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Kansai in the Asia Pacific

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Toward a New Growth Paradigm

Asia Pacific Institute of Research, Osaka

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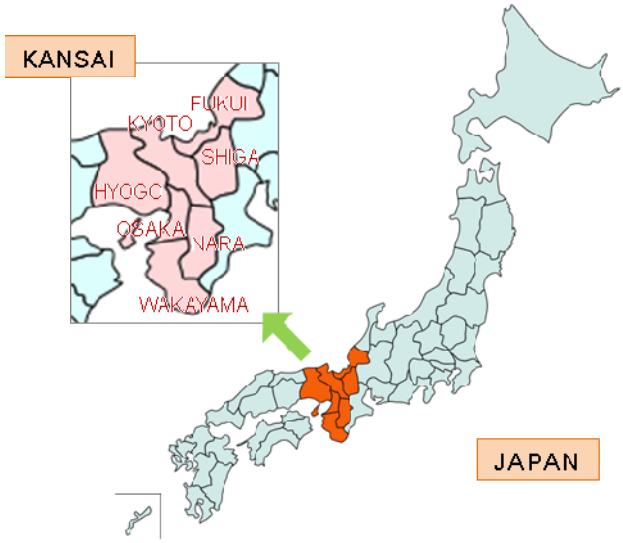

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Kansai in the Asia Pacific
Toward a New Growth Paradigm

Published by Asia Pacific Institute of Research, March 2013.

The regional division in this book is as follows unless otherwise noted.

Kansai: prefectures of Fukui, Shiga, Kyoto, Osaka, Hyogo, Nara, Wakayama
Kanto: prefectures of Ibaraki, Tochigi, Gunma, Saitama, Chiba, Kanagawa, Yamanashi and Tokyo Metropolis
Chubu: prefectures of Nagano, Gifu, Shizuoka, Aichi, Mie
Japan: all prefectures including Kansai, Kanto and Chubu

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Message from the Research Director

Dr. Hideo Miyahara

Currently, the global social order is in a state of major flux due to rapidly changing political and economic situations. The sovereign debt crisis that began in Greece and spread across Europe has engendered instability in world stock and foreign exchange markets. In developing countries, a range of social problems brought on by rapid economic growth have surfaced, resulting in slowdowns in the development of a number of those countries. Developed countries have continued to invest a great deal of time into reforming social infrastructures, including pension and employment schemes, and some have gone into expenditures in order to maintain their current schemes. Meanwhile, the unstable political situations in the Middle East and North Africa are having a considerable impact on the natural resources market. And, Japan is struggling to restore the Tohoku area from damage caused by the Great East Japan Earthquake and is faced with a pressing need for social policy reform.

On December 2011, Asia Pacific Institute of Research (APIR) was established to serve as source of intelligent strategies and solutions for the highly diverse Asia-Pacific region.

One of the missions of APIR is to discuss desirable partnerships between Japan and Asia-Pacific countries and to contribute through the Kansai Prosperity Plan to the development and implementation of social initiatives.

“Kansai in the Asia Pacific” takes as its theme “Toward a New Growth Paradigm” for Asia and Kansai. Working from the perspective of the Asia-Pacific region, it surveys the current situations of Japan and Kansai and discusses new values to be created by Japan in the wake of the Great East Japan Earthquake and suggests strategies for sustainable regional development and for innovative economic initiatives for Kansai.

“Kansai in the Asia Pacific” has been published by the newly established APIR and it incorporates a great deal of the knowledge that our institute has accumulated. It is my sincere hope that this publication will be widely read and utilized by individuals who are passionate about building a bright future for Kansai.

I want to express my sincere appreciation to the many individuals who have contributed to the editing and publication of this valuable work.

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Part I

Economic Outlook for the Asia-Pacific

Chapter 1 Japan and the Asia Pacific

1. The Asia Pacific region

For the purposes of this paper, the "Asia Pacific region" refers collectively to 25 countries and regions that include the 21 member countries and regions of the Asia-Pacific Economic Cooperation (APEC), three emerging countries in Southeast Asia (Myanmar, Laos, and Cambodia), and India.

Table 1-1 Countries and regions in the Asia Pacific region

		APIR	APEC	ASEAN	ASEAN+6	TPP	NAFTA
1	Japan	○	○		○	○*	
2	South Korea	○	○		○		
3	China	○	○		○		
4	Taiwan	○	○				
5	Hong Kong	○	○				
6	Vietnam	○	○	○	○	○	
7	Thailand	○	○	○	○		
8	Singapore	○	○	○	○	○	
9	Malaysia	○	○	○	○		
10	Brunei	○	○	○	○	○	
11	The Philippines	○	○	○	○		
12	Indonesia	○	○	○	○		
13	Cambodia	○		○	○		
14	Laos	○		○	○		
15	Myanmar	○		○	○		
16	India	○			○		
17	Russia	○	○				
18	Canada	○	○			○	○
19	U.S.	○	○			○	○
20	Mexico	○	○			○	○
21	Peru	○	○			○	
22	Chile	○	○			○	
23	Australia	○	○			○	
24	Papua New Guinea	○	○				
25	New Zealand	○	○			○	

* Japan has announced that it will take part in preliminary consultations for joining the TPP negotiations.
Note: The table above is as of September 2012.

These countries and regions have been chosen based on their present and potential geographical proximity and economic closeness to Japan, but at the same time nearly all of them lie along the "Pacific Ring of Fire," where a large number of volcanic eruptions and interplate earthquakes occur.

This region has witnessed the birth of numerous economic cooperation arrangements, including the Association of Southeast Asian Nations (ASEAN, established in 1967), the Asia-Pacific Economic Cooperation (APEC, an unofficial forum launched in 1989), the North American Free Trade Agreement (NAFTA, went into effect in 1994), and a proposed Free Trade Agreement among China, Japan, and Korea. Due to differences in the levels of economic development among Southeast Asian countries and the diverse nature of their political systems, ethnicities, cultures, religions, etc., it was once considered difficult for such nations to form regional partnerships like the European Union (EU); however, the ongoing regional economic growth driven by rapid development of the Chinese economy is providing momentum for such partnerships.

2. TPP or ASEAN Plus Three?

Discussions about the framework of economic cooperation in the Pacific Rim region involve two key considerations. The first thing that must be considered is the range of attitudes toward multilateral trade negotiations. For such negotiations to be successful, it is important that they not only benefit individual countries involved, but also promote common interests, such as international peace, democracy, security, and economic stability. However, when we compare the current points of contention involving frameworks of negotiations for economic cooperation, i.e., the Trans-Pacific Partnership (TPP) and ASEAN Plus Three, we find that the two have very different perceptions of "common interests." The selection of one over the other would thus virtually represent a decision as to what kind of world Japan would like to see going forward. The second consideration that must be made is a determination of the limits of negotiations for key members, including Japan, the U.S., China, South Korea, Australia, and ASEAN countries. By taking these two considerations into account, Japan should be able to think strategically about what it should do.

2.1. Looking back on APEC's history: Setbacks and reevaluation

2.1.1. Competing frameworks

TPP, ASEAN Plus Three, and ASEAN Plus Six are some of the most frequently talked about frameworks for economic cooperation. All three are geared toward the promotion of free trade and investment in the Asia Pacific region and are currently competing against each other. The TPP began as an economic partnership agreement among the four countries of Singapore, Brunei, Chile, and New Zealand. Subsequently, the U.S., Australia, Malaysia, Vietnam, Peru, Mexico, and Canada

have begun negotiations to join the TPP. ASEAN Plus Three has its origins in the wake of the Asian currency crisis of 1997, when leaders of Japan, China, and South Korea were invited to the ASEAN summit meeting. At the Kuala Lumpur summit meeting of 2005, it was decided that ASEAN Plus Three would be the pivot of an "East Asian Community" and a plan was drawn up accordingly to form an East Asian free trade agreement that would expedite economic cooperation. Lastly, ASEAN Plus Six is a framework for regional cooperation that, in addition to the ASEAN Plus Three member countries, also includes India, Australia, and New Zealand, and aims at setting up a comprehensive economic partnership arrangement for East Asia. All of these frameworks have their sights set on extensive economic partnerships and free trade and investment, but the participating members and negotiation contents overlap, and how they relate to each other is unclear. Nevertheless, there is certainly a widespread recognition that the Asia Pacific region requires such an economic partnership.

2.1.2. Economic cooperation playing a vital role in national economies

The Asia Pacific region including Japan accounts for roughly 40% of the world's population, 60% of GDP, 50% of the world's trade (2011, the World Bank), and approximately 60% of global economic growth, topping all other regions by a large margin. It has been said countless times before, but the way in which Japan will tap into the economic dynamism of this region will determine the country's future. Regardless of region, no national economy can survive in and of itself and cooperation with neighboring countries is indispensable. Such being the case, countries around the world have in modern times formed a variety of economic cooperatives and partnerships for limited purposes, such as customs unions and free trade zones. The most popular example of our times would be that of the EU. Originally founded as a coal and steel community among Germany, France, and the three Benelux countries, this framework has since expanded in terms of both area and scope to become an entity that goes far beyond mere economic partnership. For its member countries, the EU is such an important and successful framework for international cooperation that they simply cannot do without it.

2.1.3. APEC aiming toward a flexible multilateral free trade system

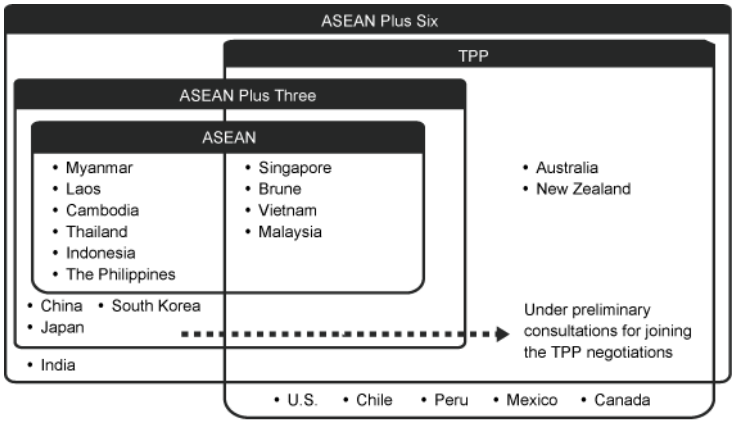
In the Asia Pacific region, too, economic partnership and cooperation have driven economic activities. Efforts to promote such frameworks began as early as the immediate aftermath of the Second World War, but the one that is considered most important today is the Asia-Pacific Economic Cooperation (APEC) forum. Established in 1989 by a total of 12 countries that included Japan, the U.S., Canada, South Korea, Australia, New Zealand, and the six ASEAN member countries of the

time, APEC has since expanded with the additions of China, Russia, and other countries, and it now serves as a forum for 21 countries and areas in the Asia Pacific region.

At the outset, APEC would often hold meetings among economic and trade ministers from its member countries and regions. It has hosted annual summit meetings since 1993, as well as annual ministerial-level meetings among foreign and economic ministers. APEC's goal has been to maintain and promote a multilateral free trade system under the World Trade Organization (WTO) by ensuring open regional cooperation to prevent the regional economy from being divided into blocks and liberalizing intra-regional trade and investments.

Unlike the EU, however, APEC is not a rigid framework that forces its member countries to trade freely within the region through a treaty. Rather, it is a loosely linked economic partnership as it sets intra-regional free trade as a goal that member countries are expected to strive for while each country voluntarily takes action to that end, and it has no means to impose sanctions on those countries who decide not to do so.

Figure 1-1 Economic partnerships in the Asia Pacific region



Note: The figure above is as of September 2012.

2.1.4. Toward a Free Trade Area of the Asia-Pacific

The three frameworks for regional partnership mentioned at the outset of this section are all under consideration in relation to APEC. More specifically, at the 2006 summit meeting, APEC member countries reached an agreement to plan and study a Free Trade Area of the Asia-Pacific (FTAAP), which aims to reinforce free trade of goods and services and economic partnerships across a wide range of areas by eliminating tariffs and trade restriction measures. At the 2010 APEC summit meeting held in Yokohama, the leaders agreed that the FTAAP should be pursued as a comprehensive free trade arrangement by building upon and further advancing ongoing regional initiatives, such as the TPP, ASEAN Plus Three, and ASEAN Plus Six.

2.2. APEC setbacks

At present, several frameworks for economic partnerships in the Asia Pacific region are competing against each other due to the failure of the attempt to liberalize trade and investment under the lead of APEC in the latter half of the 1990s[1].

2.2.1. Failure in negotiations for voluntary sectoral liberalization

After the first summit meeting in Seattle in 1993, it was decided that APEC would devote its resources to consultations for trade and investment liberalization. In 1994, they published the "Bogor Declaration," which stated that "industrialized APEC economies would achieve the goal of free and open trade and investment in the Asia Pacific region no later than the year 2010, and developing economies no later than the year 2020." Then, in a bid to accelerate portions of that declaration, they entered into negotiations for Early Voluntary Sectoral Liberalization (EVSL) in 1996.

EVSL was an ambitious attempt to liberalize trade in 15 potential areas earlier than the original schedule given in the Bogor Declaration. With priority given to nine of the 15 areas, APEC decided to intensively pour time and human resources into this process between 1998 and 1999. However, the EVSL consultations did not produce the expected results. Because participating countries failed to agree on tariff cuts in target areas, the consultations were put off to a new WTO round slated for 1999.

[1] See *Consensus That Wasn't Shared: The Political Process of APEC EVSL Consultation*, compiled by Jiro Okamoto, IDE-JETRO (2001)

2.2.2. Disappointment with APEC

The acceleration of liberalization under the framework of APEC was boosted by concerns shared by its participating countries. They all felt severe apprehensions about the rise of regionalism and the resultant stagnation in WTO trade liberalization talks. And so, they attempted to push forward liberalization in the Asia Pacific region as a way of bringing about a breakthrough in the sluggish WTO negotiations, thus checking the rise of internally focused regionalism.

