

# Chapter 6

## The Indonesian Construction Industry

### 6.1 Introduction

This chapter describes an overview of the Indonesian construction industry. It starts with introducing a general profile of the country, its location, demography, form of state and legal system, and its economic performance. This section is then followed by an overview of the Indonesian construction industry. It describes the industry's activities, contribution to the national's economic growth, its stakeholders and support infrastructure, regulations and management systems, latest developments and lessons learned. The third section is a description about Indonesian construction firms, which focuses on the contractors and their business activities. The last section of this chapter links the Indonesian contractors with the background of this study, which is a review of the crises faced by the Indonesian contractors.

### 6.2 Profile of Indonesia

#### 6.2.1 Geography

Indonesia, located in Southeast Asia, is well-known as an archipelago with 13,677 islands, which is the largest in the world. The length of its area extends about 5150 km (3200 miles) from Sumatra in the west to Irian Jaya, the western half of New Guinea in the east. Indonesia's neighboring countries are Singapore, Malaysia, Brunei, Papua New Guinea, and Australia. Indonesia's main islands are Sumatra, Java, Bali, Sulawesi (Celebes), and Kalimantan (part of Borneo island shared with Malaysia and Brunei), which forms a major part of Indonesian territories. Indonesia is also part of the so-called volcanic "ring of fire" on the Pacific Rim, where it has hundreds of volcanoes, with 70 of them still active with several recent eruptions that occurred in these past years. Besides that, earthquakes are also frequent in

Indonesia, especially in the area of the subduction zones on some of Indonesia's main islands. Furthermore, Indonesia has the world's second largest area of primary rainforest, right after Brazil, with various species of plant and animal life (IBI 2000).

### **6.2.2 Demography and Resources**

Based on the Economist Intelligence Unit's report (EIU 2008), Indonesia has a population of around 235 million people, which is the fourth most populous country in the world after China, India and the United States. The population growth has been reduced since the introduction of the family planning programme in the 1970s. In 2003–2007, the population growth was 1.3% per year, which was lower compared with 1.7% in the 1990s, 1.9% in the 1980s, and an average of 2.3% in the 1960s and 1970s. Regarding ethnicity, 95% of the population is of Malay origin, with the other 5% consisting of over 300 minority groupings, including Melanesian, Polynesian, and Micronesian. There are also ethnic Chinese living in Indonesia, estimated to be around four million people. In terms of religion, the population is 87% Muslim, 10% Christian, 2% Hindu (mainly residing in Bali) and 1% Buddhist. There are a number of ethnic and religious conflicts that occurred since 1998, mostly due to large-scale migration conflicts between the ethnic groups in a certain area. Nonetheless, although these isolated conflicts occurred, the traditions of ethnic and religious diversity and tolerance remained significant in the Indonesian people's lives.

The population distribution in Indonesia is highly uneven. Despite implementing the transmigration programme, which attempts to ease congestion in Java, Bali and Madura, 60% of Indonesians still lived on these three islands in 2005, which make up only 7% of Indonesia's land surface area. The most densely populated area is on West Java province with an estimated 1003 per sq km, followed by Bali at 553 people per sq km. Outside Java and Bali, the population density averages are less than 100 people per sq km, with Papua having only 6 people per sq km. Moreover, industrial development has resulted in large-scale migration to urban areas, with 42% of the population having lived in cities in 2000. This is a significant increase compared with 31% in 1990 and 22% in 1980 (EIU 2008).

It has been found that natural resources are the backbone of Indonesia's subsistence and formal economies. Farming, fishing, tree-crop and cash-crop cultivation have been the major activities for millions of Indonesian people. The country also has vast but heavily exploited oceanic resources. Along with that, Indonesia's vast forests have been in the interests of large industrial concerns, which have been depleted by commercial logging since 1970. Furthermore, deposits of tin, coal, copper, nickel, bauxite, gold, silver and iron sands, kaolin, marble, granite, limestone and pumice, which are also found in Indonesia, are the basis of an important mining and quarrying sector. Indonesia also has oil reserves in parts of its area, and was once Asia's only member of OPEC. However, in recent years, oil production

has been declining which reduced Indonesia's status as a net crude oil importer on a number of occasions (EIU 2008).

### **6.2.3 Form of State**

Indonesia's system of government is based on the 1945 Constitution, where the state is formed as a unitary republic. The constitution provides for five branches of government, which are the President, the House of Representatives, the Supreme Audit Board, the Supreme Court, and the Supreme Advisory Council. There are 33 provinces which all are lead by a governor, who is responsible to the president through the minister of home affairs and represents the central government in his province. Aside from that, there are three provinces, which are Aceh, the territory of Jogjakarta and the capital Jakarta, that have special status in their provincial government. In leading the country, the president has the executive power, who is elected to a 5-year term by the People's Consultative Assembly, which meets to decide general policy and calls the presidential elections. In supporting the government, Indonesia's legal system is exercised by the Supreme Court, which has the judicial powers of the state (IBI 2000).

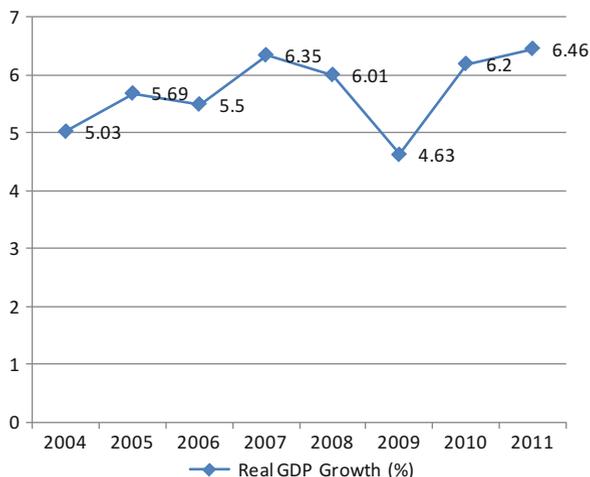
### **6.2.4 Economy**

#### **6.2.4.1 Economic Performance**

According to the Economist Intelligence Unit (EIU) (2008), domestic consumption has become an increasingly important driver of Indonesia's economic growth since the 1990s. It has helped in easing the economy out of recession in the late 1990s, and has been one of the main engines of growth, compensating for sluggish investments and a slump in the export-oriented manufacturing sector.

Indonesia's economic performance can generally be viewed in some of the main economic indicators, which are its Gross Domestic Product (GDP) growth, annual average exchange rate, population, and annual current account balance. Figure 6.1 illustrates the GDP growth of Indonesia from 2004 to 2011. The GDP growth started from 5.03% in 2004, which had fluctuated around 5% for the next 2 years. After that, it has reached 6.35% in 2007. Although there was a significant decrease from 6.01% in 2008 to 4.63% in 2009, the GDP growth of Indonesia has increased to 6.46% in 2011. Looking back at Indonesia's economic history, it appears that prudent economic management had enabled Indonesia to record consistently high rates of economic growth, well in excess of the expansion in population, for more than two decades. The past economic growth that averaged more than 6% per year between 1970 and 1996 was achieved despite a number of external issues, including oil prices and international exchange rates fluctuations which affected the trade and

**Fig. 6.1** GDP growth of Indonesia. Source: SCA (2012)



value of the country's external debt. Indonesia has transformed from a low-income country in the mid 1960s into a middle-income country in 1996. The 1997–1998 financial crisis had slowed the GDP's growth to 4.7% in 1997 and then contracted by 13.1% in 1998, which was the worst performance since records began. The crisis recovery started in 2000, supported by strong household and government consumption which led to a GDP of over 6% in 2007 for the first time since the 1997 financial crisis (EIU 2008; SCA 2012).

In Fig. 6.2, the annual end-period of the Rupiah's exchange rate against the US Dollar is shown. It can be seen that the average rate of Rupiah for \$1 USD during 2006–2012 was around Rp 9404. After the Asian financial crisis in the 1997, the Rupiah has gained its strength in its value, increasing from around Rp 12,000—for \$1 USD (the value right after the financial crisis) to the range of Rp 8900–Rp 10,950 in the last few years. In 2010–2012, the value has become more stable than the previous years, maintaining in the range of Rp 8900–Rp 9068. A high and stable value of local exchange rate (particularly towards the dominant exchange rate in the international market) provides a positive environment for international trading and business in Indonesia (EIU 2008, 2012).

Figure 6.3 shows the population of Indonesia in selected years. The population growth increase had been quite stable with an average of 29.6 million additional people per 10 year (SCA 2012).

Last but not least, Fig. 6.4 shows Indonesia's annual current-account balance. The current account is considered as the difference between national (both public and private) savings and investments. A current account deficit may therefore reflect a low level of national savings relative to investments or a high rate of investments. Based on a World Bank's (2012) report, fluctuations had occurred in 2002–2010. The highest account balance was reached in 2006, with US\$10,859.5 million. However, the account balance had hit very low level in 2005 and 2008, with the amount of US\$277.6 million and US\$125.2 million respectively. These

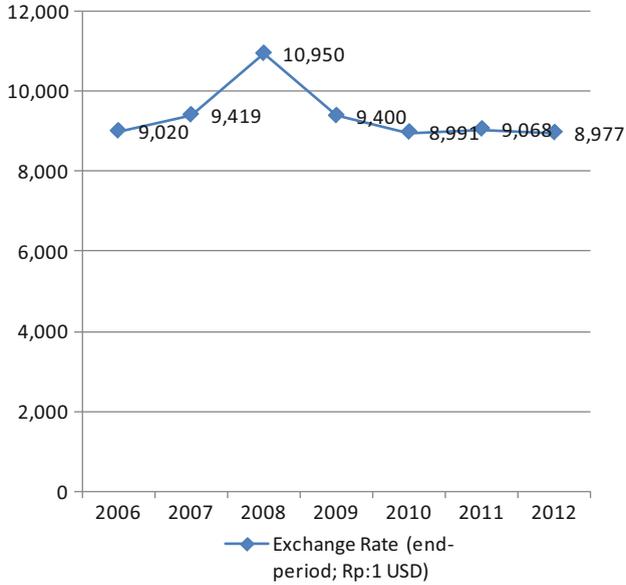


Fig. 6.2 Annual end-period exchange rate Rupiah:\$1 (USD). Source: EIU (2012)

