstuff such as biscuit, snacks, confectionery, instant noodles, souces, syrups, and cooking oil. Multinational companies have also strong operation in Indonesia such as Nestle, Coca Cola, Unilever and Nissin.
- The processed food sector had previously been confined to the domestic market, but its contribution to exports has been increasing from \$3.7 billion in 2009 to \$ 5.7 billion in 2010 and around US\$ 6 billion in 2011. Export is dominated by palm oil, cocoa preparation, margarine, canned fishes, animal feed and biscuit.
- Out of the 237.6 million population in 2010, 41.7 million falls into youth population category, aged between 15 and 24. This age group tends to be more westernised compared to the older population and is forecasted to drive demand for mass market products such as confectionary and snacks.

- Increasing number of middle class (expenditure between US\$2- US\$20 / day) from only 80 million in 2003 to 130 million in 2010 will potentially change the consumers to more educated & changed life style, more concerned about food safety & health and halal concerned .
- Due to global media influence and recent health issues, the youth generation has become more health-conscious, deriving great demand for food and beverage products with specific health solutions.
- Being a country with big Muslim population, “halal” food is a strong issue in F & B market in Indonesia.
- At present retail trade of F&B products is still dominated by traditional market. But, there is a trend that modern retail market such as supermaket, minimarket, hypermarket and special F & B stores will have increasing role in the market. In 2010, there were 154 hypermarket, 1,076 supermarkets an 16,922 mini markets.

2. Business opportunities

- With stable economic growth and huge population, Indonesia is potential for investment to optimize natural resources and produce added value products.
- There are wide opportunities for transfer of technology in food processing as most of the industry players are small industries which have no access to modern processing technology.
- High post-harvest food losses, arising largely from limited food preservation capacity, are a major factor constraining food and nutrition security in Indonesia
- The constraints on development of small and medium food industries in Indonesia are : seasonal supply and low quality of raw materials, unskilled workforce at operating level, inadequate modern technology, and quality management. Since the trend of processing is now toward using modern technology, training at all levels is required
- Despite the growing market , food safety is still a big problem particularly for food products of small industries.
- Most of small and medium size industries also lack of good knowledge / technique for food processing that can preserve the nutrients of the food materials for health purposes. This presents an opportunity for technology transfer in safe and healthy food processing.
- Most of coffee beans are produced by small holders. However, they could not get the value added from coffee processing as they could not compete with large companies. The main problem lies in lacks of appropriate technology for drying, peeling, sorting as well as roasting in the production process, resulting in lower production and lower quality of products. Requirement for technology transfer exist in this sector.

- Packaging is also still a strong issue in food processing industry such as in fruit canning. Although the industry has used quite modern equipment, but they often experience problem due to packaging, such as in canned pineapple.

3. Key market drivers

- Increasing per capita income (Government target US\$ 14,250-15,500 in 2025)
- Increasing middle class population
- Changed lifestyle toward consuming safe and healthy processed food
- Increasing networks of modern markets

4. Challenges

- High logistical costs from poor infrastructure add to domestic operating costs
- Rising cost of energy (electricity and gas). Electricity tariff is decided by the government, and the tariff will be influenced by the operation cost of power plants which some of them still use high price fuel oil.
- Rising price of food materials in domestic and international market
- Although there are numerous program for funding small industries, but in the implementation, many obstacles are still found. Lack of capital / financial sources still a challenge for developing small industries.
- Most of small industries are controlled by conventional people who are not easy for changes or absorbing new technology.

C. SUSTAINABLE ENERGY

1. Current situation

- Indonesia is an oil producing country and was a net oil exporter until 2004, when imports of oil surpassed the export because of rising demand and depleting oil resources. Indonesia is very much dependent on fossil energy, for its energy source accounting for about 71% of the total supply of primary energy. The country's primary energy supply was 1,177 million BOE (Barrel Oil Equivalent) in 2010 (excluding biomass) of which oil accounted for 47%, coal 24%, natural gas 24%, hydropower 3.8% and geothermal energy 1.3%. Biomass is the second most important fuel source, but its use is mostly for informal economy.
- Although rising by around 9.3 % a year in 2008-2010, Indonesia's primary energy consumption per capita is still low namely 4.95 BoE in 2010, compared to China (9.4 BOE) and the USA (56 BOE). The final energy consumption per capita rose by 7.5% a year from 2.56 BOE in 2008 to 2.99 BOE in 2010. The consumption is expected to increase by around 5-7% a year over the next 10 years.
- The electrification ratio was 72% in 2011, meaning that some 70 million of population still have no electricity access to. In some regions of East Indonesia, the ratio is less than 50%. PT PLN, the state electricity company still strongly