Unfortunately, the failure of EVSL robbed APEC of much of its momentum in its drive for liberalization[2]. Hoping to have achieved liberalization under this framework, the U.S. suffered more damage than other countries, and its interest in APEC waned quickly. For Asian countries, too, expectations for APEC faded away. When the currency crisis hit Asian countries from 1997, APEC was unable to take any resolute actions, and it was ASEAN Plus Three that offered proactive support for troubled countries. In fact, the success of this emerging framework was what gave birth to the idea of an East Asian Community.

2.3. A move to reevaluate APEC

After a temporary loss of its solidarity after the failed EVSL attempt, APEC has more recently been reevaluated to become an arena of negotiations for trade and investment liberalization. One of the reasons behind this change is the rise of FTAs, which grew rapidly in number between the late 1990s through the 2000s. FTAs concluded either bilaterally or interregionally increased sharply during this period, and most of them were concerned with the Asia Pacific region. Because such agreements are arranged through international negotiations, no two FTAs are exactly alike. As a result, this diversity among FTAs has often posed an obstacle for the economic activities of international businesses.

In response to the cries of discontented businesses against the "spaghetti bowl phenomenon" of FTAs, concern was expressed by the APEC Business Advisory Council (ABAC), a policy recommendation organ comprising business leaders from APEC member countries, and they urged the conclusion of an APEC-level wide-area FTA.

Another reason behind such developments has been a change in the level of interest on the part of the U.S. From the latter half of the George W. Bush administration, the U.S. resumed its attempts for liberalization in the arena of

[2] For details, see *The Search for Community: Multilateralism in East Asia*, compiled by Satoshi Oyane, Yushindo Kobunsha K.K., 2009, and *Constructing International Regimes: Japanese and American Policy Toward the WTO, APEC, and FTAs*, Satoshi Oyane, Yuhikaku Publishing Co., Ltd., 2012.

APEC partly because the country was concerned about a possible decline in U.S. involvement in the fast-growing Asian economy. The other motive behind this renewed interest was to aid the fight against terrorism by Islamic extremists. It was believed that, if the benefits of free trade and investment were to be shared throughout the Asia Pacific region, the U.S. would be able to spread the values of liberalism and democracy in this strategic region and thereby suppress any possible incentives for terrorism. The U.S. then came up with the idea of forming an FTAAP in a move to expedite liberalization on the APEC level. It is true that other APEC member countries have expressed their consent to the framework of FTAAP as a long-term goal, but at the same time they are seeking ways to achieve the goal amid competition among the frameworks for regional partnerships that were formed during that period – the TPP, ASEAN Plus Three, and ASEAN Plus Six.

3. Structure of multilateral trade negotiations

3.1. Reasoning behind multilateral trade negotiations

The setbacks and reevaluation of APEC has much to do with questions as to the reason why multilateral trade negotiations are conducted. Simply put, liberalization of trade and investment is a matter of economic activity. However, so long as national borders are set for political reasons, lowering the fences of such borders for economic activities cannot be purely an issue of economy. Rather, it is necessary to consider how this relates to diverse values that exist in the background of international politics.

3.1.1. Contributions to national economies

It is hardly necessary to bring up the economic theory of David Ricardo to realize that it would generally be effective to encourage free trade and lower the fences between countries in order to revitalize economic activities. This is considered common sense in economics. Because protectionism isolates domestic industries from competitive markets abroad, it hinders the development of protected industries and compromises consumers' interests, as it guarantees that the relevant domestic industries will make money without the need to compete or, to put it another way, without the need to provide consumers with inexpensive yet quality products. In the long run, it should be free trade that increases economic efficiency and thus makes the entire nation more affluent. From a short-term perspective, however, domestic industries that have been under the aegis of the government would object to liberalization because they could end up being forced out of business in the face of foreign competition. Such industries may try to mobilize politicians and voters with vested interests to stage an opposition

campaign in a bid to influence general voters. If their mission is successfully accomplished, they may successfully prevent the government from joining liberalization talks.

3.1.2. Contributions to international peace

Aside from the domestic conflicts of interest over liberalization, the liberalization of trade and investment must also be considered from a political perspective. The extent of influence that liberalization might have is not limited solely to economic activities. We must recall the fact that the free trade system was formed based upon reflection after WWII. As it is widely known, free trade movements prior to WWII were discontinued as one major Western power after another rushed to form economic blocks in a desperate attempt to corral their colonies and other territories in the wake of the Great Depression stemming from the U.S. in 1929. The rise of protectionism helped to fuel the fight over economic blocks among the powers, which in turn pushed "have-not" economies such as Japan and Germany into a corner and eventually prompted them to make war against the "have" nations, i.e., the Allied Powers.

Free trade systems serve to maintain international peace – with this idea as a backdrop, a free trade system known as the IMF-GATT system was formed after WWII, stemming from reflection on the fact that the principle of free trade was not sustained because prewar trade systems were fundamentally concerned with bilateral relationships.

Multilateral trade negotiations are not only meant to serve the short-term interests of individual negotiating countries, nor are they purely meant to revitalize the economy, but instead have been conducted to promote common long-term interests such as contributions to international peace. The entire concept of trade and investment is not merely a matter of economic activities, but has also much to do with what people wish the world to be like.

3.2. Asian way vs. hard regime

3.2.1. APEC style attaching importance to consensus

The values in the background of APEC's setbacks with EVSL were not as significant as those concerning the formation of the IMF-GATT system, but the setbacks were nevertheless a manifestation of various approaches to multilateral negotiations, which went beyond any mere conflicts of interest among member countries. Generally speaking, the ultimate goal of multilateral negotiations under the frameworks of GATT and others like the WTO and EU that followed is to have a mutually binding treaty signed, and such negotiations are naturally expected to

produce results. Also, because the negotiations involve multiple countries, sometimes certain countries are allowed to take the lead for the sake of efficient discussions.

As described above, negotiations between states normally seek hard and legally binding results, but those at APEC were completely different. In more concrete terms, under the framework of APEC, the question of whether or not to endorse liberalization is totally dependent on the initiative of individual member countries. Also, no single country is allowed to lead the negotiations, and instead all of the countries and regions are treated equally and with mutual respect, and thus the process leading up to characteristics of APEC, namely, vol an agreement matters and the participants do not rush to achieve results. These untary participation, emphasis on the process, and decision-making based upon mutual consensus, are referred to as the Asian way (or ASEAN way). Understandably, these countries opted for such a negotiation style because the Asia Pacific region is so culturally, politically, and economically diverse that member countries have not necessarily been able to agree on decision-making rules, and because many Asian countries have experienced colonialism in the past, they are averse to any kind of "hard regime."

3.2.2. Differences from a Western-style hard regime

Recognition of the Asian way, however, was not necessarily shared among APEC member countries. The U.S. and other non-Asian countries such as Australia, Canada, and New Zealand thought lightly of the Asian way and effectively aspired toward a hard regime, while Japan and other Asian countries assumed that it would be difficult for them to enter negotiations without due respect being given to that principle. The U.S. wished to negotiate a comprehensive agreement through a process of "give & take" as was the case with the WTO, whereas Japan believed that liberalization should be left to voluntary participation by each country. As it turned out, the countries were unable to come to terms with each other, eventually resulting in setbacks for APEC.

In fact, such differences in approach are also evident in several frameworks for negotiations after APEC began to be reevaluated. The TPP, for example, seeks a conventional Western-style hard regime, whereas ASEAN Plus Three is more akin to the Asian way. Having passed through rounds of FTA negotiations following the failure of EVSL, Asian countries are becoming increasingly tolerant of a legal agreement that would be harder than the Asian way. Members of ASEAN Plus Three are not stressing the Asian way as they did during negotiations for EVSL, either, but they are focusing more on how to ensure government involvement (in

setting the direction of development, etc.) and support for developing countries. These factors distinguish ASEAN Plus Three from the TPP, which places emphasis on market dynamism.

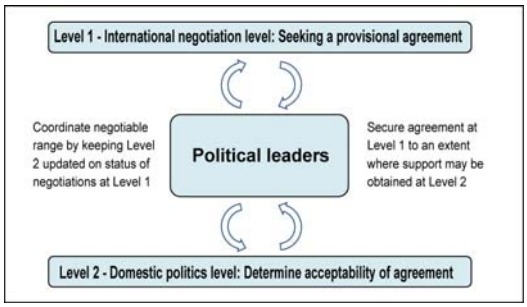
3.2.3. Japan holds the key to success for the TPP and ASEAN Plus Three

At present, APEC is making a competitive comparison among these two frameworks and ASEAN Plus Six and planning to single out what is considered the most appropriate of the three as a vision for an FTAAP. Given the differences in their underlying ideas, one could argue that APEC's choice of a framework to design an FTAAP is directly linked to an ideal vision of the world. In other words, it will be a decision as to what ideas will be adopted for negotiations in the Asia Pacific region with regard to the relationships among states and markets. Japan holds a highly prominent position in making this decision, because the country is the only G20 nation that can be a part of both the TPP and ASEAN Plus Three frameworks. As the world's third largest economy, Japan may control the success or failure of both frameworks if it were to join them. To sum up, Japan is in an important position in terms of a decision about the kind of world that is desired for the future.

3.3. Negotiations on two levels

3.3.1. International negotiation level and domestic politics level

Figure 1-2 Two-level game of multilateral trade negotiations



Together with the aforementioned approaches, another key factor in multilateral trade negotiations is the ability to handle such negotiations. Robert D. Putnam propounded a theoretical model for a two-level game of policy decisions on international issues[3]. According to his theory, negotiations can be divided into two levels. One is the level of international negotiation (Level 1), which aims to reach a provisional agreement, and the other is the level of domestic politics (Level 2), which sets out to determine whether or not the agreement reached through

[3] Putnam, Robert D. (1988), "Diplomacy and Domestic Politics: The Logic of Two-Level Games," *International Organization*, 42-3.

negotiations on Level 1 is acceptable. The role of connecting these two levels is held by political leaders.

3.3.2. Aligning "win-sets"

On Level 1, political leaders in negotiating countries work to reach an agreement to an extent where support may be obtained on Level 2, while at the same time attempting to coordinate "win-sets" (negotiable range) by keeping Level 2 updated on the status of negotiations on Level 1. As discussed earlier, although multilateral trade frameworks pose an issue that transcends "gain or loss of economic interests," one cannot discuss them without considering their economic implications. Obtaining support on Level 2 is deemed particularly important because concrete interests are visible. For example, suppose a nation's industries are divided into a trade sector and a non-trade sector. If the trade sector accounts for a larger portion of the country's GDP than the non-trade sector, one may conclude economically that the short-term benefits due to trade liberalization would be large. If, on the other hand, workers in the non-trade sector account for the majority of the constituents and thus wield huge political power, or the political system is structured in such a way that allows the non-trade sector to object to liberalization (two-chamber system, etc.), it would be difficult to expedite liberalization even if such an action would be preferable for the country from a short-term perspective as well.

Trade negotiations are fundamentally negotiations between states. If country A is cautious about liberalization and country B unilaterally liberalizes trade, then liberalization can be detrimental to B as A increases exports to B's market while B is prevented from doing so. It is often the case that liberalization talks go nowhere due to the fact that each country has its own political circumstances. Because interests among different industries vary depending on their respective countries, each nation has its own individual "win-sets." It may easily be assumed that, the broader the win-sets of negotiating countries are, the easier the negotiations will be, and the narrower they are, the harder the negotiations will be.

3.3.3. Factors determining win-sets

What, then, determines the win-sets of each country? According to Putnam, the range of win-sets is determined by the balance of power among "actors," political institutions, and the strategies of political leaders. The actor that has the greatest influence on Level 2 largely determines the size of the win-sets of the country. Generally speaking, if either protectionist powers or liberal powers have a disproportionately strong influence, the range of the win-sets becomes narrow, leaving little room for compromise on Level 1. On the other hand, if no single

group has a conspicuously large amount of influence within a country, its political leaders may conduct broad-ranged negotiations on Level 1. In a political institution that has many systems for restricting the power of its political leaders (two-chamber system, etc.), the range of win-sets is narrow because there are more groups who hold the power to veto.

Theoretically, win-sets may be defined as described above, but in reality they may often be invisible. It is not as if the win-sets are predetermined on Level 2, according to which negotiations on Level 1 then commence. Rather, only after negotiations have begun on Level 1 can discussions on Level 2 be initiated, and the size of the win-sets is gradually set from there. Depending on what issues are handled on Level 1 and how they are handled, the structure of interest among different domestic groups will change. Thus political leaders' strategies assume importance in that they serve as a bridge between Level 1 and Level 2.

In order to know what modes of negotiations are possible, it is necessary to understand what win-sets participating countries may currently form. When one considers the framework for the Asia Pacific region, one requires an understanding of the win-sets that may develop in Japan, the U.S., China, South Korea, Australia, and ASEAN countries. It is thus important to analyze the aforementioned three elements – the balance of power among actors, political institutions, and political leaders' strategies – in light of the situations facing each individual country.

3.4. Perspective for economic partnership negotiations

As discussed thus far, what is called into question in international negotiations is the question of how one wants negotiations to be carried out and how one can conduct those negotiations. The former has to do with ideology, while the latter involves international and domestic negotiations. Developments related to the economic partnership frameworks of the Asia Pacific region in recent years are certainly concerned with both, and it is time for Japan to make a decision of some sort. The TPP and ASEAN Plus Three often come into the limelight, but neither framework can be neutral toward every county. The U.S. is pouring its efforts into promoting the TPP, while China is actively involved in ASEAN Plus Three. Not surprisingly, each of these frameworks is strongly related to the respective national interests of these two superpowers. It is thus understandable that a sort of conspiracy theory is spreading, along the lines of: "If Japan should decide to join the TPP, it would then be at the mercy of the U.S."

When economic partnerships are designed in the Asia Pacific region, however, it is necessary to take a somewhat broader view to deal with the problem. That is, the

issue of ideology – what kind of world is desired – must be taken into account, along with the kinds of negotiations that the U.S., China, and other countries concerned can pursue. It can be said that the issue of ideology has to do with the views that free trade helps to bring about international peace and that the state of trade and investment can affect the relationships between a nation and its society and the promotion of democracy. In this regard, recent years have seen an increasing amount of attention given to the idea that we should aim at a framework which makes fair trade possible without bringing about deterioration of working conditions in the form of low-wage labor or environmental damage. Concerning the kinds of negotiations, it is necessary to realize that there are various conflicts of interest within each country participating in the negotiations. For example, the U.S. is in a position to promote the TPP, but it cannot be expected that their domestic opinions are monolithic – certainly no surprise considering that it is a democratic country.