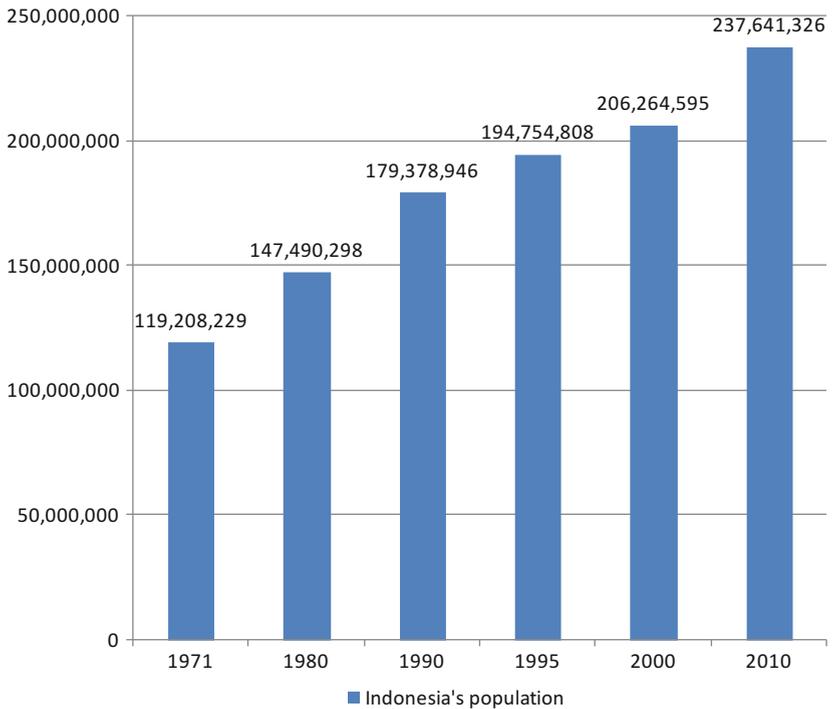
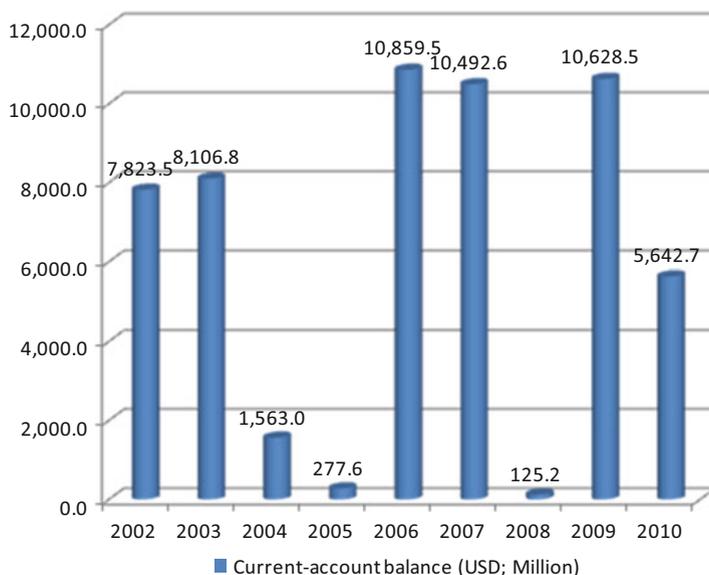


Fig. 6.3 Indonesia's population in selected years. Source: SCA (2012)



**Fig. 6.4** Indonesia's annual current-account balance. Source: World Bank (2012)

situations were due to Rupiah's weakness in those years, worsening terms of trade (export prices such as coal had plunged and import prices such as oil prices had risen) and an unsustainable fuel subsidy policy (Lee and McKibbin 2007; Ghosh and Ramakrishnan 2012; Bofa 2012; World Bank 2012).

In terms of investments in Indonesia, the 1997–1998 financial crisis and subsequent political unrest had a significant impact on investor's willingness and ability to invest, which affected Indonesia's economic recovery. The annual investment did not return to the pre-crisis level until 2006. However, the new investment was still deterred by issues such as corruption, restrictive labour market, poor infrastructure and a frail legal system (EIU 2008).

For the past 4 years since 2007, Indonesia's macroeconomic environment has been improving. Although there was another economic recession in 2008–2009 that hit the global market, the country recovered quite well. Unlike many advanced economies which faced record budget deficits and debt burdens, Indonesia benefited from the reforms that followed after the 1997–1998 financial crisis. Its economy continued to expand in 2009 and the real GDP growth continued in strength. The government's main focuses during these years and the next 2 years (until the final year of the current government's term) are to increase GDP growth, job creation and poverty reduction. It is also committed to narrowing income inequalities, maintaining economic stability and improving energy, food and water security. If these objectives are reached and maintained, the economic performance will remain in surplus in 2010–2014 (EIU 2010c).

### 6.2.4.2 Infrastructure

As mentioned previously, since the 1997–1998 financial crisis, infrastructure in Indonesia has been poorly neglected, impeding economic growth. Investments have been deterred by the generally low return on infrastructure projects, compounded by legal uncertainties and concerns over security and political stability. All of these issues are now being part of the current government's concerns and who placed infrastructure at the core of its strategy to improve economic growth (EIU 2008). Based on the British Chamber of Commerce reports on Indonesia (BMI 2009), the country needs infrastructure investments of US\$70 billion. This will be essential to bring about sustained growth levels about 7%, which is needed to resolve issues in employment and poverty. Below are some descriptions about Indonesia's physical infrastructure, their existing conditions and several issues that are faced by the government (EIU 2008):

- Railways:

Railways' coverage in Java is around 3100 and 1300 km in Sumatra, and only 10% of this consists of double-track railway. Smaller rail networks that carry cargo and raw materials are also found in parts of Kalimantan. The state-owned company, *Kereta Api Indonesia* (KAI) operates the railways in Indonesia and the network is badly in need of new investments. Recently, a sharp increase of train accidents occurred which are mostly due to the ageing infrastructure. Many railway crossings are found with no security gates, particularly in rural areas, and in 2003, it was reported that 31% of locomotives and 45% of coaches had been operating for more than 30 years. In countering these issues, the House of People's Representative has passed a new rail transport bill in 2007 which will allow the private sector to provide rail transport for the first time. Government regulations are still required before the law takes effect, and the state will continue to set train fares. This new legal framework may promote foreign investments in rail transport, which may support the future long-term planned high-speed 800 km rail link project between Jakarta and Surabaya.

- Roads:

Land transportation in Indonesia mostly depends on its road network. The road network is measured around 372,929 km in 2004 and 55% of which was asphalt-covered. In terms of coverage and capacity, it is still considered as inadequate. The road's quality also deteriorates substantially in wet weather. There are also a number of payments on the road for road users, which range from tolls, both legal and illegal, to extortion payments demanded by the police or illegal criminal organizations. Hindrance in road network investments includes the risk of rising land acquisition costs. By buying up land earmarked for new toll roads, politically connected land speculators have caused the land acquisition costs of projects to spiral. Problems in land acquisition are also stemming from the poor functioning of the civil service and the judiciary.

The government's current effort for this matter is to cap such costs at 10% above initial estimates, which may help to ease concerns. Moreover, it has also

resolved to outsource the appraisal of land to professional consulting firms, and push more vigorously on reforming the civil service and the judiciary. Resolution of these land-procurement issues may lead to a boom in toll-road development, reducing bottlenecks and create new jobs in the construction industry (EIU 2010a).

- Ports:

Although Indonesia is well-known as an archipelago, the country has only a small domestic ocean-going fleet, and lacks the port facilities to attract major vessels. Most cargo is transshipped at Singapore and arrives in smaller feeder vessels. Nonetheless, Indonesia's main container port in Tanjung Priok, Jakarta (which managed 28% of exports and 42% of imports in 2005), is partly under private ownership. In addition, future high investments are being planned to upgrade its facilities. Problems that occurred in Indonesia's ports include high insurance costs for Indonesian shippers due to frequent organized crime, piracy, strikes and theft, and recent ferry accidents, including capsizes and fire that claimed many lives caused by poor safety.

- Airports:

Indonesia has 179 commercial airports, with 61 of them that are large enough for wide-bodied jets. Some of the airports has been modernized and extended during the years.

- Energy:

Annually, Indonesia produces around 100 billion kWh of electricity. In 2004, about 55% of households in Indonesia were able to consume electricity, which stood at 509 kWh per head in 2005. Electricity demand had risen sharply in recent years, with the rate growing at 11% annually in 2002–2006 in the main regions of Java and Bali. The provision of electricity is the responsibility of the state-owned electricity company, Perusahaan Listrik Negara (PLN). However, PLN had inefficiencies in its management, followed by bad business practices and corruption which recently operated in a perpetual situation of near-bankruptcy. PLN's problems have been combined by a heavy reliance on oil-based fuels, which have risen sharply in cost in recent years. Rising oil prices and serious financial problems have forced the company to take vital measures to reduce dependence on oil-based fuels. Based on EIU's current report (EIU 2010a), some progress have been made in order to raise electricity-generating capacity. The efforts were initialized on an US\$8 billion programme to develop 10 GW of new coal-fired generating capacity. The programme is planned to be completed by 2012, although delays are likely to occur. The new capacity will come from ten large power stations in Java and 30 smaller plants on other islands, and these projects are mostly funded by Chinese investors. In addition to this programme, the government is also planning a second phase of investments in the power sector, with another 10 GW of capacity which is expected to be generated by 2014.

- Telecommunications:

The state-owned telephone system covers almost the entire country, and has been greatly extended and more efficient since the mid-1970s by the deployment

of telecommunications satellites. There were a total of 8.7 million fixed-line users, which is equivalent to a ratio of 3.7 fixed lines per people in 2005. This low density does not fully reflect the actual degree of coverage provided by the existing network, which is expanded by about 220,000 telephone kiosks located from cities to even the most remote areas in Indonesia. Recently, the mobile telephone system has exceeded the fixed-line technology, where it does not need the same heavy investments in infrastructure. In 2007, the number of mobile subscribers has risen to around 86 million users.