depends on fossil fuel in its power generations particularly to coal (50.2%) and oil (21.6%).

- The soaring oil price , the highly subsidized price of fossil fuel, and the depleting oil resources have driven the government to focus on renewable energy development since 2006. Indonesia formerly produced 1.1-1.2 million barrels crude oil per day, while nowadays , the oil lifting is only about 830,000 barrel per day.
- Indonesia has a huge potential for the development of various renewable energy. The potential capacity includes 500 MWe of mini/micro hydro power, 50 GWe of Biomass, 4,80 KWh/m2/day solar power, 9.3 GWe wind power, 3 GW of nuclear energy , 240 GWe oceanic energy and 28.1 GW geothermal energy. Except for hydropower and geothermal, the utilization of the resources is still minimal.

Table – 3- Development of utilization of renewable energy, 2008-2010

DESCRIPTION	UNITS	2008	2009	2010
ELECTRICITY				
Geothermal	MW	1,052.00	1,189.00	1,189.00
Solar power	MW	8.67	13.5	13.5
Wind power	MW	1.87	1.87	1.96
Hydropower	MW	4,200.00	5,711.29	5,711.29
Microhydro	MW	218	218	229
Biomass	MW	1,628.00	1,628.00	1,628.00
Sub-total		6,415.78	8,761.55	8,772.50
EDIBLE FUEL				
Bio diesel	000 KL	2,329.10	2,521.50	2,647.57
Bio etanol	000 KL	192.40	212.50	223.12
Bio oil	000 KL	37.20	40.00	42.00
Sub-total		2,558.70	2,774.00	2,912.69

Source: Dir.Gen. of Renewable Energy

- In its national energy policy enacted in 2006, the government set a target to increase use of renewable energy to 17% of primary energy consumption in 2025 of which biofuel 5%, geothermal 5%, biomass, hydro, wind and solar 5% , and coal liquefaction 2%. However, the implementation of the program is slow. The main barriers are particularly high initial investment cost, the pricing issue, distribution and geographical constraints and others.
- To boost the renewable energy development, the government has provided several incentives for the projects including mandates to purchase electricity generated by renewable energy power plants as well as biofuels, income tax incentives for investment in geothermal energy and biofuels and an import duty exemption for renewable energy. The government is also considering the possibility of a VAT on biofuels, to be paid by the government.
- The government also plans to set green subsidy for renewable energy by setting special price and incentive for renewable energy, to bridge the price difference with fossil energy. This issue will be included in strategic policy issue for 2013
- The government of Indonesia is committed to mitigating climate change and has announced that the country will reduce GHG emissions by 26 percent by 2020 from

the status in 2006. To mitigate the local environmental impacts and diversify the fuel, the government launched a program to develop 10,000 MW power generation plants by 2012-2016 through a program of predominantly renewable energy (Geothermal and hydropower). About 70 million of populations currently still do not have access to on-grid electric power.

- Beside investment cost barrier, obstacles in developing renewable energy are lacking capacity and resources of bureaucracy and also riddled by inter-departmental tension at the national level. The decentralized system of government and the resulting division of power between central and local governments also impedes national coordination in delivering a policy of transition to renewable energy.