The decision about what framework for economic partnerships is appropriate can differ significantly, being heavily influenced by the situation of the world at the time. After ASEAN Plus Three offered a framework for support in the wake of the Asian currency crisis of 1997, its member countries set the goal of forming an East Asian Community, which suggests that the crisis strongly indicated to them the path that they should pursue. However, one may argue that the Great East Japan Earthquake turned this situation completely around. Who offered a helping hand to Japan from a spirit of friendship at that time? It would be necessary to proceed with negotiations while maintaining this kind of mentality.

Chapter 2 Vietnam as a "*Monozukuri*" Partner with Japan

This chapter focuses on Socialist Republic of Viet Nam (Vietnam) -- a country that has attracted the interest of Japanese companies as a candidate for investment under their "China plus one" strategies -- and explores Vietnam's potential and challenges as a *monozukuri* ("manufacturing craftsmanship") partner for Japan. It begins with an overview of the Vietnamese economy, trends in trade and investment, and the key challenges confronting Vietnam in its drive to industrialize in the context of accelerating global integration. This is followed by a description of trends in foreign market penetration by Japanese companies including small and medium-scale enterprises. With this background, the chapter then attempts to show that the development of supporting industries in Vietnam backed by efforts to attract Japanese foreign direct investment (FDI) meets the industrial needs of both Japan and Vietnam.

1. The Vietnamese economy: An overview

Vietnam has been an economic latecomer in East Asia. Following its long war for independence and a period of centrally planned economic management, in 1986 the country adopted its "Doi Moi" program of economic reforms and liberalization policies and in 1992-1993 began to resume ties with the West. Although it later experienced temporary setbacks stemming from the Asian currency crisis and a global financial crisis, Vietnam managed to achieve remarkable economic growth through the expansion of trade, FDI, development assistance, and international financial transfers. Within a period of less than 20 years, Vietnam moved from being one of the world's poorest agrarian economies (with annual per-capita income of only US$98 in 1990, according to IMF data) to join the ranks of lower middle-income countries, participating in the industrial division of labor in East Asia (with per-capita income of US$1,374 in 2011). Under its latest (ninth) five-year plan (2011-2015), Vietnam has set targets for average economic growth and per-capita GDP of 7-8 percent and US$2,100, respectively, by the year 2015.

As of 2011, Vietnam's top-three trading partners were the People's Republic of China (China), the US, and Japan; in value terms these three countries together accounted for approx. 40 percent of total trade by Vietnam. The US ranked as the

top destination market for Vietnamese exports, followed by China and Japan. Asian countries including China, the Republic of Korea (South Korea), Japan, and Taiwan accounted for over 70 percent of the total in goods imported by Vietnam. As Table 2-1 shows, Vietnam exports a diversity of goods to Japan, including apparel, crude oil, marine products, machinery and equipment and parts, and electrical wiring and cabling. Conversely, key Japanese imports to Vietnam range from machinery and equipment and parts, computers and electronic components, automotive components, and other industrial manufactured goods and components to steel and scrap iron, plastic feedstock, textiles, and other raw materials.

Table 2-1 Vietnam's trade with Japan in key product categories (customs-cleared basis)

(Units: USD millions, %)

	Exports (FOB)					Imports (CIF)			
	2010	2011				2010	2011		
	Value	Value	Share	Growth		Value	Value	Share	Growth
Apparel	1,146	1,690	15.7%	47.5%	Machinery, equipment and parts	2,547	2,804	27.0%	10.1%
Crude oil	204	1,580	14.7%	673.0%	Steel, scrap iron	1,590	1,957	18.8%	23.1%
Marine products	892	1,016	9.4%	13.9%	Computers and electronic components	1,025	1,150	11.1%	12.2%
Machinery, equipment and parts	897	1,011	9.4%	12.7%	Textiles	356	527	5.1%	48.0%
Electrical wiring, cabling	912	988	9.2%	8.3%	Automotive components	396	413	4.0%	4.2%
Lumber and wood products	453	597	5.5%	31.9%	Plastic feedstock	304	317	3.0%	4.3%
Transport equipment and parts	381	492	4.6%	29.3%	Chemical products	231	256	2.5%	11.0%
Plastic products	255	294	2.7%	15.2%	Chemical reagents	175	228	2.2%	30.4%
Coal	234	279	2.6%	19.4%	Fiber and leather materials	132	179	1.7%	35.5%
Footwear	170	249	2.3%	46.3%	Automobiles	163	162	1.6%	-0.4%
Handbags, luggage, hats, umbrellas	93	144	1.3%	55.8%	Petroleum	42	107	1.0%	151.7%
Total (including "Other")	7,677	10,781	100.0%	40.4%	Total (including "Other")	8,969	10,400	100.0%	16.0%

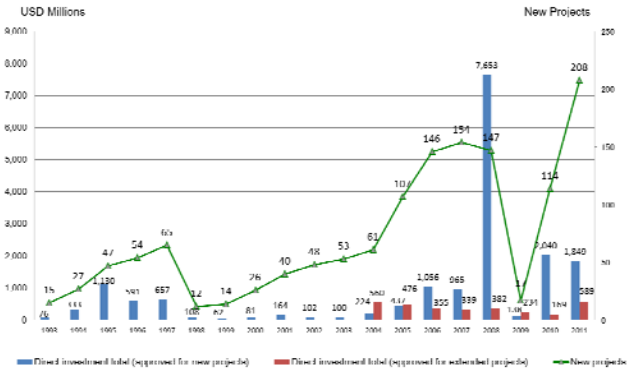
Source: Table prepared by Japan External Trade Organization (JETRO) with data from Vietnam's Ministry of Planning and Investment and Foreign Investment Agency.

In 2011, inflows of FDI totaled US$115.59 billion (1,091 projects on a new approvals basis). By country, the top-three sources of FDI were South Korea followed by Japan and Taiwan. In terms of cumulative FDI (approvals basis), Japan accounted for the largest share from 1988 to February 2012, followed in descending order by Singapore, South Korea, and Taiwan. Inflows of FDI from Japan expanded in response to the enactment of foreign investment laws by Vietnam in 1988 and the resumption of Japanese official development assistance (ODA) to Vietnam in 1992. Starting in 1995, abrupt yen appreciation fueled a surge of FDI inflows into Vietnam by leading Japanese firms in industries from cement, consumer electronics, and automobiles to motorcycles and computer components, among other fields, and by 1997 the first Vietnam investment boom

had arrived. The country began recovering from the impact of the Asian currency crisis in 2004 and entered its second investment boom in 2008. Several factors contributed to this development. For one, Vietnam had made progress in developing its legal system, building industrial parks, and creating an enabling environment for FDI attraction. For another, it had garnered more attention as a secondary or alternative ("China plus one") investment target among companies that preferred not to concentrate their resources too heavily in China. Additionally, the Japan- Vietnam Investment Agreement (placed into effect in December 2004) comprised provisions that protected the rights and interests of Japanese companies investing in Vietnam.

Affected by the Lehman Shock, FDI inflows into Vietnam subsided in 2009. However, the level of FDI has recovered and grown since then as Japanese companies step up their efforts to shift their production bases offshore. In 2011, Japanese firms accounted for 208 new FDI projects, totaling US$1.85 billion in value, a record-breaking high (Figure 2-1). More than half of those projects were valued at less than 10 million yen, effectively highlighting the increased presence of small and medium-scale Japanese enterprises in Vietnam. There were signs of changes in Japanese FDI flows into Vietnam, which was once dominated by large firms.

Figure 2-1 Foreign direct investment by Japan in Vietnam (approvals basis)



Source: Table prepared by Japan External Trade Organization (JETRO) with data from Vietnam's Ministry of Planning and Investment and Foreign Investment Agency.

For Japanese companies, Vietnam appeals for a variety of reasons. It is seen as a country with a relatively young and hard-working labor force endowed with

strong technology acquisition skills, a politically and socially stable climate, a country that has achieved rapid strides toward improving its environment for foreign investment, a country offering a competitive advantage through its proximity to the geographic center of the ASEAN and Southern Chinese economic spheres, and a domestic market of 87 million consumers (Japan Bank for International Cooperation, " Vietnam's Investment Climate," 2011). However, while wages in Vietnam are still low compared to their levels in other Asian countries, they have been climbing rapidly in recent years. In fact, a number of issues facing Vietnam have been cited. These include abrupt policy changes and frequent legal revisions, inadequate infrastructure, a lack of business experience and familiarity with international business practices, nontransparent costs and other unfair trading practices, weak supporting industries[4] and local industrial bases, shortages of middle management personnel, engineers, and highly skilled workers, and slow adaptation to trends in international economic integration (Japan Bank for International Cooperation, *Op. cit.*). The weakness of its supporting industries in particular is a matter closely associated with other issues, namely, the shortage of industrial human resources and the pressures from global integration.

2. Deepening international integration: Challenges to Vietnam

Vietnam has endeavored to open up its markets and attract more foreign investment since the second half of the 1980s. Under accelerating globalization, its economy entered a new stage around the year 2000. Efforts to adapt to economic integration within the Asian region included joining ASEAN in 1995 and later participating in the ASEAN Free Trade Area (AFTA) as well as the ASEAN-China Free Trade Agreement (ACFTA). As preparation for full implementation of the AFTA and ACFTA agreements in 2015 (to be delayed for certain sensitive product categories until 2018), Vietnam has been working to expand the reach of its supply chains including those established with other ASEAN economies and China. Under the ACFTA agreement, it is anticipated that Vietnam will strengthen its ties with the Southern Chinese economic zone in particular. It has also been strengthening its position within the context of integration with the world economy, having implemented a trade agreement with the US in 2001 and joining the World Trade Organization (WTO) (as a formal signatory in January 2007). Furthermore, in November 2010 the Vietnamese

[4] "Supporting industries" is a term referring to multi-tiered clusters of domestic companies that supply components to product assembly-oriented manufacturers operating in a given country.

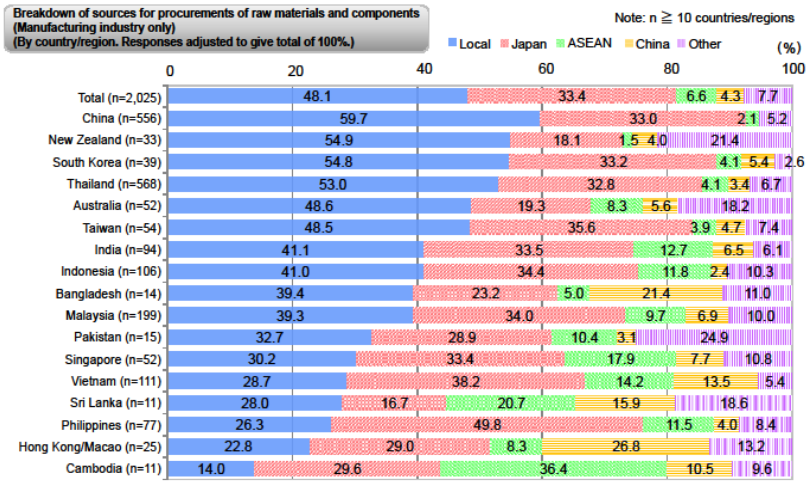
government formally announced plans to participate in negotiations for the Trans-Pacific Partnership (TPP).

With actions including the introduction of a Law on Investment and an Enterprise Law (placed into force July 1, 2006), the Vietnamese government has made headway with the development of domestic legal structures aimed at improving the investment climate. The implementation of these new laws has set the stage for the conduct of business under identical standards by domestic and foreign-capitalized firms that previously had been regulated by separate sets of legislation. From the standpoint of FDI firms, this has improved their level of freedom with investment decisions. In the context of ties with Japan, under the Japan- Vietnam Economic Partnership Agreement (implemented in October 2009), Vietnam has taken steps to liberalize the bilateral trade in commodities and services, facilitate heightened levels of investment, and cooperate more closely in matters involving personnel flows and intellectual property. Under the terms of this EPA, it is expected that Vietnam ultimately will withdraw customs tariffs that is equivalent to 92 percent of the total value of the trade in commodities as of 2006.

However, industrial infrastructure in Vietnam is still marked by weakness. The manufacturing industry, for example, is chiefly focused on labor-intensive, final assembly operations and low value-added products. Local content ratios are low compared to other Asian countries (Figure 2-2), and the country's trade structure is characterized by the exportation mainly of primary industrial goods and light industrial goods are manufactured chiefly for export, and the structure of trade is tilted toward the importation of raw materials and parts. Vietnam has posted economic growth under these conditions with a primarily labor-intensive industrial base. However, the risk of stagnation in the country's industrial development cannot be ruled out should worker wage levels rise, as companies engaged in labor-intensive operations would then be more likely to move their facilities offshore to other countries in search of less-expensive labor. Granted the economic ascension of Myanmar among other countries, Vietnam is likely to face increasingly intense competition with its neighbors. In fact, Vietnam could be at risk of becoming trapped within the ranks of middle-income countries and prove unable to sustain its economic growth. Vietnam has also been confronted by macroeconomic challenges including the task of controlling inflation and eliminating its trade deficits with other countries. However, such pressures are not entirely unrelated to the country's weak industrial base. Japanese manufacturing firms in Vietnam typically assemble and export products by

importing intermediate goods from neighboring countries. This has resulted in a persistent trade deficit in Vietnam because even with a net increase in exports, the level of imports has not declined.