### 6.2.4.3 Overview of Business Environment

In promoting the investment climate in Indonesia, the government has raised five main issues that must be solved, which are tax reforms to raise the level of competitiveness, labour law revision to give both investors and employees a win-win solution, development with a focus on regulation in the competitor countries, realization of infrastructure projects, and finalizing the Investment Law (BMI 2009). All of these approaches will mostly depend on the political environment in Indonesia, followed by the country's economic performance. Some of the latest socio-politic situations in Indonesia (BMI 2009) include:

- Up to now, central Sulawesi and part of Maluku have been considered as areas of instability due to several ethnic and religion clashes in that area. Nonetheless, ongoing efforts by the government have been conducted to restore peace and build stability, which have started to bear fruit.
- Unrest situation in Papua, due to an independence struggle waged by *Organisasi Papua Merdeka* (OPM), has transformed into something more complex. It has been further complicated by some immigrants from other parts of Indonesia who are supporting for the national government to maintain control. This situation is currently part of the focus of the central government.
- In Aceh, things have remained calm, particularly since the treaty between the central government and the Aceh rebels in 2005. However, there are some concerns about corruption on the part of some former insurgents who now hold political office, and the fragmentation between the former rebel group [*Gerakan Aceh Merdeka* (GAM)] and the activities of the Indonesian military [*Tentara Nasional Indonesia* (TNI)]. This is considered as a risk that may trigger new violence and needs to be monitored by the government.

Furthermore, in supporting the five main issues mentioned above, the Indonesian government has developed policies based on some of their forecasts (EIU 2011):

- Policy toward private enterprise and competition:  
Initial public offerings of shares in several state-owned enterprises will be conducted in 2011, after being postponed due to stock market falls in 2008–2009. However, in 2013–2015, it is forecasted that liberalization slows

further ahead of the 2014 elections. Government regulation and price-fixing may deter private investments in important areas of the economy.

- Policy towards foreign investments:

Starting from 2011, the procedure and process for obtaining investment license will become easier, owing to reforms implemented by the Investment Coordinating Board, but a general suspicion of the motives of foreign investors may continue to deter inward investments. Nonetheless, in 2013–2015, the economic nationalism will strengthen in some quarters as the elections approach.

- Foreign trade and exchange controls:

Restrictions on foreign exchange and trade which were implemented during the 2008–2009 global recession were rolled back in 2011. The efficiency of port and customs are also improving. Furthermore, the trade liberalization effort will be driven by Indonesia's membership of the ASEAN.

- Taxes:

Since 2010, tax office modernization and the electronic filing of tax returns had improved with new and efficient collection methods. However, a lack of civil service reforms holds back efforts to bring medium-sized companies into the tax net. In the following years, the government will gradually repeal miscellaneous levies in order to reduce the tax burden.

- Financing:

Foreign participation in the banking sector continues to encourage competition, modernization, and a more transparent operating regime. This will most likely be followed by improved corporate creditworthiness that encourages loan growth and investments.

- The labour market:

Indonesia has a relatively young labour force, but most of them are unskilled and semi-skilled labour. People with vocational and managerial training are in short supply, and demand often has to be met by using more foreign workers. In 2010–2014, it is unlikely that the quality of the Indonesian labour force will improve significantly, given that the government has begun to increase investments in education only recently, where the problems start at the elementary-education level. Besides that, the average wage level for the labour force is still among the lowest in Southeast Asia, with only 10–15% of the labour force unionized. Strikes have also happened in recent years, with the vocal trade unions actively opposing privatization and liberalization, which forestalled reforms to labour laws. In future, demand for jobs may prompt the government to confront the trade unions and to make amendments to employment laws. Although the unemployment rate in the overall labour market continued to decline during the global recession, most of the jobs created were low-paid and relatively in the informal economy such as agriculture, informal trade and services. Therefore, job creation where a large proportion of the labour force is in the formal economy should be considered (EIU 2010b).

- Infrastructure:

In 2010–2014, it is hoped that there will be an improvement in the quality of Indonesia's infrastructure. Previously, the poor quality of the infrastructure was

attributable not just to the government's inability to finance projects but also to the generally poor business environment, which has deterred potential private investors. In an effort to encourage investments in infrastructure, a financing company called Indonesia Infrastructure Finance, was established by the government to provide long-term financing for infrastructure schemes (EIU 2010a). Moreover, more investor-friendly regulations and laws are being created, which will open its sector for foreign participation. One of the measures that had been adopted since 2007 was creating a more robust public-private-partnership regulatory and legal framework (BMI 2009).

## **6.3 The Indonesian Construction Industry**

The important role played by the Indonesian construction industry in the national economy can be seen from the major usage of domestic goods and services such as architects, consultant engineers, economists, building materials, financial services, legal specialists, construction equipment, transport and communications. These goods and services make the total value of building and construction works contribute some significant amount in the total GDP. Moreover, the role of the industry is supported by a broad spectrum of legislation and agents. Under Indonesia's democratic system, the central government and local government (which are the provinces, regencies and cities) have the same with very slight variations in their legislative and administrative systems, relating to licensing and registration of construction related activities. The construction law and Indonesia's national building code also ensure a degree of technical uniformity across the country, setting out the level of performance for building elements (NBCSD 2004).

### ***6.3.1 Construction Activities and National Contribution***

The Indonesian construction industry delivers various types of construction projects, which are the residential and non-residential buildings, agricultural structures/irrigation, infrastructures such as roads, bridges, harbours, electricity, gas, water supply, and communication, and others (Raftery et al. 2004). Currently, there are large government projects underway, as well as office and residential building projects. Infrastructure development, residential and commercial construction may provide a major boost to the construction industry (BMI 2009).

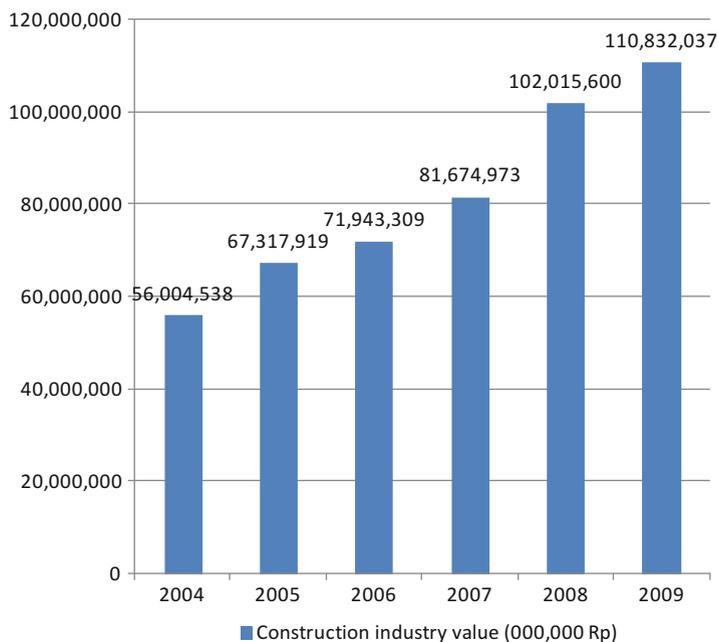
In Indonesia, the construction industry is widely spread, where there are some 30 associations accredited and registered with membership firm employers ranging from 14 members to approximately 60,000 members. They compose of general contractors, specialist contractors, material and labour suppliers to equipment leasing firms. Altogether, they employ around 269,000 full time employees and a part time labour force of four to five million skilled and unskilled workers. The

larger private and state-owned firms form an association of 65 members which are entrusted with the nation's larger, longer term and more complex projects (NBCSD 2004).

The national contribution that the industry had given to Indonesia can be viewed through its value, growth percentage, percentage of GDP, and total workforce supplied to the industry. A report from Indonesia's Statistical Central Agency (2012) noted that throughout 2004–2009, the value of the Indonesian construction industry had increased steadily. Figure 6.5 shows the increase from around Rp 56 trillion to Rp 110.8 trillion within 5 years.

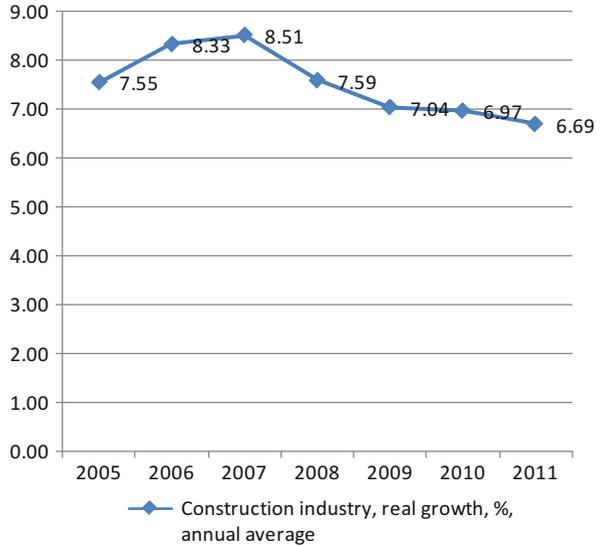
Regarding its annual average growth, there had been some fluctuations of growth in 2005–2011. The average growth had peaked at 8.51% in 2007, but had steadily decreased to 6.69% in 2011, as seen in Fig. 6.6. This was mostly due to several changes in the infrastructure regulations and political factors (the national election in 2009, central and local government changes) (SCA 2012; BMI 2009). Nevertheless, many projects were still constructed within these years, supported by positive economic performance in the country.

In terms of its contribution to the nation's GDP, in 2004–2009 the industry contributed to around 7.87% of GDP. It is forecasted to contribute around 10% of GDP in 2010–2011 (Fig. 6.7).