Geothermal energy

- Indonesia has enormous geothermal potential estimated at 28,100 MW across 265 spots . Most of the geothermal potential is found in Sumatra (13,800 MW), Java and Bali (9,250 MW), and Sulawesi (2,000 MW), while smaller pockets are found scattered across the archipelago.
- Geothermal resources were managed by Pertamina until 2000, when they were transferred to regional authorities . Today development of geothermal power plant will involve the power plant developer, the regional authorities which will issue the geothermal mining concession, and PLN (State Electricity Company) which will purchase the electric power.
- The geothermal exploitation started 30 years ago but until now the existing installed capacity of geothermal power plant is only 1,214 MW or about 4.3% of the geothermal resources. The primary barriers to the development of Indonesia's geothermal resources have been the pricing of electricity and a shifting regulatory environment.
- Chevron operates the largest plant totaling 635 MW, followed by PT Pertamina Geothermal Energy/ PGE (292 MW), Star Energy and Geodipa Energi.
- The National Energy Blueprint projects that geothermal capacity will grow to 9,500 MW by 2025 including 4,733 MW which will be developed under “ the second 10,000 MW fast track development program” to start delivering electric power in 2014. Most of these projects to be conducted by Independent power producers(IPP) , of which 1,500 MW by PT Pertamina Geothermal Energy (PT PGE) .
- The implementation of the program is challenged by several constraints: a weak tendering process, lack of sufficient and reliable data, lack of human resources, inadequate financial support, and the weak power purchase agreements (PPA) process.
- Progress has been made, notably in price issue. . In 2011 the Ministry for Energy and Mineral Resources (MEMR) set up a ceiling price of .097 USD at which PLN may purchase power from geothermal IPP'a . Despite this progress, 0.097 USD is

still considered by many developers to be too low. According to the Japan International Cooperation Agency (JICA), an economically feasible tariff for geothermal would be 0.119 USD per kWh.

- An attempt to develop 4,733 MW geothermal power plants, or about four times the current installed capacity will certainly need a large number of specialists, project managers, researchers, etc. There are many people in the central and regional administrations, banking industry, consulting and construction companies, who need to increase their knowledge of the geothermal industry such as in carrying out technical and risk assessments. Building human resources capacity will be a challenging job in developing geothermal power projects.
- Strengthening university and postgraduate programs in geothermal related fields, as well as professional development programs for those who work in the geothermal sector, can help developers undertake projects as well as create a workforce that will ensure that projects are developed using best practices.

Biofuel

- Indonesia is blessed with various sources of biofuel such as corn, casava, tapioca, sugar cane, palm and castor/jathropa. The country is the second biggest world palm oil producer after Malaysia, and together these two countries represent the main exporter of palm oil to the European Union.
- Indonesia's biofuel industry started in 2006 and currently there are 11 companies in operation of 22 companies being registered. Of this total, only 5 companies supplying to Pertamina. The installed production capacity of biofuel is around 4.4 million KL, but the actual production is only around 1.5-1.6 million KL a year. Around 500-600 thousand KL are for domestic market and the remaining is for export.
- The main raw material used to produce biodiesel in Indonesia is crude palm oil (CPO) because of the well established CPO industry. Another potential feedstock is Jatropha with a potential cultivation area of around 20 million Ha. Jatropha biodiesel is still in research stage, though several projects have tried to cultivate Jatropha in large scale.
- Formerly biofuel production consist of biodiesel (Fatty Acid Methyl Ester or FAME) and Fuel Ethanol(FE). Since 2010, however, the FE has been no longer produced, due to disagreement in price between MEMR (Minister of Energy) and FE producers.
- Pertamina, as a sole biofuel distributor, recently increased blending of FAME to diesel oil for producing biodiesel, from 5% to 7.5%. This raises demand for FAME.
- Indonesia registered higher FAME exports in 2010 at 235 million liters compared to that of 200 million liters in 2009. Netherland, Italy, and Spain account for more than 80 percent of the Indonesian FAME exports.
- For Indonesia, development of bio fuel will be a solution for reducing dependence on fossil fuel, stimulate agricultural market and reduce poverty in rural areas, increase foreign exchange earnings from exports and reducing fuel subsidy. However, some challenges must be addressed to maximize the benefit of utilizing

biodiesel fuel, among others, i.e. selection of most effective raw materials, sustainable raw material supply, reliable production process, bio-diesel fuel specification, pricing policy and fiscal policy.