Figure 2-2 Breakdown of sources for procurements of raw materials and components (manufacturing industry)



Source: JETRO. "Survey of Japanese-Affiliated Firms in Asia and Oceania" (FY 2011 Survey)

3. Government initiatives toward industrialization

"Industrialization to the year 2020" has been one of Vietnam's national policies since 1996. Held in January 2011, the 11th National Congress of the Communist Party of Vietnam appointed new members to the party leadership, electing Nguyen Phu Trong to serve as the Party's General Secretary (formerly served as the Chairman of the National Assembly) and Truong Tan Sang to serve as President of Vietnam (formerly a Secretariat executive), and re-electing Nguyen Tan Dung to the position of Prime Minister, and also approved a new 10-year program of economic and social development (2011-2020). It is worth noting that the 11th National Congress, giving due consideration to the changes to the external environment since the 10th National Congress convened in 2006, including accelerated global integration, demonstrated its strong national commitment to develop globally competitive industries. The new party leadership

has placed high priority on institutionalizing policies for developing supporting industries.

Two important developments deserve attention in this context. One was a decision (signed February 24, 2011 and implemented April 15) by the Prime Minister concerning policies to promote the development of supporting industries. The other was the designation by the Vietnamese government of industrial parks for Japanese supporting industry firms.

The Prime Minister's decision on policies for the development of supporting industries took into account the views and recommendations of Japan's government and business sector and signaled a new direction for the future development of supporting industries, based on the "Supporting Industry Development Program" (set to last through 2010) that the Vietnamese government had formulated in 2007. Under the February 2011 decision by the Prime Minister, supporting industries[5] engaged in the domestic manufacture of machinery, electronic goods, or computers, the assembly of automotive parts, the production of textiles, apparel, leather goods, or footwear, and the supply of raw materials, components, or semi-finished goods to industries engaged in high-tech development enterprises would be eligible for promotional measures aimed at aiding their development. The promotional measures range from marketing assistance and the provision of land access and other infrastructure to technology transfers, human resources development, information sharing, fiscal assistance, and preferential tariff rates. Projects for the manufacture of goods supplied by supporting industries will be eligible for preferential allocations of property with the scale, locations, and land-use fees deemed commensurate with project needs. Additionally, they will have preferential access to infrastructure and facilities within industrial parks and industrial zones, public services, and other services and will be eligible for assistance on favorable terms for worker recruitment and training.

The other development, namely, the establishment of industrial parks designated for Japanese supporting industry firms, is an undertaking aimed at the development of supporting industries with incentives that encourage Japanese companies to set up local operations. In June 2011, President Sang unveiled policies that would promote economic development along two growth corridors—Hai Phong City in the north and Ba Ria-Vung Tau Province in the

[5] In Japan, the term "supporting industries" is used chiefly in reference to industries that engage in metal casting and mold operations, forging operations, metal processing, surface processing, and other materials industry operations. The Vietnamese government, however, applies this term more broadly. (Japan International Cooperation Agency, "Study on Feasibility and Funding Scheme for the Utilization of Japanese Private Sector Resources to Achieve Development Objectives in Vietnam," 2011.)

south. This in turn prompted the launch of in-depth studies concerned with the establishment of industrial parks for Japanese firms and the creation of industrial parks for supporting industries in both regions. In late October 2011, Prime Minister Dung visited Japan and met with Prime Minister Yoshihiko Noda for talks that culminated with a joint statement (formally the "Japan-Vietnam Joint Statement on the Actions Taken Under Strategic Partnership for Peace and Prosperity in Asia"). This joint statement also incorporated the expectations of the Vietnamese government that two special-purpose industrial parks -- one in Hai Phong and the other in Ba Ria-Vung Tau -- would be developed with Japanese assistance to promote more Japanese investment and encourage the advancement of supporting industries in Vietnam. Additionally, in early October 2011, Chairman Shigetaka Sato of the Osaka Chamber of Commerce and Industry visited Vietnam to meet with political and financial leaders. On that occasion, President Sang announced his strong commitment to the development of supporting industries and manufacturing craftsmanship (*monozukuri*) over the coming decade and sought Japanese cooperation with efforts to attract companies to the industrial parks designated for Japanese supporting industry firms.

The Vietnamese government has established frameworks for industrial parks, export processing zones, and high-tech parks with the objective of attracting investments from manufacturers engaged in the production of industrial goods, products for export, and high-tech products as well as from investors involved in service trades that cater to those sectors. As of December 2011, Vietnam had a total of 283 industrial parks and export processing zones up and running in 58 provinces and municipalities nationwide. Together, these facilities occupy land area totaling over 70,000 ha. (However, according to Vietnam's Ministry of Planning and Investment, the tenant occupancy rate at all facilities combined was approx. 65 percent.) Industrial parks are priority districts for investment and companies that run manufacturing operations in those parks are eligible for investment incentives. Economic zones receive preferential tax breaks for investments in economically or socially disadvantaged districts. Investment projects for infrastructure development in economic zones are eligible for special investment incentives. As with economic zones, investments in high-tech parks are also eligible for corporation tax-related incentives.

4. Toward a Japan- Vietnam "monozukuri" partnership

There are several strengths and weaknesses in Vietnam, once Japanese manufacturing firms operating on a global scale decide to establish *monozukuri* partnerships with Vietnam. Although Vietnam is already an important target of investments by Japanese manufacturing firms, it cannot be said that simple assembly and processing operations powered by low-wage labor have sufficiently tapped the country's potential. Vietnam will command the capacity for participation in global value chains only after the country has dramatically improved the quality of its human resources, policies, and frameworks. Additionally, Japan will then be better positioned to treat Vietnam as trusted a *monozukuri* partner for Japanese firms that require multi-skilled labor for their manufacturing processes.

Japan- Vietnam *monozukuri* partnerships will be well-matched with the industrial needs of Japan. In Japan, the protracted slowdown in domestic demand, the debut of emerging economies, intensifying levels of price competition, the strong yen, uncertainty over the supply of electric power, and the risk of severed supply chains (e.g., due to earthquakes, flooding in Thailand) have accelerated the trend among large corporations to move their manufacturing bases offshore and adopt global procurement strategies. Furthermore, a growing number of small and medium-scale enterprises have begun to expand their operations offshore targeting the fast-growing, emerging economies of Asia. In the first half of 2011 alone, Japan Finance Corporation financing for overseas projects reached a scale equivalent to the total disbursed over the entirety of the preceding fiscal year.

According to an Osaka Foundation for Trade and Industry-led survey of small and medium-size manufacturers based in the Osaka district (conducted in October 2010; 180 respondents), 40.6 percent of the respondents stated that they were expanding operations in Asian emerging economies (including export and investment operations). Further, 26.2 percent answered that they were interested in or already studying the possibility of expanding their operations to emerging economies in Asia while 33.2 percent either stated that they had no interest or did not respond to the question. In effect, two-thirds of all respondents indicated that they were already engaged in business operations in Asian emerging economies or interested in pursuing such business in the future. Those respondents indicated that their target clientele would be local Japanese affiliates (53.0 percent), locally based companies (46.6 percent) or affluent Vietnamese consumers (21.7 percent). In particular, of the countries where they had no presence, it was Vietnam in

which Osaka-based manufacturers demonstrated the strongest interest. Another survey performed nationwide by the Organization for Small and Medium Enterprises and Regional Innovation, Japan (the FY 2008 Survey of Overseas Activity by Small and Medium Enterprises) obtained similar findings, showing that Vietnam is the second-most popular candidate for investments by small and medium-scale companies after China.

Stemming from concerns over the hollowing of Japan's industrial base, in the past the Japanese government and relevant organizations were wary about the prospect of Japanese small and medium enterprises (SMEs) carrying their operations offshore. However, in light of the current situation as highlighted above, in recent years they have begun shifting their policy stance in favor of supporting such purposes (Small and Medium Enterprise Agency, "2010 White Paper on Small and Medium Enterprises in Japan"). In October 2010, the Conference on Supporting Small and Medium Enterprises in Overseas Business was established, chaired by the Minister of Economy, Trade and Industry, thus laying the foundations for information-sharing among the relevant institutions and agencies twice a year. In June 2011, a Framework for Supporting SMEs in Overseas Business was formulated and implementation plans were drawn up by regional organizations and relevant institutions and agencies. Then, at the 4th Conference on Supporting SME in Overseas Business convened in March 2012, the membership was broadened to include the participation of organizations charged with economic cooperation, such as the Japan International Cooperation Agency (JICA) and the Overseas Human Resources and Industry Development Association (HIDA), as well as the Japan Federation of Bar Associations, to enhance the efforts that had already been initiated. Further, in view of the strong interest of Kansai firms in Vietnam, the Conference on Kansai- Vietnam Economic Exchange (provisional name) was created in April 2012 as a special subcommittee of the Kansai Conference on Supporting SMEs in Overseas Business.

Participation by the organizations charged with economic cooperation is crucial to building an All-Japan framework that incorporates field-based experiences deriving from aid projects in developing countries and as such, it can contribute to concretizing Japan- Vietnam *monozukuri* partnerships. Japan resumed its provision of ODA to Vietnam in November 1992 and today ranks as the largest donor of aid to Vietnam. Vietnam itself is the second-largest recipient of Japanese ODA after India. Japan has been involved for many years with projects in infrastructure development, human resources development,

institution-building, and policy support. There is also a framework for public-private partnership between the two countries to improve the investment climate and formulate industrialization strategy in Vietnam. The government of Vietnam, the Japan Business Association in Vietnam, the Embassy of Japan in Vietnam, the Japan External Trade Organization (JETRO), JICA, and other relevant institutions and agencies have been closely collaborating under "the Japan-Vietnam Joint Initiative" and provide support to "the Industrialization Strategy," giving attention to the needs of Japanese and Vietnamese companies. Furthermore, diverse forms of assistance have been extended for the development of Vietnam's supporting industries and small and medium-scale enterprises.

As these developments illustrate, both Japan and Vietnam have shown a strong political commitment to the vision of a *monozukuri* partnership. Now that the Japanese government and related institutions have taken the initiative in facilitating the offshore operations of small and medium-scale firms, it is vitally important to establish networks among the agencies charged with economic cooperation and other, related organizations at the local level and to strengthen information-sharing and business-matching. In the years ahead, enhanced interaction and deeper levels of mutual learning by municipal governments, economic organizations, and companies in Japan and Vietnam will be of critical importance to the task of transforming strong political commitments into tangible undertakings at the practical level.

Chapter 3 Economic Growth and Energy Infrastructure in Asia

Led by China and India, the emerging economies of Asia have continued to demonstrate powerful growth. Although signs of a slowing trend are evident in some areas, it is anticipated that the economic expansion of Asia as a whole will be sustained for years to come. Access to an abundant supply of energy resources and electric power will be essential to the task of supporting this economic expansion and the improved living standards that accompany it.

However, it also is projected that the heightened consumption of petroleum, coal, natural gas, and other fossil fuels particularly by the power sector will lead to a sharp increase in emissions of carbon dioxide, a greenhouse gas. From the standpoint of halting the trend toward global warming -- the most pressing environmental problem of our time -- curbing emissions of greenhouse gases by the emerging economies will be an urgent challenge. This will demand the utilization of energy alternatives to fossil fuels as well as new initiatives aimed at boosting the energy efficiency of power facilities that rely on fossil fuels.

Companies in the Kansai district of Japan command an array of advanced technologies for the utilization of energy and are in a position to transfer those technologies primarily to the power sectors in emerging economies. Contributing to the search for solutions to global warming through the use of technology counts as an extremely important challenge.

1. Energy supply in Asian countries

Asia's emerging economies are in a sustained expansion. Gross domestic product (GDP) in China, India, Indonesia, and the five Mekong Basin countries (Vietnam, Cambodia, Thailand, Myanmar, and Laos) has ballooned anywhere from threefold to sevenfold in the past decade.

To support these levels of economic growth, supplies of primary energy and electric power have also expanded sharply. China has already displaced the US as the world's largest producer of electric power. Nonetheless, demand for electric power in India, Thailand, Indonesia, and other Asian economies has widened from 30 to 40 percent in the past five years alone.

The following section will examine the scale of the eight emerging Asian economies mentioned above as well as their economic ties with Japan and current conditions highlighting their respective supplies of energy and electric power.

1.1. The expansion of emerging Asian economies

In sheer scale, Asia's emerging economies have been on an uninterrupted growth track ever since the conclusion of the region's currency crisis in 1997. China surpassed Japan in GDP scale some two years ago but in terms of purchasing power parity, even India with its current GDP in excess of US$4 trillion is closing in on Japan.

Trade with Japan has also climbed in tandem with this growth in economic scale. Japan currently accounts for 11.2 percent of China's imports and 18.5 percent of imports by Thailand -- both top shares; 10.4 percent of imports by Vietnam, for the third-largest share following China and South Korea; and 12.5 percent of imports by Indonesia, also the third-largest share. That said, Japanese products still account for only a small share of imports into other Asian economies. Japanese firms face the urgent task of setting up manufacturing bases and tapping into local markets in, for example, India and Myanmar -- two countries expected to see further economic development.

1.2. Energy supplies for sustained growth

As a reflection of economic growth and climbing per-capita GDP, improved standards of living have driven up the consumption of energy and electric power in the emerging economies. Rates of growth in the volume of primary energy resources consumed tend to correlate well with rates of growth in GDP. This correlation is especially strong during the early stages of economic development due to the increased levels of output by industries in steel, cement, and other energy-intensive sectors. Electric power consumption displays much the same pattern.

China's GDP has multiplied about five-fold in the past decade; over the same period, corresponding power consumption multiplied almost four-fold. On a quantitative basis, China has already surpassed the US to become the world's top consumer of electric power; Chinese power consumption per-capita is currently around 40 percent of the corresponding level in Japan and destined to sustain its uptrend for years to come.

Although power consumption is also climbing in the other emerging economies, in per-capita terms it is still relatively low, as Table 3-1 shows. It is projected that levels of power consumption will rise further in the years ahead as industrial infrastructure development and improving standards of living foster the increasingly widespread penetration of appliances and consumer electronics.