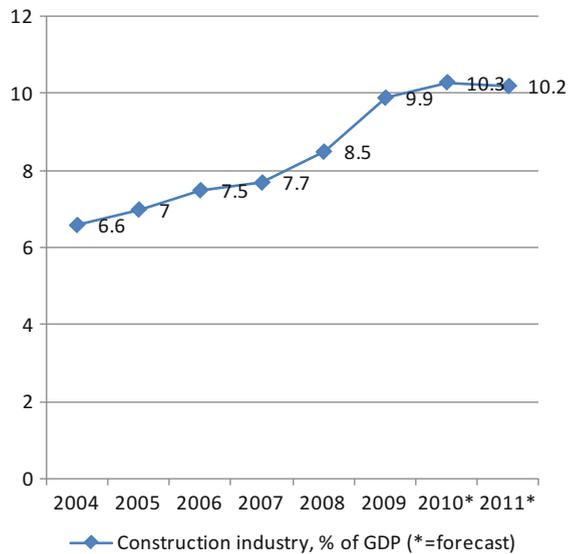


**Fig. 6.5** Indonesian construction industry: value. Source: SCA (2012)

**Fig. 6.6** Indonesian construction industry: real growth. Source: SCA (2012)

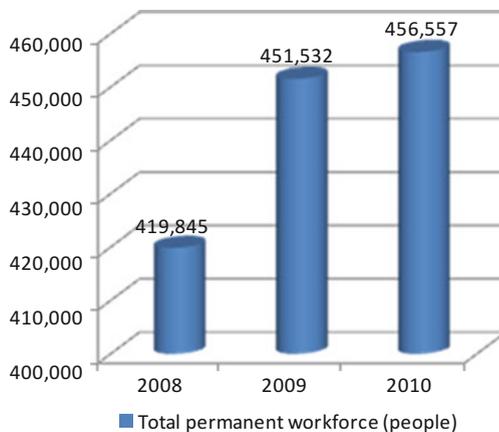


**Fig. 6.7** Indonesian construction industry: percentage of GDP. Source: SCA (2012)



The significant value and growth of the construction industry supported the increasing employment. In 2008–2009, the total permanent workforce employed in the Indonesian construction industry had an increase of 7%, followed by a 1.1% increase in the period of 2009–2010 as shown in Fig. 6.8 (BMI 2009; SCA 2012).

**Fig. 6.8** Total permanent workforce in the Indonesian construction industry.  
Source: SCA (2012)



### 6.3.2 Role of Construction Administration by Government

Up to now, the Ministry of Public Works is in charge of the central administration of the Indonesian construction industry. One of the main agenda of the ministry is to adopt good governance and management systems both at the central and local government within the framework of decentralization and regional autonomy. In promoting these, the key policies are to implement governance through law enforcement, transparency of implementation, fair treatment to all, professionalism, and public accountability. A leap in progress on the decentralization process has been marked through the issuance of two laws on regional autonomy (Law No.22 Year 1999) and fiscal balancing (Law No.25 Year 1999). These regulations have brought major changes towards a stronger and decentralized local authority in the Indonesian governmental system. These have also become the basis for promoting political, administrative and financial independence of local authorities in the future (NBCSD 2004).

The construction service sector in Indonesia has been regulated by The Construction Services Law No. 18 Year 1999 and The Government Procurement Policy No. 80 Year 2003. The main objectives of these regulations and policies are to achieve a high corporate capability with the competence to compete in both national and international market. In supporting these, the Indonesian government established a special board for the construction industry, which is named the National Board of Construction Service Development (NBCSD). The coordination of all construction administration responsibilities between the central and local governments will be carried out by NBCSD which currently has offices in all provinces in Indonesia. Based on NBCSD's (2004) report, along with the central and local government, NBCSD also coordinates with other construction industry services and professional associations under other ministries for specific construction industry development in mining, energy, transportation, and communication. The role of the central and local governments in regulating and administering

national construction development, together with the statutory bodies such as NBCSD and construction services associations, are essential for integrating the whole complex process of construction development and delivery.

### ***6.3.3 Role of Construction Industry Associations***

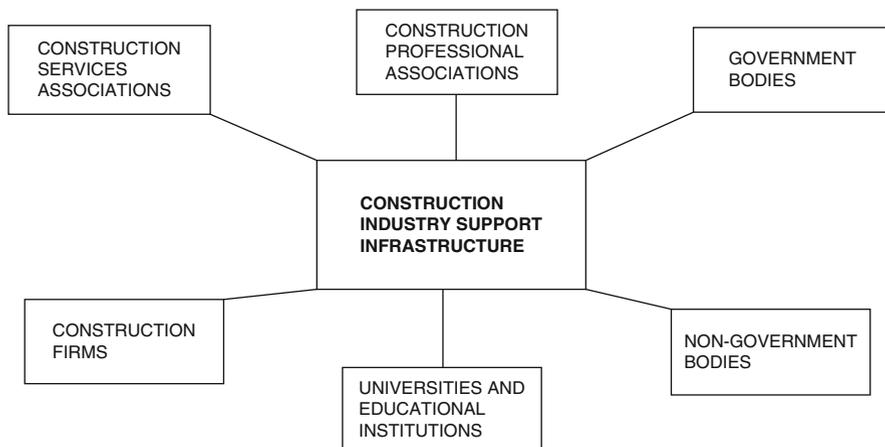
According to NBCSD's (2004) report, its tasks are to conduct research and development in the construction industry, to organize education and training, to register construction workers which include classification, qualification and certification of professional and skilled workers, and to register construction firms. In implementing these tasks, NBCSD has the function as the authority of a construction service society, as an organization for coordinating and communicating the construction process and development, and as the government's partner in developing and enhancing the role of national construction service in contributing to the national economic growth. Furthermore, NBCSD also has the following roles to play:

- To accredit firms and professional associations in carrying out the certification process. Construction designers/planners, constructors, and construction supervisory firms must possess qualification and classification certificates. Also, individual construction designer, supervisor, and construction workers must have professional certificates as set out by NBCSD in association with the related construction or professional associations.
- To issue an equal status of foreign workers certificate and registration of foreign firms.
- To develop construction service information system.
- To disseminate national, regional and international standards.

These functions are mandated by The Construction Service Law No.18 Year 1999 (RI 1999), which stipulates the conditions and standards to perform construction service works in Indonesia.

The NBCSD performs and coordinates its activities with several bodies, which are an important part of the regulatory framework in the construction industry. These bodies represent the various functions, networks for access of information in the construction industry, methods, knowledge, technology, expertise, human resources, management, materials and equipment supply, finance, and other inputs that are needed to carry out the activities of the industry. These bodies are also called the construction industry support infrastructure, which consists of construction and professional associations, government and non-government bodies, construction firms, and universities and educational institutions (Fig. 6.9).

Currently, there are 25 construction services associations that are listed with NBCSD. Generally, these associations are established for firms that provide services in the constructing process (contractors), engineering and designs, pre-construction consultants, and material and equipment supplies. The



**Fig. 6.9** Indonesian construction industry support infrastructure. Source: Adapted from NBCSD (2004)

construction professional associations are created for professionals who work in construction services, such as engineers, construction managers, interior designers, architects, project managers, quantity surveyors, and construction planning experts. There are also 25 professional associations which are currently listed with the board. In terms of the government bodies, all of the bodies in the government that are related to the industry's process and development are listed, which in general consist of the national ministries, banking associations, agencies for statistics and land surveying, and local/regional authorities. The non-government bodies are organizations that support or assist the government in terms of delivering the construction process and development. The higher educational institutions consist of both state-owned and private-owned institutions, which focus more on the research and development process for the industry. The key functions of these construction support industry infrastructure are described in Table 6.1 (NBCSD 2004).

By and large, the construction industry associations have fundamental roles within the regulatory framework of the industry. They provide the technical expertise to advise the government and NBCSD on the conditions of the construction industry for formulating the need for policies or changes. They also perform additional monitoring and control for the industry with regard to its level of competitiveness in order to meet future global challenges. Last but not least, they also provide a platform for communications on a wide range of administrative, technical and social economic issues that occur in and relate to the construction industry (NBCSD 2004).

**Table 6.1** The key functions of Indonesian construction industry support infrastructure

Construction industry support infrastructure key functions		
<i>Construction services associations</i>	<i>Construction professional associations</i>	<i>Government bodies</i>
<ul style="list-style-type: none"> <li>• Registration of company and firms</li> <li>• Qualification of company and firms</li> <li>• Accrediting of company and firms</li> <li>• Certification of company and firms</li> <li>• Standards of performance</li> <li>• Standards of quality</li> <li>• Monitor and control construction performance</li> <li>• Consultation and information</li> <li>• Training</li> <li>• Communication and networking</li> <li>• Assist government enforcement of policies and standard procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Registration of company and firms</li> <li>• Qualification of company and firms</li> <li>• Accrediting of company and firms</li> <li>• Certification of company and firms</li> <li>• Standards of performance and competency</li> <li>• Standards of quality</li> <li>• Monitor and control professional performance</li> <li>• Consultation and information</li> <li>• Training</li> <li>• Communication and networking</li> <li>• Assist government enforcement of policies and standard procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Formulate regulatory policies and procedures</li> <li>• Enforce policies and standard procedures</li> <li>• Evaluate performance and economy of construction industry</li> <li>• Provide technical support and assistance</li> <li>• Provide construction development and training facilities</li> <li>• Provide access to finance</li> <li>• Monitor and control construction industry</li> <li>• Carry out research and development support</li> <li>• Publish and communicate results of research and development</li> </ul>
<i>Construction firms</i>	<i>Universities and institute of educational institutions</i>	<i>Non-government bodies</i>
<ul style="list-style-type: none"> <li>• Carry out construction business services, which are planning (consultancy service), constructing (contractors), and supervision services (consultancy)</li> <li>• Each of the business services provides works in areas such as architectural, civil, mechanical, electrical, and environmental works</li> </ul>	<ul style="list-style-type: none"> <li>• Provide education and training</li> <li>• Provide technical support and assistance</li> <li>• Provide technology development assistance</li> <li>• Carry out research and development support</li> <li>• Arrange seminars and workshops</li> <li>• Publish and communicate results of research and development</li> <li>• Benchmarking of international standards and research results</li> </ul>	<ul style="list-style-type: none"> <li>• Carry out survey and analysis for the needed statistics</li> <li>• Carry out research support</li> <li>• Establish national and local standards</li> <li>• Benchmarking of international standards</li> <li>• Assist government in construction industry management and relations</li> </ul>

Source: Adapted from NBCSD (2004)

### **6.3.4 Regulation and Management Systems of Construction Projects**

In delivering construction projects, a vast network of relationship between many parties is involved in the process. Both public and private projects are first informed through tender announcements which will be followed by the tendering/bidding process. According to the procurement law, all tenders are to be advertised and given fair treatment and communication to the parties who will register to compete for the projects. In the project execution phase, the standards of the construction industry are maintained and the relevant party in the project will carry out performance based inspection on compliance with planning standards, building regulations standards, safety standards, and other statutory specifications (NBCSD 2004).