Wind power

- Indonesia has potential of wind energy of 73 Gigawatt. In this level, the maximum value of power density is 3.6 MW/m² with a potential wind power energy could be develop is to 1.1 MW/m².
- Southern Bali, Nusa Tenggara Barat, Nusa Tenggara Timur and Merauke (Papua) are places with high wind velocity throughout the month so that they are good potential area of wind energy.
- Although has enough wind, wind velocity in Indonesia is not constant enough so that the energy generated by wind turbine will fluctuate . Indonesia has increased its wind power capacity since 2004 from 0.5 MW to 1.4 MW in 2010.. These are mostly small isolated wind energy systems in remote areas or islands, frequently installed as part of research programs.
- Small wind turbines for electricity generation have been set up in northern and southern parts of Java, eastern Madura, northern and southern Sulawesi, and eastern Lombok
- Although it only generate small energy, Indonesia still develop the energy from wind turbine by the project SKEA (Wind Energy Conversion System).
- The first commercial wind power plant is now underway, PT Viron Energy plans to develop a 10 MW power plant with a total investment of around US\$ 14 million. The PPA (Purchase Power Agreement) has been signed with PLN in Dec 2011. Souzlon will supply the wind turbine to the project.
- The country lacks and needs an Indonesian wind map or atlas to push forward national wind energy development. and users, representing demand. Indonesia also needs pilot projects where wind energy can be developed on sites with adequate data. Then developers will be in a better position to select the right technology for specific sites
- One of the barriers to wind development is that the cost of energy produced by wind turbines is still high and may not be considered appropriate for sale to PLN, which has a monopoly on grid sales until the new liberalized regulations start working.
- Cost of wind technology could be reduced by increasing the local production of components (including towers) and by developing marketable products with the private sector. There is one tower manufacturer in Indonesia, PT Korindo Wind with products wholly exported to North America.

Solar Energy

- Indonesia embarks toward development of solar power plants to improve the electrification ratio in remote areas of East Indonesia which currently have only 35-50% electrification ratio as compared to 72% nation-wide.
- Being a maritime country with more than 17,000 islands, Indonesia faces the challenges to meet power demand for people live in remote areas. To overcome this problem, PLN has launched a program to develop communal solar power generation plants (PLTS) in 1,000 islands of Indonesia with a total capacity of 142 MW. The project will be implemented in 2012-2014 and will cost around US\$ 1 million for one plant or total about US\$ 1 billion. For 2012, 100 solar power plants will be developed in 100 islands to be benefited by 150,000-200,000 households.
- As a crash program to electrify people in remote areas, PLN also plans to install "Solar Home System" (SHS) totalling 340,000 sets cost some US\$ 138.76 million in Nusa Tenggara and other Eastern parts of Indonesia. PLN will provide the package of the equipment which cost around US\$ 400 per package, and the customer will pay certain monthly fee to PLN.
- Despite quite a number of solar power plant projects, domestic industry of solar photovoltaic (PV) system has not developed. A state owned company, PT LEN has one plant with a capacity of 10 MWp and plans to build another plant with a capacity of 60 MWp. The growing market is mainly shared by international brands such as BP Solar, Kyocera, Shell Solar, Siemens and Solarex.
- The primary weakness in the Indonesian solar industry is the lack of local manufacturing facilities for high quality batteries and PV modules, though the government actively supports development of solar PV applications.
- Being relatively new commercial energy for Indonesia, building human resources capacity will be also a challenging job in developing solar power business. Required improvements include: raising awareness on solar lending opportunities, strategic management and advisory in product development, banking training on solar lending, assistance for market penetration, vendor qualification and support with community outreach.

Biomass for Power Generation

- National studies estimate the electricity generation potential from the roughly 150 Mt of biomass residues produced per year to be about 50 GW or equivalent to roughly 470 GJ/year. These studies assume that the main source of biomass energy in Indonesia will be rice residues with a technical energy potential of 150 GJ (Gigajoule)/year.
- Because Indonesian policy requires rice mills to be situated close to where rice is grown, most mills are small and decentralized.
- Other potential biomass sources are rubber wood residues (120 GJ/year), sugar mill residues (78 GJ/year), palm oil residues (67 GJ/year), and less than 20 GJ/year

in total from plywood and veneer residues, logging residues, sawn timber residues, coconut residues, and other agricultural wastes.