Table 3-1 Annual power consumption per capita [Unit: kWh]

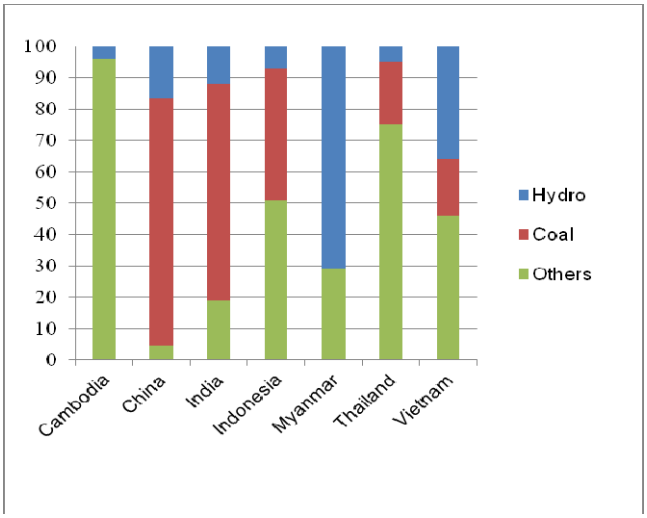
Country	Cambodia	China	India	Indonesia	Laos	Myanmar	Thailand	Vietnam
Power consumed	118	3,494	583	542	339	85	2,015	840

Note: Table compiled on basis of data from the International Energy Agency and the CIA.

1.3. Power infrastructure in emerging economies

Up until around 1960, Japan's power generating infrastructure was heavily weighted in hydro power, with thermal power playing a secondary role. Because Japan had an abundance of water resources, in the early postwar years infrastructure projects financed by the World Bank and other aid donors were focused on the construction of hydroelectric power facilities that did not require any fuel resources. As demand for electric power continued to grow, infrastructure projects shifted to thermal-powered generating facilities. Today, hydro power generation accounts for less than 10 percent of the nation's total power supply. It is assumed that power generating infrastructure in Asia's emerging economies will undergo a similar pattern of development. That is, in countries with an abundance of water resources, hydro power facilities will probably be the initial focus of development, followed by projects for the construction of thermal generating plants as power demand continues to expand.

Figure 3-1 Sources of power production in emerging Asian economies



Note: Small-scale oil-fired generators and natural gas-fired thermal plants account for most of the large "Others" component in the bars representing Cambodia and Thailand.
Source: International Energy Agency.

Figure 3-1 displays the sources of power production in emerging economies. Hydroelectric generation is more developed in Myanmar and Vietnam, two countries that are endowed with an abundance of water resources. By contrast, coal-fired generation supported by rich domestic coal reserves accounts for a larger share of total power production in China, India, and Indonesia, all of which are experiencing sharp growth in demand for electricity.

2. Prospects for power markets

It is projected that Asia's emerging economies will continue to post steep growth in the years ahead. Particularly strong hopes have been pinned on the development of massive consumer markets in Vietnam with its population in excess of 90 million as well as Myanmar, a country of 60 million people that is moving forward with steps to open up its economy.

Although it is of course envisioned that economic development will also spur huge growth in demand for electric power, it is highly likely that these economies will sustain their heavy reliance on coal due to factors of cost as well as quantity. Among fossil fuels, coal emits the largest volumes of CO2 when burned and for that reason -- in the context of global warming -- it is not a desirable choice for

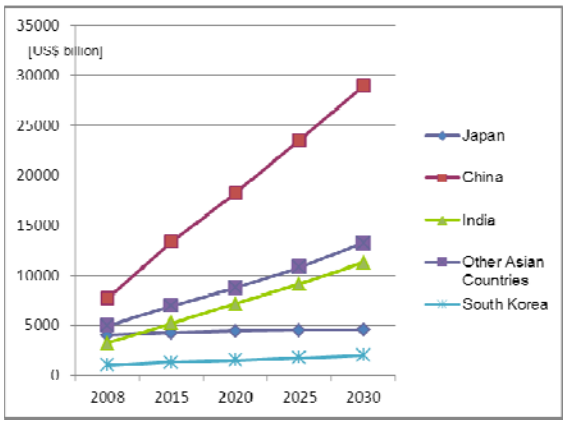
thermal power generation and will demand that additional measures against global warming be pursued.

2.1. Future power demand in Asia

US Department of Energy projections for GDP growth in Asia up to the year 2030 are shown in Figure 3-2.

Future power demand in Asia is expected to expand strongly in tandem with GDP growth. Annual power demand in China totaled 4.2 trillion kWh in 2010 and is forecast to surpass 6 trillion kWh in 2020 and reach 8.56 trillion kWh by 2030. Annual power demand in India and other Asian emerging economies is expected to transition from its level around 2 trillion kWh in 2010 to 2.95 trillion kWh in 2020 and reach 4.08 trillion kWh by 2030. In effect, many areas of Asia will expand their levels of electric power consumption by two-fold or more.

Figure3-2 GDP growth projections for Asian countries



Note: Data are recorded results for 2008, projections for later years. Source: US Department of Energy.

2.2. Future power sources

Many new power plants will be built to help satiate this burgeoning appetite for power within the emerging economies of Asia. Given its ready availability and its comparative price advantage, coal presumably will remain a key fuel for power generation particularly in China and India. Table 3-2 lists projections for future generating capacity by type of power source.

The infrastructure for generation with hydro power, wind power, and solar power is not always operational. For that reason, actual generated output will be lower than designed generating capacity. Although it is expected that more infrastructure will be developed to utilize geothermal power, solar power, and other renewal energy resources, adoption is likely to be limited due to cost considerations and the relative scarcity of suitable locations for implementation. A large proportion of new generating capacity will likely come from cost-competitive coal-fired generation among fossil fuels. This, however, poses a problem in the form of greenhouse gas emissions.

Table 3-2 Projected generating capacity in 2030, by type of power source

[Unit: Million kW]

		Coal-fired	Gas-fired	Hydro power	Nuclear Power	Wind Power	Other
China	2011	667	36	214	14	32	22
	2030	962	67	335	95	139	68
India	2011	108	29	47	6	12	6
	2030	149	65	96	25	22	14
Other Asian Emerging Economies	2011	50	105	54	6	1	35
	2030	75	180	98	17	4	34
Total Increase, 2011 to 2030		361	142	214	111	120	53

Source: US Department of Energy

2.3. Power supplies and global warming

Supplying power with cost-competitive coal-fired generation is attractive from the standpoints of ensuring a stable supply of energy and holding electric utility rates down. However, it presents an enormous problem from the perspective of stemming the trend toward global warming. When burned, coal releases 1.8 times more CO2 into the atmosphere than natural gas and 1.2 times more than petroleum and can be expected to become an even larger contributor to global warming.

Mainly as a consequence of the expanded utilization of coal, it is predicted that CO2 emissions in Asia will climb significantly in the years ahead (Table 3-3). China has already displaced the US as the world's largest source of CO2 emissions and is seen accounting for as much as one-third of total CO2 emissions worldwide by the year 2030. Given the outlook for an uptrend in CO2 emissions in India and other Asian emerging economies as well, it is projected that the emerging economies of Asia will account for 45 percent of total global emissions by 2030.

Table 3-3 Annual CO2 emissions

[Unit: Million metric tons]

	2011 Emissions	2030 Emissions (Projected)
China	8,381	12,626
India	1,633	2,728
Other emerging Asian economies	1,901	2,884
US	5,601	6,108
World	31,640	40,640

Source: US Department of Energy.

3. Collaboration by Japan and Asia's emerging economies: Japan's possible contributions and the benefits for emerging economies

From the perspective of halting global warming, it is imperative that the power sectors in Asia's emerging economies take action to curb emissions of CO2. Significantly reducing the strong electric power demand that come with economic development arguably will not be a viable option. It will be necessary, however, to explore power conservation measures on the demand side together with supply-side initiatives for the introduction of power-generating facilities that combine improved energy efficiency with zero emissions of CO2.

To be sure, the advanced industrial nations also need to implement bold initiatives of their own to curb emissions of CO2. However, cost-effective options for that purpose are limited in those advanced nations that have already achieved high levels of energy efficiency. In this context, it will be of vital importance to have the emerging economies reduce their greenhouse gas emissions through the

utilization of superior technologies and facilities that the advanced industrial nations have at their command.

3.1. The Clean Development Mechanism

Approved in Kyoto by the third session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP3) in 1997, the Kyoto Protocol defined an effective greenhouse gas reduction mechanism whereby advanced countries would be able to utilize, for their own purposes, greenhouse gas credits offset by reductions achieved in developing countries through greenhouse-gas reduction projects that the advanced industrial countries support with funding and technology transfers. This was the Clean Development Mechanism (CDM).

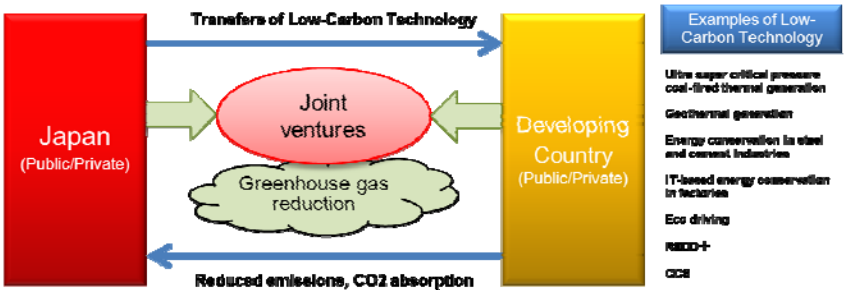
Under the CDM, Japanese companies earned emission credits through reduction projects in China, India, and other countries. However, no Japanese corporate facilities were utilized by these projects. The reason was that the mechanism did not explicitly specify the systems or equipment required for project formation and as a consequence, project contractors in the emerging economies elected to utilize cost-competitive facilities and equipment manufactured domestically or by European companies. Although the Japanese government and private firms together invested close to 1 trillion yen for this purpose and purchased emission credits worth approx. 400 million metric tons of CO2 equivalents through the CDM, Japanese firms did not win any contracts for purchases of related systems or equipment.

Partly in reflection of that outcome, the Japanese government now recommends utilization of a bilateral offset credit mechanism as illustrated in Figure 3-3. Under this mechanism, Japan and emerging economies enter into bilateral agreements concerning the prevention of global warming. If an emerging economy implements greenhouse gas reduction projects through utilization of technologies and facilities, Japan utilizes the emission credits so generated by those projects for the achievement of its own targets in compliance with the bilateral agreement.

As one initiative under its Vision and Actions toward Low Carbon Growth and Climate Resilient World, in April 2012 the Japanese government hosted the first meeting of an East Asia Low-Carbon Growth Partnership Dialogue in Tokyo. Attended by 18 nations including the US, Russia, and China as well as several international institutions, the gathering heard a Japanese government presentation of the bilateral offset credit mechanism and several participating nations

announced their support. Future work will involve the promotion of project implementation programs under this framework mainly between Japan and emerging Asian economies.

Figure 3-3 The Bilateral Offset Credit Mechanism (BOCM): An Overview



Source: METI

3.2. Bilateral Offset Credits

The Japanese government has already entered into discussions with counterparts in several emerging economies regarding the bilateral offset credit mechanism. Those countries include Indonesia, Thailand, and India but this is a mechanism that should attract the interest of other developing countries as well. Japan's Ministry of Economy, Trade and Industry and other sources have already begun providing measures in assistance for the discovery and implementation of projects that will utilize the bilateral offset credit mechanism. Additionally, related project feasibility studies are also now under way abroad.

Japanese companies possess a diverse array of technologies and equipment that can be provided to aid greenhouse gas reduction projects in emerging economies but efforts to boost energy efficiency in the power sector deserve attention first and foremost. One technology in which Japanese firms excel is "ultra super critical" (USC) pressure coal-fired thermal generation, which achieves efficiency gains by increasing the temperature and pressure of turbine steam. If the USC technology were adopted by emerging Asian economies for new coal-fired power plant construction as well as the replacement of existing plant facilities in the future, the benefits would accrue with the reduction of CO2 emissions by several hundred million tons compared to conventional coal-fired power plants.

Additionally, it would be possible to install power generating facilities that harness waste energy from the steel-making processes at steel mills -- a classic

example of an energy-intensive industry. Cement factories and other facilities, moreover, would be capable of generating electricity with the waste heat from their operations. In Indonesia, biomass waste is a by-product of the palm-oil manufacturing process. Generating power with biomass boilers or with engines that burn methane gas derived from the processing of biomass by-products would be promising energy options for the emerging economies of Southeast Asia.

Japanese companies are also well-positioned to share the technologies they have developed for small-scale hydroelectric plants, solar power plants, geothermal facilities, and other technologies for generating facilities that can be set up in remote, un-electrified areas and powered not by fossil fuels but by renewable energies. However, some of these technologies involve facilities that presumably would be drawn into price competition with companies that are based in the emerging economies themselves. In addition to reaping the benefits afforded by offset credits, Japanese firms would be able to participate in power plant construction projects and in some cases presumably would face the necessity of providing their technologies in packages that bundle the provision of power systems or equipment.

Although reductions outside the power industry would be relatively small, implementing certain modifications to factory processing methods and facilities would ensure additional energy savings. For energy conservation purposes, Japan has already developed a diverse range of technologies and systems, many of which developing countries should be able to utilize.

On another front, it is anticipated that Asia's emerging economies will experience an increase in projects for the construction of large-scale commercial facilities and residential housing complexes in the years ahead. This prospect will present opportunities for participation in urban development projects that strive to curb electric power demand by bundling the construction of energy-conserving buildings and homes that incorporate high-efficiency air-conditioning and lighting systems and transit systems.

3.3. Key green technologies in the hands of Kansai corporations

Kansai companies possess many technologies and systems that can contribute to the fight against global warming. For example, Kawasaki Heavy Industries, Ltd. achieved a world first with its development of a gas-turbine power generating system that achieves catalytic combustion with extremely dilute concentrations of methane gas that are emitted from coal mine ventilation shafts.

Coal strata normally contain methane gas, the chief ingredient in the gas blend known as "city gas." Hence, although methane gas obviously is combustible, it becomes explosive at certain concentrations. It is for this reason that coal mining ventures drill relief vents to drain off high concentrations of methane gas prior to the start of coal extraction operations. Highly concentrated methane gas is used as a fuel in gas engines and other equipment to generate electricity.