#### **6.3.4.1 System of Checks and Acceptance for Projects**

Projects awarded are generally based on the competitive bidding process with a single fixed price or traditional lump sum contract. In private projects, the contracts awarded are mostly based on lump sum or unit price. Other types that are quite recognizable in the industry are contracts given based on a negotiated cost plus fixed fee, and guaranteed maximum price agreement. The contractors are usually allowed to deliver the specified works themselves or by sub-contracting part of the work packages to other individual trade contractors. The contractors are then inspected and checked for their past performance regarding time, cost, quality and other specified requirements as stated in the agreed and signed contract (NBCSD 2004; RI 1999).

#### **6.3.4.2 Sureties for Construction Projects**

In terms of project payments, the construction law in Indonesia also considers providing protection to the contractors. Many of them have experienced difficulties in project payments, particularly in private projects. The contractor is required to provide a performance guarantee from a recognizable bank or surety bond from a reputable insurance company before they receive their final project payment. Also, the owner usually holds a certain amount of money (retention monies) that will be paid to the contractor after the latter satisfactorily finishes the whole works. However, there are situations where the contractor does not receive the full payment from the owner as stipulated in the contract, and many complaints and claims have been received from the contractors regarding these abuses. These issues are currently being studied by the NBCSD and the government, with a view to developing measures to respond to the interests of the contractor (NBCSD 2004).

### 6.3.4.3 Insurance for Construction Projects

Based on the Construction Service Law No.18 Year 1999 (RI 1999), the employers of construction projects are legally required to take out insurance policies to cover their liabilities under the law for work injuries of their employees. The major reasons for such insurance policies are (NBCSD 2004):

- Anticipation of the still potentially high accident rates in Indonesia.
- Increasing number of high rise building projects with hazardous transportation of labour, materials and other activities of construction.
- More complex site layout in dense construction area, storage, and other auxiliary support infrastructure.
- Labour intensive projects are still commonly applied.

Generally, the main insurance policies that cover construction projects in Indonesia are as follows (NBCSD 2004; RI 1999):

- Workmen's compensation insurance policy (compliance with the national labour law)  
This policy is for compensating any work-related accidents experienced by the workmen.
- Comprehensive workmen's compensation insurance policy (compliance with the national labour law)  
In some cases, depending on the type of accident, the compensation granted under the workmen's compensation insurance system is inadequate. This policy covers a more detailed provision.
- Contractor's all risks insurance policy  
This insurance is for contractors to cover additional costs involved in recovering losses sustained due to the effects of fire, burglary, lightning or storms on buildings under construction, construction materials, and temporary buildings for use during the construction phase (on-site office and accommodations). Moreover, effects due to design, construction or material defects or work-related errors may be included in the provision.
- Third-party liability insurance  
This insurance is also for contractors that cover the costs of compensating a third party for damages caused by possibility of incidental work-related accidents.
- Product liability insurance  
Another type of insurance for contractors that cover the costs of compensating third parties for incidental accidents resulting from their products or work after the product/building/structure is transferred to another party.

#### 6.3.4.4 Construction Quality Standards

The NBCSD (2004) acknowledged that there has been an increase of concerns and awareness for quality assurance in Indonesia. The ISO 9000 series in Indonesia had been introduced since 1992, when it became adopted as a national standard (SNI-19-9000), which is similar to what have been established in the US (ANSI/ASQ Q9000), UK (BS 5750), and Australia (AS 3900). In 1997, the interest in adopting the standard was growing, but the implementation was still restricted to large construction firms and other services sector. Moreover, in view of a highly competitive industry/sector, many Indonesian firms (including construction firms) have diversified their businesses to higher value-added products and services that meet international standards through the use of international standards and specifications.

As an example, the ISO 9002 standard for building contractors sets out how firms can establish, document and maintain an effective quality management system. In implementing this, the minimum requirements that need to be planned, monitored, and controlled are:

1. Tender and contract
2. Planning and documentation
3. Control of measurement and equipment tests
4. Procurement
5. Sampling, inspection and testing
6. Incoming inspection
7. In-process inspection
8. Final inspection
9. Inspection and test status
10. Material identification and traceability
11. Handling, storage, packaging and delivery
12. Control of production/construction
13. Quality records
14. Control of non-conformity
15. Corrective actions
16. Use of statistical techniques
17. Auditing the quality system

According to Andi and Chandra (2007), the NBCSD, in cooperation with the Department of Public Works, released Guidelines for Quality Management Implementation (ISO 9001:2000) of Construction and Consultant Services. The guidelines consist of key sections explaining the planning and implementation of QM systems and quality documentation, and also provide samples of works instructions.

#### **6.3.4.5 Environment Conservation Approach**

Based on the Indonesia Law for Environmental Management No.23 Year 1997, construction project activities that have significant impact on the environment should include the Environmental Impact Assessment (EIA) document. The EIA study, which is conducted at the project feasibility phase, should consider spatial planning, protected areas, historical buildings, sensitive areas, rare and protected biological species, natural resources potentials and the socio-economic cultural society around the project site. This study recommends significant impact mitigation, and changes to project location or cancellation of the project activities if the significant impacts cannot be mitigated by technological, economical and institutional approaches. Due to the complexity of construction works, the EIA should ideally be supported by the Environmental Management System (EMS), which is based on ISO 14000. The EMS provides environmental documentation, recording and auditing process to assure environmental conservation. Recently, some large contractors have been certified to meet the ISO 14000 requirements by the international registrar. It is expected that there will be an increase in the number of firms that will be certified, due to the need to comply with the government regulations on environmental management (NBCSD 2004).

#### **6.3.5 Technology**

Some of the large construction firms are starting to adopt the latest information technology in their business. For example, material procurement is conducted through the internet, the bidding processes are managed electronically, and online data sharing within the company (sharing information on CAD, project management information, and network planning control). The online data sharing application is particularly beneficial for firms that deliver construction project in remote areas. Other technologies that have been used include construction automation and mechanization in construction methods. Moreover, there are also several prefabrication technologies that are being used, particularly for high-rise building projects. These technologies reduce the time needed for the projects (NBCSD 2004; Raftery et al. 2004).

#### **6.3.6 Research and Development**

NBCSD (2004) found that there were many on-going Research and Development (R&D) works in the construction sector since the past 10 years. Most of the research was developed by academics in universities that focus on the project and construction management knowledge area, and other government funded research institutes

collaborating with the Ministry of Public Works. These institutes focus on studies related to water resources, highways and bridges, and urban settlements. Until now, the NBCSD is still currently extending the R&D process by coordinating and collaborating with the academics, professional practitioners, and government institutions. Although the outputs of research and development in the past years have not been very substantial, there is a good example of a technology innovation called the “Hydraulic non Friction Rotating Device”, which can be used to rotate heavier load for pier construction of flyovers. This technology has been used by some of the large contractors for constructing highways and roads for over 10 years.

### ***6.3.7 Lessons Learned and Future Developments***

For future developments, the construction industry in Indonesia also needs to focus on its existing conditions which may provide some lessons learned to support the industry. Larasati and Tsunemi (2009) highlighted some existing problems which occurred in the industry:

- The production process in the construction industry in Indonesia does not run smoothly. This is indicated by problems in project delivery systems such as the lack of appropriate materials and the necessity to waste valuable resources on reworks, etc.
- Low skill index and experience of construction workers cause the business to face difficulties in undertaking new concepts and technologies.
- Fragmentation in the project delivery process is still large, and this is indicated by a disintegrated relationship between the various parties involved.
- Lack of clear lines of communication and good working relationships in the processes. This situation results in project delays, wastes and disputes caused during construction, and led to an increase in antagonistic relationships. Most of these are due to an overall lack of trust between parties.
- Since the construction industry is in the “change environment” and some changes cannot be well-anticipated by the Indonesian construction sector, the risks that correspondingly arise are also high. Some events like financial crises, natural disasters, political crises and others that have triggered changes in the industry will be further discussed in Sect. 6.5.

In anticipating the current problems in the construction industry, some lessons learned can be useful for further developing more desirable services in the industry. The NBCSD (2004) had summarized these as follows:

- Construction business services need to be carried out based upon standards of competence, registration, certification and licensing of domestic and international knowledge and skills. Furthermore, skills and competence of the professionals should also be standardized and certified. These efforts may help in

delivering higher quality construction products, with better production processes.

- The respective administration and bodies responsible for enhancing the sector's development should continue to expand and intensify the research and development process to focus on the key inputs of the industry.
- The respective administration and bodies in the construction industry should also develop and utilize ICT (Information Communication Technology) capabilities for better coordination and control with other construction industry support infrastructure.
- Construction firms should establish, adopt and apply ICT capabilities and other supporting technology or systems that support the firm's general business performance and drive the necessary competitive edge to contribute more in the industry in a sustainable and productive manner.

## **6.4 Indonesian Construction Firms**

Based on the Construction Service Law No.18 Year 1999 (RI 1999), the services carried out by construction firms in Indonesia consist of construction planning consultancy service, construction execution service, and construction supervision service. The construction work itself is defined as the whole or part of the activities of planning and/or executing (constructing) including supervising which cover architectural, civil, mechanical, electrical and environmental works with their attributes, to produce a building or other physical forms. The work will be bound by the construction work contract, which regulates the legal relationships between the service user and the service provider undertaking the construction works.

### ***6.4.1 Types of Firms***

Derived from the general description above (RI 1999, 2000), there are three types of construction firms that are generally acknowledged in Indonesia. These are construction planner (planning consultants), construction executor or constructor (contractor), and construction supervisor (supervision consultants). These firms respectively carry out their specific tasks as part of the whole construction service. There will be firms that will plan the construction projects, which will be followed by organizations which will be constructing them, and supported by consultants that supervise and manage the project.