- The long term plan of PLN shows that the company plans to get power supply from biomass-based power plants totaling 154 MW for the period of 2011-2015 and additional 170 MW in 2016-2020. Private companies are expected to develop these biomass power plants and PLN will purchase their power.
- The steps needed for biomass development involves waste recycling from the farming and forestry industry as a source of energy which is integrated with its respective industry, integrating biomass development with the local economic development, boost the fabrication of biomass energy conversion technology including its supporting sectors, and increasing research and development of waste recycling.

Small/micro hydropower:

- Indonesia is endowed with large hydro potentials of up to an estimated 62.2 GW, which includes micro-hydro energy of 458 MW. The resources are abundant from the thousands of small rivers that flow into irrigation systems. Most of these energy resources are located in remote regions of the country. This is one of the reasons why only 4% of the potentials have so far been utilized.
- There is a significant portfolio of small hydropower projects planned or under construction. Small hydropower sites will likely receive significant private interest following the change in the law requiring PLN to purchase power from plants up to 10 MW. However, financing will remain a major challenge because of the difficulty in negotiating long-term power purchase agreements with PLN.
- PLN has programs to get additional power supply from mini/micro hydro power plants totalling 380 MW within 2011-2014, and another 1,120 MW within 2015-2020. Private companies are encouraged to develop these micro hydro power plants and PLN will purchase their power.
- A number of barriers still have to be overcome such as lack the capacity to design, implement and manage small hydropower schemes and absence of appropriate financial resources. Another problem is that small hydropower schemes are site-specific and are built individually. That makes them unattractive to large companies interested in mass energy production and fast market penetration

D. FISHERIES

Current situation

- Indonesia has a large maritime zone, some 5.8 Km² consisting of archipelagic waters, territorial seas, and Exclusive Economic Zones. Its coastline is more than 81,000 km long. Its sustainable fisheries (MSY) of all kinds are about 6.4 millions tons a year while its total allowable catch (TAC) is estimated at 80% amounting to about 5.12 million tonnes annually.
- Indonesian national fisheries production grow continuously at an average annual rate of 11.6%, from 7.49 million tons in 2006 to 11.60 million tonnes in 2010 and 12.2 million tons in 2011. Captured fishes (marine and open water) accounted for 46% of production while aquaculture 54%. The rising share of aquaculture is particularly due to soaring production of seaweed. The average growth rate of captured fish production is only 2.75% a year as compared to 23.59% a year of aquaculture. This is due to the government strong support for aquaculture development.
- With a total value of output of US\$ 25.1 billion, fishery contributed 3.1% to total GDP in 2011, higher than livestock (1.7%) and tree crops (2.1%). Fishery sector involves around 2.75 million fishermen in marine capture fishery, 2.83 million fish farmers in aquaculture and 0.8 million people in supporting activities in 2009. There are 58 medium and large size marine capture fishery companies in operation in 2010, of which 12 are foreign companies.
- The main species of marine capture are eastern little tuna, skipjack tuna, tuna and shrimp. In the meantime, aquaculture is dominated by seaweed totalling 2.96 million tons or 46% of the total production of aquaculture. Other main commodities are shrimp, Milk Fish, Nile tilapia and Common Carp.
- The main producing centers for marine capture fishes are North Sumatera (7.5%), East Java (8.2%), Maluku (7.1%), Papua (4.7%), Riau island (4.7%) and South Sulawesi (4.6%) and South East Sulawesi (4.5%).
- The potential areas for aquaculture is around 11.81 million hectares, consisting of 2.22 million hectares for freshwater culture, 1.22 million hectares for brackishwater culture and 8.36 million hectares for marine culture. Currently, exploitation of this potential has only reached 18.01% for freshwater culture, but only 0.51% for marine culture.
- Even though the fishing reserves is quite abundant, there are problems related to the exploitation of overfishing in some areas of sea, which threatens the sustainability of this activity. For example, there are problems with the exploitation of demersal fish and shrimp fisheries in South Sulawesi, and large pelagic fish in North Sulawesi. Therefore government has set directions that future development of fishery will be more intensive on aquaculture.
- Production of aquacultured fishes is projected to increase from 6.85 million tons in 2011 to 16.89 million tons in 2014. Sea weed will still dominate the production totalling around 10 million tons in 2014. To support aquaculture development, improvement is required for breeding centre / hatcheries to produce quality seeds.