By contrast, few technologies have been developed to effectively utilize the low concentrations of methane gas that are emitted in large volumes by air ventilation shafts during coal extraction operations. However, if power generating facilities were set up adjacent to coal mines, it would be possible to conserve fuel to some extent by feeding their boilers with this diluted source of methane gas instead of air. Yet far more important than the savings in fuel, this approach also would aid in the processing and large-scale reduction of methane gas, a greenhouse gas known for greenhouse effects that are 21 times more potent than the threat from CO2. Currently, though, only an extremely small number of power generating facilities are located next to coal mines and almost all low-concentration methane from these mining operations is still released into the atmosphere.

China and India are two of the world's largest producers of coal and currently have an enormous number of coal mines in operation. Given plans to expand their coal-fired thermal power infrastructure, it is anticipated that they also will likely increase their coal output. Indonesia and Vietnam are also engaged in coal mining operations. Hence, if low-concentration methane-burning power facilities designed by Kawasaki Heavy Industries were located adjacent to these coal-mining operations, their effectiveness in greenhouse-gas reduction through the elimination of methane gas would be immense. Although the issue of cost is still a factor for consideration, hopes are that Asia's emerging economies will adopt this approach and build such facilities.

Although direct competition with companies based in the emerging economies is common, the emerging economies still have plenty of room to harness the superior technologies and systems that Japanese firms now have at their command. Depending on the application, collaboration with locally-based firms would also warrant study.

The Japanese government has prepared an array of initiatives aimed at persuading the emerging economies of Asia to adopt the bilateral offset credit mechanism, encouraging private Japanese firms to become involved, and putting tangible projects into motion. Kansai-based companies will find it extremely

important to have their technologies put to use and accordingly contribute to the prevention of global warming and economic progress in the emerging economies of Asia.

Chapter 4 Supply Chains in Asia and the Impact of the 2011 Thailand Floods

1. Japanese manufacturers' location in Asia and their supply chains

1.1. Asian location of Japanese manufacturers

As the yen continues to appreciate and the domestic market becomes increasingly matured, Japanese corporations are accelerating their shift overseas, with Asian locations such as China and Southeast Asian countries often being chosen for their bases of operations outside of Japan.

According to a data book on the number of overseas subsidiaries of Japanese corporations (*Directory of Japanese Companies Abroad 2012*, *Toyo Keizai Inc.*), there are 27,828 Japanese subsidiaries throughout the world. Among those Japanese subsidiaries operating outside of Japan, 17,590 (63.2%) are located in Asia, followed by 3,961 (14.2%) in North America, and 4,042 (14.5%) in Europe (See Table 4-1).

In Asia, China hosts the greatest number of such subsidiaries (6,844), while Thailand, which recently suffered from severe flooding, comes in second (2,630). These two countries are then followed by Hong Kong (1,290), Singapore (over 1,000), Taiwan (over 1,000), Indonesia, Malaysia, and South Korea.

Looking at Kansai-based corporations, a total of 5,557 subsidiaries are located outside of Japan, 3,709 (66.7%) of which are based in Asia, followed by 766 (13.8%) in North America and 757 (13.6%) in Europe, showing that their number of Asian locations is large compared to the national average (63.2%) mentioned above. Also, many of them are located in China.

Table 4-1 Overseas subsidiaries of Japanese corporations

(a) By region

	Total	Kansai-based
Asia	17,590 (63.2%)	3,709 (66.7%)
North America	3,961 (14.2%)	766 (13.8%)
Europe	4,042 (14.5%)	757 (13.6%)
Latin America	1,202 (4.3%)	152 (2.7%)
Oceania	686 (2.5%)	111 (2.0%)
Middle East	200 (0.7%)	41 (0.7%)
Africa	147 (0.5%)	21 (0.4%)
Total	27,828 (100.0%)	5,557 (100.0%)

(b) By country (in Asia)

	Total	Kansai-based
China	6,844 (38.9%)	1,645 (44.4%)
Thailand	2,630 (15.0%)	460 (12.4%)
Hong Kong	1,290 (7.3%)	247 (6.7%)
Singapore	1,169 (6.6%)	230 (6.2%)
Taiwan	1,050 (6.0%)	210 (5.7%)
Indonesia	993 (5.6%)	205 (5.5%)
Malaysia	925 (5.3%)	212 (5.7%)
South Korea	813 (4.6%)	169 (4.6%)
Vietnam	644 (3.7%)	117 (3.2%)
India	558 (3.2%)	109 (2.9%)
Philippines	514 (2.9%)	86 (2.3%)
Others	160 (0.9%)	19 (0.5%)
Asia total	17,590 (100.0%)	3,709 (100.0%)

Note: As the above data is compiled from questionnaire responses, not all Japanese subsidiaries are covered. "Kansai" includes the 6 prefectures of Osaka, Kyoto, Hyogo, Shiga, Nara, and Wakayama.
Source: *Directory of Japanese Companies Abroad 2012, Toyo Keizai Inc.*

1.2. Supply Chains by Japanese Manufacturers in Asia

Next, let us look at data on sales and purchases of Japanese subsidiaries in Asia (manufacturing sector) (*Survey of Overseas Business Activities*, Ministry of Economy, Trade and Industry of Japan <METI>) to analyze the characteristics of Japanese corporations' supply chains in Asia.

As shown in Figure 4-1, Japanese corporations' supply chains in Asia may be viewed from two different perspectives: one is the procurement pattern of Japanese subsidiaries in Asia as seen from a breakdown of their purchases (Figure 4-1 (a)), and the other is their shipment pattern as seen from a breakdown of their sales (Figure 4-1 (b)).

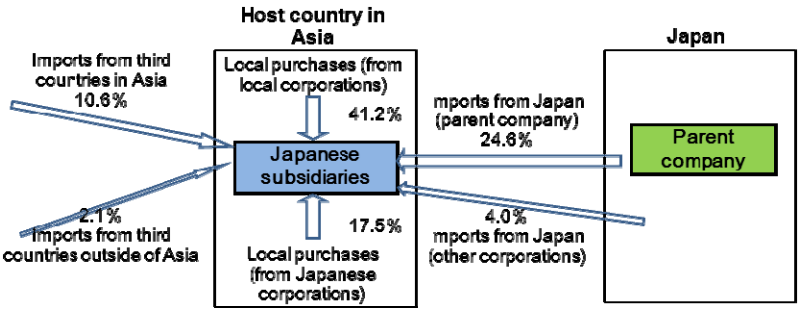
In fiscal 2010, Japanese subsidiaries in Asia imported 24.6% of their purchases from their parent companies in Japan, and sourced 17.5% of their purchases from Japanese corporations operating in the same host country and 41.2% from local corporations and others. They also imported 10.6% of purchases from third countries in Asia.

Likewise, Japanese subsidiaries in Asia generated 16.8% of their sales through exports to their parent companies in Japan, 24.8% through sales to Japanese corporations operating in the same host country, and 34.8% through sales to local corporations and others. They also generated another 15.8% of their sales through exports to third countries in Asia.

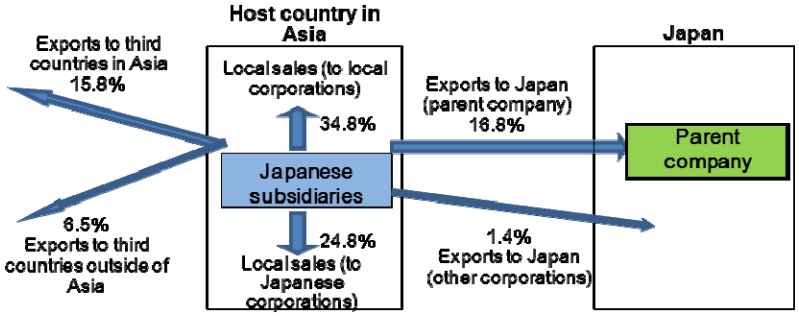
The above data confirms that Japanese subsidiaries in Asia have built up supply chains not only with entities in Japan, in particular their parent companies, but also with locally operating Japanese corporations, local corporations, etc.

Figure 4-1 Japanese corporations' supply chains in Asia

(a) Breakdown of purchases by Japanese subsidiaries in Asia



b) Breakdown of sales by Japanese subsidiaries in Asia



Source: *Basic Survey of Overseas Business Activities*, METI

2. Deepening division of work between Asia and Kansai

2.1. Rising Share of Trade with Asia

Kansai maintains strong economic relations with other Asian countries, a fact evidenced by various trade data (Osaka Customs, "Trade Statistics of Japan," Ministry of Finance).

In 2011, Japan's exports to other Asian countries amounted to ¥36,685.9 billion, which accounted for 56.0% of its total exports (¥65,546.5 billion). Exports through the Kansai customs to other Asian countries totaled ¥9,813.0 billion, or as much as 67.4% of their total exports (¥14,564.9 billion). In the same year, Japan's imports from other Asian countries were ¥30,391.3 billion, or 44.6% of its total imports (¥68,111.2 billion). Imports cleared by the Kansai customs from other Asian countries were ¥7,532.4 billion, representing as much as 56.9% of their total imports (¥13,239.2 billion).

The above statistics illustrate that the exposure of Kansai-based corporations to other Asian countries is high in terms of both exports and imports. Given the fact that such corporations' exports and imports with other Asian countries in 2001 accounted for 51.5% and 54.4% of their totals, respectively, it can be safely said that the Asian market has come to represent an increasingly large proportion of both exports and imports by Kansai-based corporations over the past decade.

2.2. Changes in Main Items in Asian Trades

As Table 4-2 clearly shows, the principal commodities that Kansai-based corporations export to and import from other Asian countries are changing. In 2001, 20.6% of imports from other Asian countries were clothing and accessories. Along with industrial goods such as office equipment, audio and visual apparatus, semiconductors and other electronic components, and textile yarn and fabrics, imports of primary commodities also stood out, such as fish and fish preparations, fruits, and vegetables.

By 2011, however, the weight of clothing and accessories dropped to 13.0%, and principal commodities imported from other Asian countries were all industrial goods, with the exception of natural gas and manufactured gas, and some materials such as steel.

In 2001, textile yarn and fabrics accounted for 8.3% of total exports to other parts of Asia, coming in second after semiconductors and other electronic components; however, their percentage dropped to 3.2% by 2011. During the same period, semiconductors and other electronic components assumed a greater proportion, while exports of a broad variety of industrial goods (components and

materials, in particular) have also become notable, such as steel, plastics, scientific and optical instruments, electric circuits and other instruments, production equipment for semiconductors, etc., motors, nonferrous metals, and organic compounds.

Table 4-2 Principal Commodities of Asian Exports/Imports through the Kansai customs

(a) 2001

Exports to other Asian countries		Imports from other Asian countries	
Semiconductors and other electronic components	12.7%	Clothing and accessories	20.6%
Textile yarn and fabrics	8.3%	Office equipment	6.1%
Steel	5.2%	Audio and visual apparatus	5.7%
Office equipment	4.7%	Natural gas and manufactured gas	5.4%
Electric circuits and other instruments	4.1%	Semiconductors and other electronic components	5.0%
Plastics	3.3%	Fish and fish preparations	4.6%
Scientific and optical instruments	3.2%	Textile yarn and fabrics	4.4%
Batteries	2.3%	Fruits and vegetables	2.4%
AV equipment components	2.1%	Footwear	2.2%
Capacitors	2.1%	Metal products	1.8%

Note: Percentages of exports/imports of top 10 commodities to totals. “Kansai” includes the 6 prefectures of Osaka, Kyoto, Hyogo, Shiga, Nara, and Wakayama. Source: Osaka Customs data.

(b) 2011

Exports to other Asian countries		Imports from other Asian countries	
Semiconductors and other electronic components	14.5%	Clothing and accessories	13.0%
Steel	6.3%	Audio and visual apparatus (including components)	5.6%
Plastics	5.8%	Natural gas and manufactured gas	5.6%
Scientific and optical instruments	4.9%	Communications equipment	5.3%
Electric circuits and other instruments	3.8%	Office equipment	4.1%
Textile yarn and fabrics	3.2%	Semiconductors and other electronic components	3.4%
Production equipment for semiconductors, etc.	2.6%	Textile yarn and fabrics	3.3%
Motors	2.5%	Steel	3.2%
Nonferrous metals	2.1%	Home electronics	2.3%
Organic compounds	2.0%	Metal products	2.1%

This change in principal imported/exported commodities may be attributable to advancement of the framework for division of work between Kansai and Asia as an increasing number of Kansai-based corporations have established a presence in Asian countries. This advancement of the framework for division of work is fundamentally desirable, as it creates a ripple effect of Asian economic growth for the Kansai economy. As the division of work between Kansai and Asia deepens, however, the risk also increases that the Kansai economy will be

affected by suspended production in Asian locations. In the wake of the 2011 Thailand floods, for example, Japanese plants were forced to reduce output as delivery of components from that country was delayed.

3. Impact of the 2011 Thailand flood

3.1. Damage caused by the 2011 floods

Triggered by Tropical Storm Nock-ten in July 2011, severe floods inundated the northern, northeastern, and central regions of Thailand along the Mekong and Chao Phaya Rivers, claiming 815 lives and leaving behind 13.6 million victims, also damaging over 20,000 km2 of farmland. Some regions continued to suffer damage up until mid-January 2012. The World Bank has estimated that 1,425 billion baht (US$45.7 billion) in economic damages and losses resulted from the flooding[6].

The floodwaters washed over seven industrial estates in suburban Bangkok, where many Japanese corporations were located: 35 in the Saha Rattana Nakorn Industrial Estate, 147 in the Rojana Industrial Park, 100 in the High-Tech Industrial Estate, 30 in the Bangpa-in Industrial Estate, 7 in the Factory Land Industrial Zone, 104 in the Nava Nakorn Industrial Zone, and 28 in the Bangkadi Industrial Park[7] (Japan External Trade Organization http://www.jetro.go.jp/world/asia/th/flood/complex.html).

Japanese corporations lost some sales as their local plants were forced to shut down due to the floods, and their margin was squeezed as the disruption in supply chains pushed up procurement costs. For the year ended March 31, 2012, the negative impact of the Thai floods on consolidated operating income was approximately ¥120 billion for Toyota Motor, ¥110 billion for Honda Motor, ¥70 billion for Sony, ¥60 billion for Panasonic, ¥40 billion for Toshiba, ¥30 billion for Hitachi, ¥30 billion for Nidec, ¥25 billion for Nikon, ¥19 billion for Rohm, and ¥17 billion for Fujitsu. The total combined operating income lost due to the disaster for key listed companies was nearly ¥700 billion (*The Nikkei* February 7, 2012 edition).