A construction planner (planning consultant) is defined as a firm that is certified as a professional in construction planning service which is able to produce works in the form of building or other physical forms of planning documents. Its business service provides planning services in construction works which consist of the whole or part of activities that start from feasibility studies until construction work

contract documents development. The Indonesia's government regulations (RI 2000) described the scope of construction planning services to consist of:

1. Surveys
2. General planning, macro studies and micro studies
3. Project feasibility studies, industry and production
4. Technical, operational and maintenance planning
5. Research

The second type of firm is a constructor, or more widely known as contractor, which is defined as a firm that is certified as a professional in constructing service which is able to deliver activities in producing a plan into a form of building or other physical forms. The service that it provides are construction works which consist of the whole or part of activities that start from site preparation until final hand-over of the construction work product.

The third type is a construction supervisor (supervision consultant), which is a firm that is certified as a professional in construction supervision service which is able to conduct supervision works since the beginning of construction activities until finishing and the hand-over phase. Its tasks are to provide a whole or part of supervision services in construction works that start from site preparation until final hand-over of the construction work product. The scope of construction supervision services consists of providing construction works supervision, and supervision in quality assurance, time accuracy in the constructing process and results (RI 2000).

Along with these types of firms, there are also some types of firms that have a combination of tasks in the construction project. There are firms that have the scope of integrating the planning, executing (constructing) and supervision services, which also depends on their respective procurement route in the project. The work scope can consists of:

- Design and build (planning and constructing).
- Planning, procurement and construction [similar to Engineering, Procurement, Construction (EPC)].
- Planning and/or supervision services throughout the project phase. This includes services like Project Management, Construction Management, Quality Assurance, and Quantity/cost surveyors.

#### **6.4.2 Firms' Characteristics**

The Indonesian Government Regulation No.28 Year 2000 (RI 2000) states that the business areas in construction services consist of:

- Architectural work area: simple/low technology building architecture, middle technology building architecture, high technology building architecture, interior architecture, and landscape architecture including their maintenance.

- Civil work area: roads and bridges, railways, airports, tunnels, underground roads, drainage and flood controls, ports, dams, irrigation and water resources infrastructures, building structures, geotechnical, plants and mining construction, including their maintenance and building demolition works.
- Mechanical work area: HVAC, air installation/air conditioning, oil/gas/geothermal installation, industry installation, thermal and sound isolation, lift and escalator construction, piping and their maintenance.
- Electrical work area: generator installation, transmission and distribution networks, electricity installation, train signal and telecommunication, radio transmitter building, air and water navigation telecommunication and facilities, telecommunication networks, telecommunication central, instrumentation, thunder shields, and their maintenance.
- Environmental work area: urban development/planning, spatial planning, environment impact analysis, environmental engineering, other environment management, regional development, clean water treatment and waste treatment plants, clean water and waste piping, and their maintenance.

In 2006, the number of certified consulting companies was 4118 firms registered by the National Board of Construction Services Development (NBCSD). In the same year, the number of certified contracting companies was 123,676 firms. NBCSD also reported that the total number of registered engineers is around 29,417 professionals (Suraji et al. 2006).

According to Indonesia's Statistical Central Agency (2012), there are three main types of construction projects delivered by the construction firms, which are:

- Building construction: building construction for residential sites, office, industrial buildings, shopping centres, health infrastructure, education infrastructures, accommodations, entertainment buildings, and others.
- Civil construction: road, bridge, railway, tunnel subway, watering building, processing, distribution and reception for the oil and gas, processing building, quay building, communication and electrical and others.
- Specific construction: the fitting of foundation and pillar, producing or drilling of ground water well, steiger fitting, roof covering, prefabrication fitting, fitting of steel framework, dredging and others, building installation and civil building, site preparation, building completion and renting of construction or demolition equipments with operator.

Figure 6.10 illustrates the type of construction projects with the project values completed in 2004–2009. It was found that building and civil construction projects had the highest value during these 5 years. In 2004–2007, the building construction was ranked first and the next 2 years was dominated by the civil construction projects. It was clear that the government's main focus is still in providing better housing and infrastructure for the people (EIU 2008).

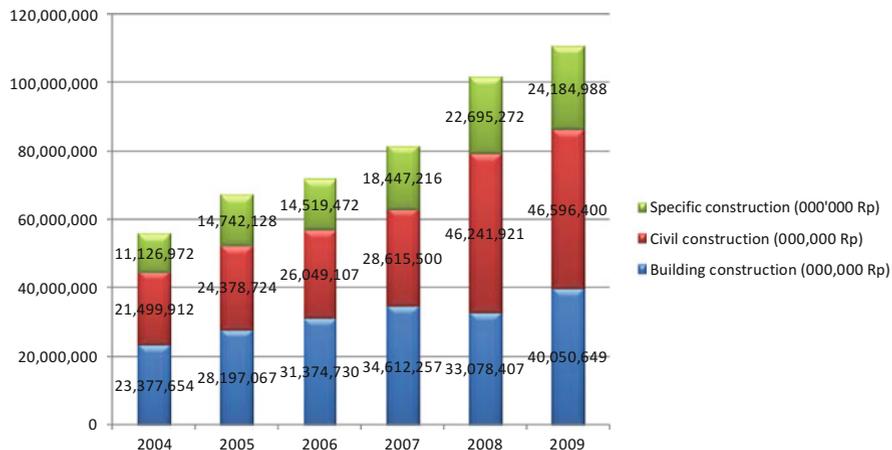


Fig. 6.10 Value of construction projects. Source: SCA (2012)

### 6.4.3 Indonesian Contractors

In Indonesia, the national contractors are categorized into Large, Medium, and Small firms, which are based on their working capital (net assets and transferred capital) as follows (NBCSD 2002):

- Small firms have working capital of maximum Rp. 1,000,000,000 [US\$1 = Rp 9438—at the time of writing (Bloomberg 2012)].
- Medium firms have working capital of more than Rp 1,000,000,000 up to Rp 10,000,000,000.
- Large firms have working capital of more than Rp 10,000,000,000.

Based on the related regulation, Medium and Large firms must be in the form of Corporation [*Perseoran Terbatas (PT)*] as approved by the related Ministry.

Until 2009, the total number of Indonesian contractors is 139,964 firms. Based on the categories, most of the firms (approximately 89% of them) are categorized as Small firms. Medium firms are around 10% of the total firms, and the percentage of Large firms is less than 1%. Table 6.2 describes the number of firms for each category. This proportion of contractors is quite interesting, because although Large contractors are still very few, most of the construction projects in the country (particularly large-scale and complex projects with high values) are delivered by these firms. Moreover, Large contractors mostly dominate in constructing projects in the large cities of Indonesia’s provinces. Small and Medium firms contribute in delivering small-scale projects within the region, mostly in the smaller towns (BCI 2006; Raftery et al. 2004).

**Table 6.2** Number of contractors in 33 provinces of Indonesia

Category	Total
Small	125,222
Medium	13,828
Large	914
Total	139,964

Source: SCA (2009)

### 6.4.4 Business Activities of Contractors

In Indonesia, the contractors are owned either by the government (state-owned) or private parties (private firms). Until now, the state-owned contractors still dominate the construction market in Indonesia (Sutjipto 1991). The system of contracting in Indonesia consists essentially of three types, which are (Raftery et al. 2004):

1. Construction only (the traditional procurement system): the contractor's task is only to construct the product, based on the given design by the owner.
2. Design and build: The task of the contractor is more than construction only. Here, the contractor has the job to design and also construct the product. The buildability factor had been enhanced by slow but wider recognition of the design and build approach. Until now, the concept had rarely been applied due to the fact that contractors require a proper design network. However, the construction of various government offices, private commercial buildings and mixed buildings have started to use the design and build approach, where engineering detailed design is carried out by the contractor, and basic design by the designer and planner. For process plant investments, the engineering, procurement and construction (EPC) system has been more practiced widely.
3. Build—Operate—Transfer: The tasks defined in the contract are to construct and operate the product, and in a defined time will transfer the product to the owner for future operations.

According to Schaufelberger (2009), there are four primary business activities of a contractor, which are business development, procurement, construction operations, and post-construction services. In business development, the essential activity is to create relationships with existing and prospective customers. This is conducted in order to capture market and obtain projects. A comprehensive market research related to its business area is also important in this phase. Secondly, procurement activities consist of creating and maintaining relationships with sub-contractors and suppliers. These relationships are needed for obtaining resources and delivering the work packages. In supporting these, efficient and effective procedures for material purchase and management should be developed. Following or in parallel with the procurement activities, construction operations consist of activities related to constructing the product through the chosen construction methods. This activity is also supported by cost and schedule estimation and control, project management system, quality management and safety management system. Last but not least, post-construction services focus on the after-construction

**Table 6.3** Value chain of contractor

Primary activities			
Business development	Procurement	Construction operations	Post-construction services
Support activities	Firm infrastructure		
	Human resource management		

Source: Schaufelberger (2009)

phase. The warranty of the product that was delivered should be well-managed (particularly in handling defects after the hand-over phase) and coordination with the customer or user is essential.

Supporting activities in a contractor’s business include the basic organizational structure, its employees and equipment, as well as human resource management programs and policies to attract, develop, and maintain a motivated, skilled team of employees. Elements that must be considered in the firm’s infrastructure are the adequacy and location of facilities and equipment, the efficiency and effectiveness of its finance and accounting system, and its information management system. These are necessary because in managing construction projects, the firm will mostly create a project-based (site) office which is near or in the project location. The head office of the firm may not be located in the same area as the site office. Therefore, good coordination between these offices should be managed and maintained during the project phase. Regarding the firm’s HRM, establishing procedures for employee recruitment and development, creating an encouraging work environment, creating and maintaining good relationships with unions, and focusing on employee’s level of motivation and job satisfaction are needed to achieve the business goals. The value chain for contractor in doing its business is illustrated in Table 6.3, describing the elements in its primary and support activities.