- The main producing area for aquaculture are Central Sulawesi for marine culture (710,991 tons), South Sulawesi for brackishwater (233,607 tons) and West Java for freshwater production (325,899 tons)
- Indonesia is among major world exporters of fishery products. In 2011, with a total export of US\$ 3,18 billion, the country's share was 2.5% to the world export market. The government set a target for export to increase to US\$ 3.6 billion in 2012 and US\$ 5 billion in 2014. At the same time the share of Indonesia's export is expected to rise to 3.2 % in 2014.
- European Union (EU) is the third major export destination market after United States and Japan with approximately share of 13 percent. Export from Indonesia to EU continued to increase from US\$293,35 millions in 2009 to US\$460 millions in 2011.
- The number of fish processing unit (FPU) in 2010 was about 60,117 units. Of this total, East Java has the largest number totaling 10,640 units (17.7%), followed by Central Java 8,350 units (13.9%), West Java 5,966 units (9.9%), South Kalimantan 3,660 (6.1%) and West Nusa Tenggara 3,550 units (5.9%). It should be noted that FPU consist mainly of micro FPU (88%) and small FPU (9%) only 122 companies (0.2%) are large size. Of the total FPU, only 505 companies(8%) are certified in 2010 and in 2011, the number rose to 948 units. Certification is required for FPU needs which will exports the fishes.
- Total fish domestic consumption is estimated at around 7.5 million tons in 2011. The country's per capita fish consumption is still low but increasing from 29.9 kg in 2009 to 31.57 kg in 2011. For comparison, the consumption in Thailand and Malaysia has exceeded 40 kg in 2009, while Japan more than 150 kg.
- Productivity of the fishermen is still low, due to the dominant use of small size boats. This condition resulted in short fishing day (one day fishing), limited storage capacity, high losses rate and low quality fishes. The number of fishing boats totalled 596,300 units in 2011, of which 50-60% consist of boat of less than 5 GT and those of unmotorized boats. For modernizing the fishing fleet, the government launched a program to provide 1,000 fishing boat of 30 GT capacity for fishermen groups under PUMP (fishery village development) program, located mostly in East Indonesia. Each boat will cost some US\$ 167,000 and the procurement will be done within 2012-2014 period.
- One of the main constraints in developing fishery business in Indonesia is weakness in logistic system because of lack or poor condition of storage system, auction centres, transportation networks and fishing port facilities.
- The ministry of Fishery and Marine Affairs has issued a policy on marine and fishing industrialization in order to make the country the biggest fishing industry in 2015. This is an expansion concept of "Minapolitan" which aims to develop an integrated fishery business in certain regions from upstream up to downstream activities. In doing so, improvement is required for strengthening the connectivity, processing technology, skilled manpower, better investment climate, fixing management system, sustainability and competitiveness.

Business opportunities

To reach the fishery development target for 2015, the Ministry of Marine Affairs and Fisheries has identified the following needs which can be developed by private or government institutions / enterprises

- The development of fish breeding centers/hatcheries to produce quality seeds; For illustration, fish farmers breeding high price eel for export are facing problems in getting the seeds as they have no access to technology for eel hatcheries.
- The construction and development of fishing ports;
- Development of Fish Processing Unit (*FPU or UPI – Unit Pengolahan Ikan*);
- Increasing the capacity of the ports in Makassar and Manado;
- Developing/improving access roads from fishing location to the port and a regional trade center;
- Developing of marine storage facilities, in the auction places and trading centers;
- Increasing the capacity of infrastructure (electricity, water, telecommunications).
- Providing education to fishermen to ensure the use of better fishing methods for fishery sustainability;
- Increasing fishery productivity and processing through training and counselling, provision of capital, transfer of appropriate technology;
- Improving education and access to financial assistance for fishermen