3.2. The case of Honda

Honda Motor's plant in the Rojana Industrial Park was inundated in early October 2011 and was subsequently forced to shut down. The plant resumed

[6] http://www.worldbank.org/en/news/2011/12/13/world-bank-supports-thailands-post-floods-recovery-effort
[7] Japan External Trade Organization http://www.jetro.go.jp/world/asia/th/flood/complex.html

operations on March 26, 2012, but as a result of the disruption they were unable to produce 260,000 cars – a little less than 10% of their production plan for fiscal 2012. The damage was increased when, in addition to the suspended production in Thailand, they were unable to procure components from other suppliers that were also affected, and were thus forced to reduce output at their plants in North America and Japan. In response, Honda decided to construct a new plant in suburban Jakarta, Indonesia (to begin operations in 2014) and another in southeastern Thailand, where the possibility of flooding is low. Obviously, the rationale for this decision is to mitigate any disaster risks by dispersing production, thereby establishing more solid supply chains (*The Nikkei* March 14 and 27, 2012 editions).

3.3. Did supply chains increase the damage?

As mentioned earlier, Japanese subsidiaries in Asia have formed supply chains not only with entities in Japan, but also with other locally operating Japanese subsidiaries, local corporations, etc., which is one of the reasons why the disruption of supply chains due to flooding resulted in extensive damage. However, the fact that supply chains have been established there means that related industries and supporting industries, including small- and medium-sized component suppliers, have formed a cluster in Thailand, which gives the country a competitive edge as a location for manufacturing plants. Such being the case, it is unlikely that Thailand will lose much of its significance as a location for Japanese corporations, despite the risk of flooding.

4. Effects on Kansai companies

4.1. Summary of statistical analyses

The Thailand flooding that became increasingly exacerbated from October 2011 shed light on the business activity risk of the formation of a supply chain (SC) as a result of international division of work. In order to confirm the formation of SCs as a result of the international division of work, an analytical example using a vector autoregression (VAR) statistical model is shown below. VAR models have been used extensively because they are able to achieve quantitative analysis of relationships among many variables, which in this case are production in Thailand and exports/production for Thailand in Kansai in each industrial sector. First, VAR models were applied to analysis of the three industries (electric appliances, general machinery, and transportation equipment)

narrowed down through correlation analysis. Below are the results of the test based on impulse responses to the shock of suspended production in Thailand.

4.2. Formation of SC confirmed in the electric appliances industry

For the “electric appliances industry,” the impulse response to the shock of suspended production in Thailand of “exports from Kansai to Thailand” is significantly positive, i.e., “exports from Kansai to Thailand” increase as production in Thailand increases. It is also estimated that the impulse responses of Kansai’s exports to Thailand would peak three terms later, after which they would begin to decrease. The impulse response of “production in Kansai” is significantly positive, meaning that “production in Kansai” increases as production in Thailand increases. In summary, as production in Thailand increases, exports from Kansai to Thailand also increase, which in turn increases production in Kansai. The reverse is also true.

4.3. SC not confirmed in the general machinery industry

For the “general machinery industry,” the impulse response to the shock of suspended production in Thailand of “exports from Kansai to Thailand” is significantly positive, but that of “production in Kansai” is not. In other words, for this industry increased production in Thailand does not have any impact on production in Kansai.

4.4. SC not confirmed in the vehicles industry

For the "transportation equipment industry," impulse responses to the shock of suspended production in Thailand are significant for neither "exports from Kansai to Thailand" nor "production in Kansai." That is to say, increased transportation equipment production in Thailand does not increase Kansai’s exports to Thailand or production in Kansai.

The use of VAR models made it possible to assess any impact in each industrial sector and to make quantitative judgments as to how the impact spread, which cannot be revealed through analysis of their correlations alone. The analysis successfully provided evidence of the formation of SC between Thailand and Kansai in the “electric appliances industry,” i.e., any stagnation in production in Thailand due to flooding can lead to reduced production of electric appliances in Kansai.

4.5. Production in and exports to Thailand: Industry-side analysis

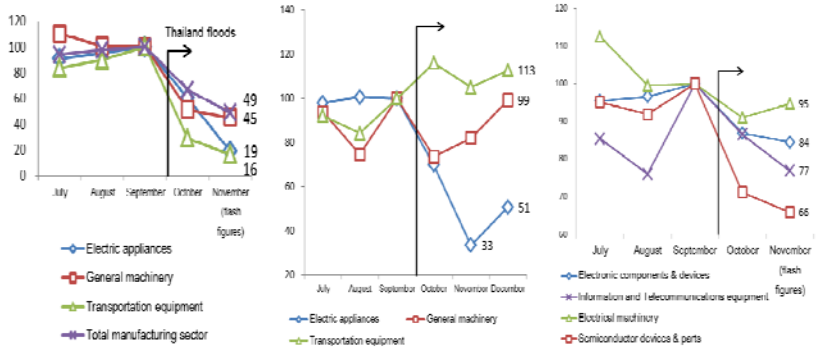
Figure 4-2 (By-sector Production in Thailand) shows that production in the manufacturing sector dropped sharply after September 2011. In particular, electric appliances suffered a huge reduction in November, indicating that the damage to this particular industrial sector where an SC has been formed was more serious than in other sectors.

Figure 4-3 (By-sector Exports from Kansai to Thailand) shows that exports of electric appliances dropped in November to one third of the level in September, but then picked up again in December. Exports of general machinery also recovered in December to pre-flooding levels. This testifies to the fact that exports in the electric appliances industry, which has formed an SC between Kansai and Thailand, made a sharp plunge and hit bottom in November.

Figure 4-4 provides in more detail the trends in the electric appliances industry by breaking it into four segments, i.e., electrical machinery, electronic components & devices, information and telecommunications equipment, and semiconductor devices & parts. From this figure, one can see that the production of electronic components and related commodities dropped significantly.

Both in actual production/export data and VAR model analysis results, it becomes evident that there was a tendency for electric appliances, particularly their components, to be most vulnerable to SC disruption in the wake of the Thailand floods among all Kansai industrial sectors.

Figure 4-2 Production in Thailand (by sector, September = 100)
Figure 4-3 Exports from Kansai to Thailand (by sector, September = 100)
Figure 4-4 Electric Appliances Production in Kansai (by product category, September = 100)



Source: Bank of Thailand, Osaka Customs "Trade Statistics," and METI Kansai's Industrial Production Trends

5. Reconstruction of the Asian strategy by Japanese manufacturers

5.1. Globalization index of Japanese companies

One of the indicators showing the extent to which Japanese corporations have been globalized is the overseas production ratio. The method of calculating the overseas production ratio of all the corporations in Japan is: “Sales of overseas subsidiaries (manufacturers)/(Sales of overseas subsidiaries (manufacturers) + Sales of the parent company in Japan (manufacturers)) x 100.” In fiscal 2010, this ratio was 18.1% (*Survey of Overseas Business Activities*, METI), showing an upward trend from 14.3% in fiscal 2001.

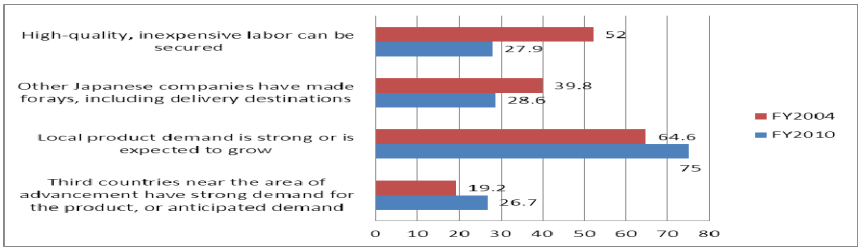
Other indicators by which to assess the globalization of Japanese corporations include the local procurement ratio and local sales ratio of Japanese manufacturers’ subsidiaries. In fiscal 2001, the local procurement ratio and local sales ratio by Japanese subsidiaries in Asia were 43.9% and 47.9%, respectively, but these ratios had increased to 58.8% and 59.5% by fiscal 2010. As Japanese manufacturers expanded production in Asian locations, these ratios rose significantly, and thus it is safe to say that the globalization of Japanese corporations is also a process of “localization” in their respective host countries. This also merits attention with regard to the confusion in their supply chains in the wake of the Thailand floods.

5.2. Changes in the main factors for overseas investment

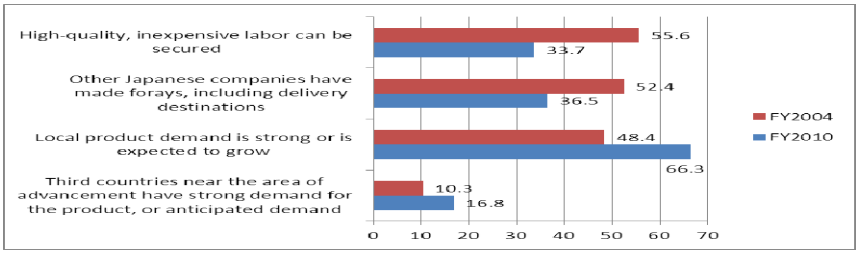
While local procurement and sales by Japanese corporations continue to expand, factors affecting Japanese corporations’ decisions to make overseas investments have changed. As shown in Figure 4-5 (a), 52.0% of Japanese manufacturers of all sized said that in fiscal 2004 they made such decisions because “High-quality, inexpensive labor can be secured,” whereas only 28.3% cited that reason in fiscal 2010. On the other hand, the percentage of Japanese corporations that made such a decision because “Local product demand is strong or is expected to grow” increased from 64.6% in fiscal 2004 to 75.0% in fiscal 2010.

Figure 4-5 Japanese corporations' deciding factors for overseas investments

(a) Manufacturing sector (all sizes)



(b) Manufacturing sector (small- and medium-sized enterprises)



Note: Multiple answers. % to valid responses. Source: *Survey of Overseas Business Activities*, METI

Looking at small- and medium-sized enterprises (SMEs) only, the largest factor (55.6%) in fiscal 2004 was that "High-quality, inexpensive labor can be secured," followed by "Other Japanese companies have made forays, including delivery destinations" (52.4%). In fiscal 2010, however, both of these factors showed a decline and "Local product demand is strong or is expected to grow" took precedence as the greatest deciding factor for overseas investments at 66.3% (See Figure 4-5 (b)).

5.3. New direction for the Asian strategy

From the above reasoning, it may be assumed that Japanese corporations, particularly SMEs, are viewing Asia not only as a location where they can lower costs, but as a location where they can achieve expansion of demands (markets). As such, it will become increasingly important to understand operating environments in terms of marketing, i.e., distribution systems and consumer behaviors, in addition to the cost advantages offered by those locations.

In cases where Asian locations were chosen for their lower costs, it would not be much trouble for Japanese corporations to simply transfer their Japanese

business activities in their existing form. If they wish to establish a presence there in order to tap into local demands (markets), however, they may need to alter their business activities according to local operating environments (adapting to local environments).

Accordingly, Japanese corporations, including those based in Kansai, may be required to reexamine their Asian strategies if they are to capture local demands (markets).

Following the 2011 Thailand floods, some Japanese corporations began establishing their plants in Indonesia and other Southeast Asian countries in order to disperse risks. When reexamining Asian strategies, how much they want to disperse risks when deciding on locations must be considered as well.

Honda decided to construct a new plant in Indonesia in anticipation of growing demands (markets) in Southeast Asian countries, while at the same time making additional investments in Thailand. Due to limitations of funding and human resources, however, it is no easy matter for SMEs to disperse their production. At any rate, it will become increasingly important to select optimal locations by taking into account location environments, i.e., it will be necessary to manage the risks of natural disasters and political instability.

It is desired that Japanese corporations, whether based in Kansai or elsewhere, will achieve successful operations in other parts of Asia and enhance the international competitiveness of their business activities in Japan, thus further promoting the international division of work between Japan and other countries in Asia. For this to happen, it would be necessary for Japanese corporations to gain a full understanding of the characteristics and developments of their potential locations in Asia, so that they can better redesign their Asian strategies.

Part II

Prospects and Challenges for the Kansai Economy

Chapter 5 Prospects for the Kansai Economy

❑Section 1 Recent Developments and Outlook for the Kansai Economy

In Part II (Chapters 5 and 6), we will report on recent developments and the short-term (FY 2012-2014) outlook for the Kansai economy and discuss challenges affecting the region's growth strategy. First, in Chapter 5, we will describe recent developments and the short-term outlook for the Kansai economy, along with a number of events that occurred in Kansai in FY 2011 and the challenges these produced. We will also refer to the international strategic special economic zone that is promoting industrial clusters in Kansai. In Chapter 6, we will discuss changes in the business environment and investment strategies directed towards overcoming the economic crisis.

1. Recent Developments in the Kansai Economy: a slight weakening

Recently, the Kansai economy has been weakening slightly compared to the overall national economy. While signs of decline can be seen in household consumption, residential investment is picking up. The worst seems to be over in terms of industrial production, as the downward production trend affecting the general machinery and electronic parts and devices sector bottoms out. This is now leading to a gradual increase in plant and equipment investment as demand for energy conservation and postponed replacement investment start to emerge. In the future, a recovery in overseas conditions and a pickup in the Kansai economy are, therefore, expected. However, the level of uncertainty remains high and there are still a number of different routes this recovery might take.

A Bank of Japan tankan survey of business sentiment shows that, in September, the business conditions diffusion index for Kansai (on an all-size and all-industry basis) posted a rating of -9 and remained flat for the fourth quarter in a row. On the other hand, the nationwide diffusion index (on an all-size and all-industry basis) fell 2 points from the previous poll result to -6. The December 2012 outlook for the Kansai economy is expected to show the diffusion index falling 3

points from the previous survey result to -12. For Japan, overall, this rating is expected to fall by 4 points to -10. A major change is the growing risk of deterioration in the relationship between Japan and China after the release of the September tankan results. The December survey results, once the China risk element is factored in, will be very interesting.