In delivering a project, a contractor needs to manage the materials, people, and equipment in a project site and assembling the materials in the proper sequence to construct a project that meets the customer’s requirements. In meeting these requirements, the contractor also has to consider their stakeholders, which can vary from the customers, suppliers, creditors, investors, employees, subcontractors, governments and the public, to existing and new competitors. Moreover, the business management challenges for contractors are to ensure that (Schaufelberger 2009):

- The revenue generated by the construction activity exceeds the cost of doing the work.
- The firm has adequate demand for its services.
- The firm has adequate financial resources to finance construction projects until reimbursed by its customers.
- The firm has a skilled, motivated workforce of sufficient size to meet anticipated requirements.
- The cost of the firm overheads is affordable based on the projected workload.

Schaufelberger (2009) also mentioned that each type of construction projects has its unique set of technical challenges, but the following business responsibilities for contractors are similar, which are acquisition of the work, performance of the work, and management of the financial, capital, and human resources of the firm.

The existing conditions of the Indonesian contractors have been analyzed. Suraji (2003) had completed an analysis showing the strengths, weaknesses, opportunities, and threats in general. Based on these findings, the Indonesian contractors have the strengths of delivering more projects due to their many labour resources and the current needs of infrastructures in many cities in Indonesia. There are many opportunities for collaboration with other foreign contractors arising from their recent businesses in Indonesian construction projects. Thus, this can enhance the capability of Indonesian contractors in delivering better projects through technology and knowledge transfer. Some weaknesses identified are the lack of funds and technologies, lack of skilled workers, the high level of competition in the national construction industry, and management inefficiencies. Factors such as the competencies of human resources, research and development, certification and support from other sectors may threaten the firm's growth and sustainability in the future if not considered comprehensively.

## **6.5 Review of Crises Faced by Indonesian Contractors**

A crisis may give various consequences to an organization, whether financial, legal, or operational consequences. It may disrupt the business process from a few minutes to up to several months or years in extreme cases. These consequences can impact the business process, and hence might threaten the firm's sustainability.

### **6.5.1 Crisis Overview**

Based on the Oxford Dictionary (2006), the word crisis means a time of great danger, difficulty, or confusion when problems must be solved or important decisions must be made. A crisis can be a threat because it has the possibility of trouble, danger, or disaster. Moreover, Barton (1993) described crisis as an abnormal situation or perception which threatens operations, staff, customers, or the reputation of the organization. There are various examples of crises that may occur in a firm. Elliott et al. (2002) had listed examples of crises as illustrated in Table 6.4. These events may result into a disaster for a firm if not handled or responded well and quickly.

Various studies had also grouped crises into several types and categories. Shrivastava and Mitroff (1988) had developed a crises typology, which is based on its root causes, whether from the internal, external, technical/economic, or human/organizational/social aspects. Moreover, Karakasidis (1997) had grouped

**Table 6.4** Unstructured list of crises

Unstructured list of crises (Elliott et al. 2002)	
– Adverse weather	– Loss of important staff
– Computer breakdown	– Major industrial accidents
– Computer bugs	– Media crisis
– Computer failure	– Natural disasters
– Currency fluctuations	– Product injuries
– Disease/epidemics	– Product tampering
– Fire	– Sabotage by outsiders
– Floods	– Sabotage by staff
– Hostile takeover	– Societal crisis
– Illegal activities	– Supplier crisis
– Industrial action	– Telecommunications failure
– Kidnapping	– Terrorism

crises based on the intentional or unintentional cause. Low et al. (2008a) had likewise compiled the categories into four types of crises, which are:

- Acts of nature such as floods, snowstorms, earthquakes, etc.
- External, man-made events such as terrorist attacks, bomb attacks, riots, etc.
- Internal, unintentional events such as an accidental loss of files, a computer crash, etc.
- Internal, intentional events such as sabotage, data deletion, etc.

By grouping crises based on their characteristics, it is beneficial for the firm to detect and respond to the crisis more accurately.

### ***6.5.2 Possible Crises Faced by Contractors***

Like any other firms, contractors may also experience various crises within their businesses. The types of crises can be grouped into categories, where each of them has various levels of impacts towards the business. Compiled from various references, the types of crises that contractors may encounter can be categorized based on the firm's primary and supporting business activities as follows (Edwards 1995; Low et al. 2008b; Schaufelberger 2009):

- **Business development**  
 During the phase of creating relationships with existing and prospective customers for capturing market and obtaining projects, there are some events that may threaten or interrupt these activities. Scandals such as corruption in the firm and other malicious contamination within the organization may affect the firm's reputation and image. Actions or protests by environmentalist/pressure groups toward the contractor due to its actions that may not be beneficial to the public or the environment could also disrupt the firm's business development activities. Other crises such as financial crisis (either national or internal

financial crisis), and political instability (that may lead to changes of project scope or project cancellations, sanctions and embargoes, and others) could affect the contractor's current and future business development strategies. Moreover, issues such as regulation or legislation changes, client insolvencies, and delays due to resolving disputes with clients or other stakeholders may also disrupt the business development process.

- Procurement

In creating and maintaining relationships with suppliers and subcontractors for purchasing resources for the projects, there are some threats that can interrupt the process such as material shortages (particularly key materials), material damages or faulty goods from the manufacturers, unexpected price escalation for the resources, and subcontractor's insolvencies.

- Construction operations

During the construction operation phase, activities that relate to and support the methods for constructing the product is monitored and managed. The time, cost, quality and safety measures during this process are essential, supported by a comprehensive project management system. Crises such as serious accidents, construction plant breakdown, fire, explosion, theft, sabotage, and limitation or restriction to some vital access may create significant interruption for this phase, and may threaten the final delivery of the product.

- Post-construction services

In this phase, the contractor is mainly focusing on managing the warranty period and further developing relationship with the client after handing over the product. If any serious defects or failures on the product or its components occurred, this could give rise to adverse impacts that may lead to liabilities on the contractor's part.

- Firm's infrastructure

The process of managing the firm's infrastructure, which includes its offices (head and site offices), finance and accounting system, and information system, can be disrupted by crises such as natural disasters, loss of confidential information, war, riot, and terrorism. These crises can damage the firm's infrastructure and the continuity of its business.

- Human resources management

This supporting activity, which focuses on the firm's employee recruitment and development, maintaining relationships with various human resources unions, and managing the firm's working environment, can be disrupted by several events. Crises such as virus pandemic (flu pandemic, SARS, etc.), labour strikes or disputes, lack of competent workforce, loss of management personnel or key staff, and kidnap of or ransom for employees may threaten the firm in continuing its business activities, particularly its human resources activities. Considering that most of the activities of a contractor are led and operated by people, these events should not be overlooked as these can cause significant impacts toward the firm's business.

Table 6.5 compiles these crises, which are grouped into the contractor's business activities categories, and followed by their respective classifications into the various main types of crises, including the acts of nature, external man-made events, and internal, intentional or unintentional events.

### ***6.5.3 Crises Experienced by Indonesian Contractors***

Indonesian contractors have also experienced various threats or crises that have significant impacts on their business activities. Some factual crises that occurred and documented in the past years, followed by their impacts toward contractors and the firms' responses toward those events are described below:

- 1997 financial crisis (Agustinus and Luhur 2008; Firdausy 2002; Kartasasmita 2000; Saparini 2009)

The 1997 financial crisis started when the Indonesian currency depreciated sharply more than three times. The impacts were that the investment level of property, real estate and construction diminished significantly, with a sharp drop in construction business which led to bankruptcy, where the growth rate became  $-37.5\%$  and companies laid off more than 1.4 million workers, and with high unemployment faced by the contractors. In responding to this crisis, the government provided public work programs for the unemployed construction workers. But this was a temporary program and there were problems related to the program such as the mismatch in job tasks, lack of program dissemination, and ineffectiveness in managing the program. Moreover, currency and inflation control by the government provided some slow recovery for the construction sector.

- 2008 financial crisis (Suryadharma 2008)

This crisis started from the global economic downturn, which led to increased interest rates (up to 9%), and skyrocketing costs of raw materials, including steel and cement, which accounted for approximately 20% of an average project's cost structure. This had led the contractors to be more selective in managing their costs of contracts because hedging raw materials prices was by no means a sure way to counteract the impacts of high building material prices. Furthermore, a rejection of escalation clauses may in fact have darkened the future of the construction sector. The National Planning and Development Agency (*Bappenas*) has rejected a project value escalation proposal by the contractors' associations, electrical and mechanical associations and other construction-related associations. The sector was then also likely to suffer from postponed infrastructure projects in 2009 as the Public Works Ministry was likely to see its original expenditure plan slashed to Rp 35.6 trillion from Rp 58.7 trillion due to budget constraints amidst higher oil-related subsidies. Diversification into other businesses may help the contractors reduce risks in this context. Some firms have

**Table 6.5** Possible crises faced by contractors

Contractor’s business activities (Schaufelberger 2009)	Possible crises (Low et al. 2008b)	Type of crises (Low et al. 2008a)
<b>Business development:</b> <ul style="list-style-type: none"> <li>• Creating relationships with existing and prospective customers</li> <li>• Obtaining the work</li> <li>• Market research</li> </ul>	Loss of public goodwill, reputation, image due to malicious acts	Internal, intentional event
	Action by environmentalist/pressure groups (protests)	External, man-made event
	Financial crisis	External, man-made event
	Corruption scandal	Internal, intentional event
	Political instability i.e. those leading to changes of project scope or cancellations, sanctions and embargoes, tighter exchange controls, repatriation of funds	External, man-made event
	Changes in regulations and statutory legislation	External, man-made event
	Client insolvency leaves outstanding debts for work done	External, man-made event
	Delays or uncertainty in resolving disputes	Internal, unintentional event
<b>Procurement:</b> <ul style="list-style-type: none"> <li>• Relationship with subcontractors</li> <li>• Relationship with suppliers</li> <li>• Efficiency and effectiveness of material purchasing procedures and management procedures</li> </ul>	Increase in price of raw materials (unexpected price escalation)	External, man-made event
	Shortage of key materials	External, man-made event
	Material damages (during deliveries or faulty products from manufacturer)	Internal, unintentional event
	Subcontractor insolvency	External, man-made event
<b>Construction operations:</b> <ul style="list-style-type: none"> <li>• Cost and schedule estimation and control</li> <li>• Project management system</li> <li>• Quality management system</li> <li>• Safety management system</li> </ul>	Breakdown of key construction plant	Internal, unintentional event
	Serious accidents in a project	Internal, unintentional event

(continued)

**Table 6.5** (continued)

Contractor's business activities (Schaufelberger 2009)	Possible crises (Low et al. 2008b)	Type of crises (Low et al. 2008a)
	Fire	Internal, unintentional event
	Explosion	Internal, unintentional event
	Theft	Internal, intentional event
	Sabotage	Internal, intentional event
	Access/approval restriction or limitation	External, man-made event
Post-construction services: • Warranty management system • Customer relationship develop- ment program	Serious product defects or component failures	Internal, unintentional event
Firm infrastructure: • Adequacy and location of facili- ties and equipment • Efficiency and effectiveness of finance and accounting system • Information management system	Loss of confidential information	Internal, unintentional event
	Natural disasters (earthquake, floods, tsunami, etc.)	Acts of nature
	War	External, man-made event
	Riot	External, man-made event
	Terrorism	External, man-made event
Human resources management: • Procedures for recruiting and developing employees • Working environment • Relationship with unions • Levels of employee motivation and job satisfaction	Lack of component workforce	Internal, unintentional event
	Loss of management personnel or key staff	Internal, unintentional event
	Kidnap and ransom (effect on pro- duction and share price of loss of key personnel)	Internal, intentional event
	Strikes, labour disputes	Internal, intentional event
	Health issues (flu pandemic, SARS, etc.)	Acts of nature

already begun engaging in the LPG-tank business or have acquired stakes in toll road or power plant firms to ensure continued growth and reduced risks.

- Terrorism (CMfEA 2009; PTX 2008<sup>1</sup>; UNR/HC 2005)

Some serious terrorism events that occurred during the past 10 years in Indonesia were the Bali bombing in 2002, Jakarta bombings (Australian Embassy, JW Marriott Hotel, and Ritz Carlton Hotel) in 2003 and 2009. There were tens to hundreds of casualties due to these bombings. These events had resulted in a 1-day business disruption in the Jakarta area which led to building evacuation and higher security within that week. For this type of crisis, most of the contractors have emergency responses for bomb threats (as applied to their head and site offices).

- Riots (Herlijanto 2004; ICG 2002; Lee 2009; PTX 2008; Tirtosudarmo 2005; UNR/HC 2005)

Various riots and conflicts have occurred in Indonesia, such as: The Poso conflict in 2005, Jakarta riots in 1998, Aceh conflict (during the 1980s up to 2005), and Papua conflict in 2002. These conflicts were mainly due to political issues and instability with various diverse root causes. These caused various business disruptions, from 1 day to 1 week in the conflict area. As an example in the Jakarta riots, the capital city had a level 1 alert (highest level of national security alert) within the week. People were trapped in their offices, there were no transportation and commercial activities, and there was mass departure from certain ethnic groups going abroad. The government responded to the crises with high level of security and military responses in the area. In addition, after the 1998 Jakarta riots, several contractors had subsequently developed emergency responses to riots/conflicts.

- Fire (PTX 2008; Tadie 2008)

Forest fires and short circuits in slums area and buildings mostly occurred in Indonesia's dense cities and villages. In populated cities like Jakarta and Surabaya, any fires due to short circuits in the buildings or houses had led to building evacuation. Considering this, in protecting the firm's head or site office, most of the contractors have emergency responses for fires in their facilities and sites.

- Accidents/safety issues (Permana 2007; PTX 2008)

Recently, it has been found that accidents in construction projects are increasing, particularly involving the small contractors. The accident severity rates are increasing from year to year. Impacts from these events included small injuries to fatalities, loss of workforce due to injuries, and loss of productivity. Responding to these, most of the large contractors have developed detailed safety plans and certification. However, only a few small contractors have safety plans in their firms.

- Earthquakes and tsunami (MiyamotoINTL 2007; PTX 2008; Tambunan 2006; UNR/HC 2005)

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<sup>1</sup>PTX (2008)—This document was provided by an Indonesian contractor who requested for anonymity.

Indonesia had suffered from many earthquakes and a huge tsunami disaster within these past years. Some recent events included earthquakes in Aceh and Nias (2004), the Yogyakarta area (2006), and West Sumatra (2007 and 2009). Impacts from such natural disasters are severe, such as building and infrastructure damages, injuries and fatalities. The largest fatalities were in the Aceh and Nias earthquake caused by the tsunami disaster that followed after the earthquake. Emergency responses were provided by local authorities, followed by local and international aids in the following days after the disaster. The local and national government also provided temporary shelters, health aid facilities, and surveys of damage around the area. Due to the significant impact towards the business sector, including construction, an earthquake site evacuation procedure had been planned by most of the contractors. These procedures are particularly vital to the firms that have projects or offices in earthquake-prone area.

- Floods (IFRC 2004; PTX 2008; Sutardi 2006)

Generally, floods were due to torrential rains, such as those seen in Sumatra and Sulawesi islands in December 2004, the Jakarta floods in 2002, and North Sumatra flash floods in 2003. The impacts included loss of home and building damages, business disruptions from 1 day to 3 days, and infrastructure damages. Most of the contractors have emergency responses for floods in their facilities and sites, supported by emergency evacuation and responses by the local authorities. In addition, the government had also developed Integrated Flood Management Policies, including corresponding emergency measures and responses.

#### **6.5.4 Current Findings**

Based on the literature review presented earlier, the contractors appeared to have reacted differently to different types of crises. In financial crises, some contractors postponed their current projects, sought assistance from the government such as proposing project value escalation, while others diversified their businesses to ensure continued growth. These reactions gave rise to different impacts in their businesses, with some firms that could not save their businesses due to high debts, while others lay off their workers temporarily until they can resume their projects. In other cases, because of currency intervention and inflation control by the government, some firms have also survived the crisis to recover within several years.

In crises related to external man-made events (such as terrorism and riots) and internal unintentional events (such as fires), these firms experienced business disruptions which can vary from 1 day to 1 week, depending on their office and project location. Most of the contractors applied emergency responses (evacuation process) to give priority to people's safety. These responses had been written in the firm's emergency manual. For further business recovery, the contractors will need to create a recovery team who will assess all the loss and develop steps that are

needed to resume the business. From this procedure, it can be seen that the firms are mostly focusing on the evacuation response process. The process and steps for continuing the business after the crisis have not been planned in details yet, thus resulting in an even longer disruption period.

Crises related to natural disasters (such as earthquakes, tsunami, and floods) caused the contractors to apply emergency responses (site or office evacuation procedures), and further coordination with the local government. The processes after the disaster appeared to be mostly dependent on the government's aid. These included temporary shelters, health aid facilities, and surveys of damage around the area provided for by the government. Similar to the previous types of crises, the contractors do not have a detailed back-up plan and continuity procedure to recover and resume business. They will only create the recovery team after the situation had evolved to be conducive enough to resume business.

In addition, in crises such as accidents in construction projects, most of the larger contractors have detailed safety plans. The emergency responses are therefore well managed with detailed procedures. However, smaller contractors do not have detailed safety plans and only a few are certified for emergency preparedness. This may cause the disruption period to last longer and affect the productivity of projects.

From these cases, it can be seen that most of the contractors have provided relevant emergency responses for evacuating people during the crises (in external man-made events and natural disasters). However, a detailed recovery procedure for their businesses to resume after the crisis had not been planned in advance. The firms will create the recovery team and develop steps to resume based on the management's decision. As for financial crises, the reactions were varied, which were again dependent on the management's decision to sustain the business. Most of the contractors faced difficulties during these events. They were significantly reliant on government's actions in currency intervention and in managing the spiraling inflation rate.

Some extremely damaging crises have major impact on the local or provincial economy, and some to the national economy. For example, the 1997 financial crisis resulted in the collapse of the banking sector which led to projects and businesses being postponed in various sectors. This caused negative growth in the Indonesian economy (Agustinus and Luhur 2008). As for natural disasters that have occurred in various regions in Indonesia, the impact of these crises caused severe damages to areas and infrastructure in the location, high death tolls, and disrupted business activities which led to associated economic problems in the location. These situations required aids and assistance from the central government.

From these findings, it appears that the Indonesian contractors have not developed their crisis responses into a holistic management approach in their organizations, and there is a lack of detailed responses for their business stakeholders. There remain patches of responses that have not yet been sewn together for the Indonesian contractors to survive and continue their businesses. Therefore, these firms should start to adopt a management concept within their organizations to recover and sustain their businesses in an effective manner. Considering the types of crises

and the severe impacts that have occurred, the existing responses made for these crises were not fully effective for assuring the firm's business continuity.

## 6.6 Summary

As the largest archipelago in the world, Indonesia has various and abundant natural resources, with a large population distributed across the islands. Its economic performance has been improving throughout the years, after facing financial and political crises that occurred in the late 1990s. Regarding its infrastructure, Indonesia still needs to develop this sector in a systematic and practical manner. This sector also provides attractive opportunities for investments and the construction industry can play an important role in developing this.

The Indonesian construction industry is one of the important sectors in Indonesia. Its role can be seen from the major usage of domestic goods and services that contribute significantly to the country's total GDP. There are some problems faced by the industry, particularly due to its position in a volatile environment. In anticipating this matter, the construction industry has gained some lessons learned and engaged in an effort to develop the industry into a more valuable sector.

The Indonesian contractors cannot overlook any events that may cause various consequences to them, whether financial, legal, or operational consequences. A crisis may disrupt the firm's business processes from a few minutes to up to several months or years in extreme cases. Based on the literature review, a contractor's business activities may be vulnerable to various types of threats and crises. These were proven by some factual crises that occurred and documented in the past years, which had been experienced by the Indonesian contractors. From these findings, the contractors appeared to have reacted differently to different types of crises. The impacts from these crises also differ, from several days of disruption to bankruptcy. In order to be resilient and able to response to such threats, the Indonesian contractors should start to adopt a holistic management concept, such as BCM in their organizations.