The “Trend survey of business and economy for September 2012”, jointly implemented by the Kansai Economic Federation and the Osaka Chamber of Commerce, produced the same result as the tankan survey. The business sentiment index (BSI) for the domestic economy over the July-September period was -9.9, showing a further decline from the previous survey result (-4.9 in April-June). On the other hand, the BSI for Kansai business over the July-September period was -5.5, showing an improvement of 2.6 points from the previous survey result (-8.1). Companies in the Kansai district are, therefore, more optimistic regarding their own business conditions. This means that worsening economic conditions, centering on home appliance manufacturers, may have bottomed out and that the worst is now over.

1.1. Household Sector: a modest recovery in consumer sentiment

Consumer sentiment, reflecting the motivation to spend in Kansai, has been gradually recovering from an earlier standstill. The consumer sentiment index in October inched up by 0.3 points from the previous month’s result to 39.5. Three of the four indices involved (overall livelihood, income growth, and willingness to buy consumer durables) showed an improvement but the employment condition index deteriorated for the second month in a row. In the future, with poor winter bonuses likely for FY 2012, worsening income conditions are a concern.

An examination of consumer durables (in terms of major commodities) shows that new car sales in September fell 4.8% from a year earlier, down for the first time in twelve months. Termination of the “cash for clunkers” scheme and worsening income conditions had an adverse impact on sales. On the other hand, while sales of home appliances in September fell by 5.5% from the previous year, down fifteen months in a row, the rate of decline has been gradually decreasing.

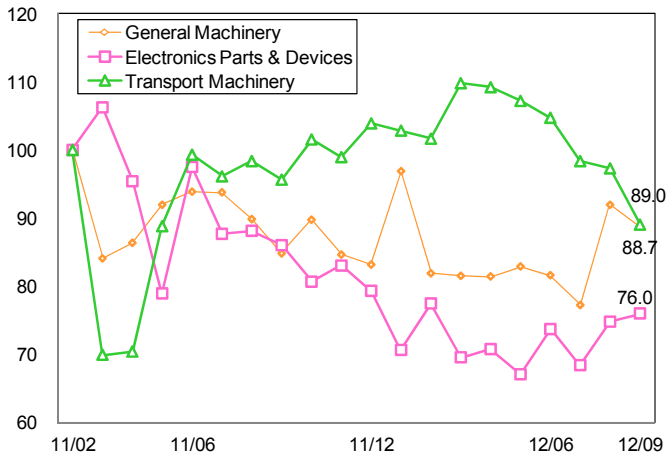
1.2. Corporate Sector: a continuing production adjustment

Industrial production in Kansai has been weakening due to a decrease in exports. Looking at the quarterly development of industrial production, it can be

seen that July-September industrial production in Kansai fell by 2.7% from the previous quarter, while nationwide industrial production, nationwide, fell by 4.1%, nationwide. Although industrial production was down for two quarters in a row, the rate of decline in nationwide production was larger than that for Kansai because the burden imposed by the ailing transport equipment production sector in Japan is larger than that in Kansai.

Figure 5-1 shows the development of industrial production, by sector. Production of transport equipment (excluding steel ships and rail vehicles) has fallen for six months in a row, since April 2012. It fell by 8.3 points in September, down from the previous month's figure to 89.0 (compared to the pre-earthquake level = 100). This corresponds to an intensification of production cuts (prior to the termination of the "cash for clunkers" scheme) and a decline in exports to China. Although the production levels for electronic parts and devices and general machinery are also still lower than pre-earthquake levels, it is likely that the worst is now over. Thanks to increasing global demand, a production pickup for tablet terminals and smart phones is now leading to a production increase for electronic parts and devices, overall.

Figure 5-1 Contrasting recovery patterns



The contrasting recovery patterns for production between Kansai and the nationwide average reflect the differences in industrial structure. That is to say, electrical machinery production (with a high share in Kansai) was sluggish during

the reporting period while auto production (with a low share in Kansai) was recovering.

The capital expenditure program shows signs of recovery. The September tankan survey shows that Kansai companies expect their capital investment in FY 2012 to increase by 8.8% from the previous year (with manufacturers increasing capital investment by 9.1% and non-manufacturers increasing by 8.5%). However, since private core machinery orders are still weak and capacity utilization is low, investment will only increase at a gradual pace.

1.3. External Sector: exports down for 14 months in a row

According to the summary of external trade in the Kinki area (compiled by Osaka Customs), the trade balance in October 2012 was -¥ 15.4 billion, the first deficit in two months.

Exports in October fell 4.8% from a year earlier, down for the fourteenth straight month. Thanks to a downturn in the global economy, exports have been slow to recover. On the other hand, imports increased by 0.1% from last year, up for twenty-eight months in a row.

While exports to Asia fell by 1.8%, down thirteen months in a row, those to China slipped by 4.1%, down for the eleventh straight month. However, the rate of decline has been decreasing. While exports to the U.S. rose (+4.4%) for the third consecutive month, those to the EU plunged by 21.2%, down for the fifteenth straight month.

Exports of semiconductor parts and devices increased by 16.1% from the previous year. On the other hand, exports of steel products and construction machinery fell by 18.6% and 63.2%, respectively, due to a slowdown in Asian economies. Imports of communication equipment jumped by 38.0%, while those of apparel and accessories rose by 6.8%. Imports of liquefied natural gas and manufactured gas (previously showing an upwards trend) fell sharply by 26.9%.

2. Outlook for the Kansai Economy: FY 2012 through FY 2014

2.1. Forecast Summary: FY 2012 through FY 2014

Based on the same assumptions for both the external economy and fiscal and monetary policy, we conducted a short-term forecast for the Kansai economy. In real terms, the gross regional product for Kansai is expected to fall by 0.2% in FY 2012, grow by 1.3% in FY 2013, and stay relatively neutral in FY 2014 (Table 5-1).

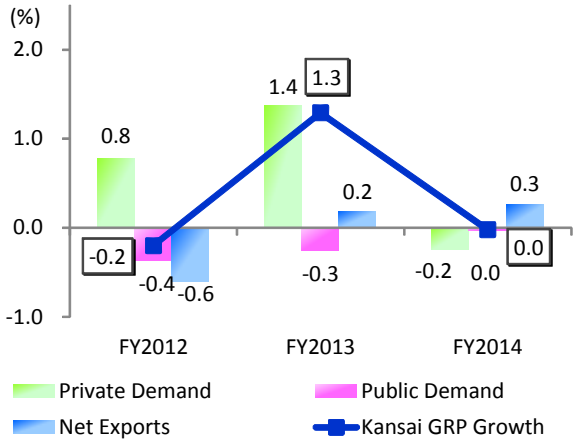
The Kansai economy in FY 2012 is expected to be relatively weak in comparison with Japan's economy overall (+0.7%). In Kansai, no reconstruction demand is expected as a result of the Great East Japan Earthquake and policy effects, including the "cash for clunkers" scheme, are likely to fade away in the second half of the year. In FY 2013 and FY 2014, the growth differential between Japan and Kansai is expected to narrow.

Table 5-1 Outlook for the Kansai economy

	FY2012	FY2013	FY2014
Real Gross Regional Products	-0.2	1.3	0.0
Private Consumption	0.8	1.1	-0.7
Residential Investment	0.4	7.3	-12.2
Nonresidential Investment	3.4	3.7	3.9
Government Consumption	-0.5	-0.7	0.0
Public Investment	-8.3	-4.0	-0.8
Exports	0.0	0.0	0.0
Foreign Exports	-0.6	2.5	4.3
Domestic Exports	1.2	2.7	-1.4
Imports	1.7	2.1	0.7
Foreign Imports	3.3	3.5	3.0
Domestic Imports	1.1	1.5	-0.2
Nominal GRP	-0.9	0.5	1.7
GRP Deflator	-0.7	-0.8	1.7
Industrial Production Index	-2.7	2.9	1.5
Unemployment Rate	4.7	4.9	4.7

In terms of contributions to real GRP growth, real private demand will contribute +0.8% in FY 2012 and +1.4% in FY 2013, respectively. However, in FY 2014, due to a recoil reduction from last-minute demand prior to the consumption tax hike, private demand will dampen growth and its contribution will be -0.2% point. The contribution of real public demand will be -0.4% point in FY 2012, -0.3% point in FY 2013, and -0.0% point in FY 2014. Unlike the forecast for the Japanese economy, overall, no reconstruction demand is expected in Kansai and local government will cut budgets, pushing down economic growth even further. The contribution of net exports will be -0.6% point in FY 2012, +0.2% point in FY 2013, and +0.3% point in 2014. With a stagnant global economy and an increasing China risk factor, net exports in FY 2012 will trim economic growth but then gradually help boost it from FY 2013 onwards (Figure 5-2).

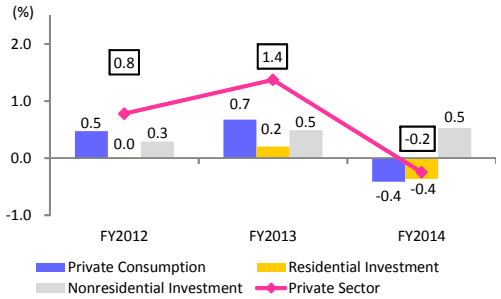
Figure 5-2 GRP growth rate forecast and relative contributions



2.2. Private Sector

If we examine the contributions from GRP components in the household sector (private consumption plus residential investment), real private consumption will grow by 0.8% in FY 2012 and 1.1% in FY 2013, but fall by 0.7% in FY 2014. Weakening income conditions in FY 2012, the impact of a consumption tax hike in FY 2013, and a recoil reduction in FY 2014 should also be taken into account. Real residential investment will be profoundly affected by the consumption tax hike. It will grow by 0.4% in FY 2012, jump by 7.3% in FY 2013, and plunge by 12.2% in FY 2014. As a result, the household sector will contribute to overall growth by +0.5% in both FY 2012 and FY 2013, but reduce GRP growth by -0.8%.

Figure 5-3 Contribution of private demand



In the corporate sector, real nonresidential investment will grow by +3.4% in FY 2012, +3.7% in FY 2013 and +3.9% in FY 2014. While information from the survey conducted by the Development Bank of Japan, indicating that large-scale companies plan to increase capital investment, should be taken into account, the effects of postponing the investment program should also be considered. Its contribution to real GRP growth will be +0.3% in FY 2012, +0.5% in FY 2013 and +0.5% in FY 2014.

As a result, the private sector contribution to real GRP growth (including the household and corporate sector) will be +0.8% point in FY 2012, +1.4% point in FY 2013 and -0.2% point in FY 2014.

2.3. Public Sector

All assumptions regarding the public sector are based on the FY 2012 budget and the long-term fiscal outlook for the major local governments in Kansai. Real government consumption will fall -0.5% in FY 2012, -0.7% in FY 2013 and -0.0% in FY 2014. Real public investment growth will be -8.3% in FY 2012, -4.0% in FY 2013 and -0.8% in FY 2014. The overall contribution by the public sector will be -0.4% point in FY 2012, -0.3% point in FY 2013, and neutral (+0.0% point) in FY 2014.

2.4. External Sector: a limited increase in growth

The external sector includes net foreign exports (foreign exports minus foreign imports) and net domestic exports (domestic exports minus domestic imports). Real exports will decline by 0.6% in FY 2012, grow +2.5% in FY 2013 and +4.3% in FY 2014. China risk factors are considered in FY 2012 estimates. However, these are limited to auto exports and Kansai's export share in this area is relatively small. Following a gradual recovery in the world export market, exports for FY 2013 and 2014 are expected to expand. Real imports, on the other hand, will grow +3.3% in FY 2012, +3.5% in FY 2013 and +3.0% in FY 2014. Fuel imports, including LNG, continue to be high due to the intensive use of thermal power plants. In terms of domestic trade, growth in real domestic exports will be +1.2% in FY 2012, +2.7% in FY 2013 and -1.4% in FY 2014. Growth in real domestic imports will be +1.1% in FY 2012, +1.5% in FY 2013 and -0.2% in FY 2014.

As a result, the contribution of real net exports to real GRP growth is expected to be -0.6% point in FY 2012, +0.2% point in FY 2013 and +0.3% point in FY 2014.

3. Topic: Impact of the China risk on the Kansai economy

Possible downside foreign risk factors that could affect the baseline forecast include (1) escalation of the euro area crisis, (2) the fiscal cliff in the United States, and (3) a hard landing in China and other emerging economies. Other potential risk factors are (4) the China risk, and (5) a prolonged economic slowdown resulting from the downward spiral of wages and employment (a domestic risk factor).

Due to worsening ties with China (including anti-Japan demonstrations and boycotts of Japanese goods resulting from the Senkaku Islands dispute), some

economic indicators such as production and trade may be affected. However, it is difficult to make any accurate assessment of the likely extent and duration of these effects. How much impact could the China risk factor have on the Japanese economy and the Kansai economy? In order to answer this question, we must examine primary impacts using trade data.

We can characterize of Kansai's exports to China as follows:

1. Kansai's export share to China is higher than that of Japan, overall
2. Kansai's auto export share to China is relatively small
3. Kansai's electrical machinery export share to China is relatively large

Taking the different export structures for Japan, as a whole, and Kansai into consideration, we can compare October exports to China. Japan's exports to China fell by 11.6% from the previous year – with transport equipment contributing the most (-6.1% point) because transport equipment exports were down 54.1% from the previous year. On the other hand, Kansai's exports to China only fell by 4.1% and the transport equipment contribution was only 0.7% point. Kansai's transport equipment exports to China were down by 51.2%, but the export share was very small. This resulted in a small negative contribution to Kansai's overall export growth. Thus, the impact of any China risk is limited in the Kansai region. It should be noted that exports of electrical machinery to China in October rose by 9.3%. Electrical machinery (an area where Kansai has a comparative advantage) contributed to this growth in exports and is one of the strengths of Kansai. Semiconductor parts and devices, and ICs, constitute a large proportion of this electrical machinery. Exports in October rose by 30.4% and 33.7%, respectively, contributing to an increase in exports to China. These components are essential for the manufacture of tablet terminals and smart phones (a growing area in the global market) and are, therefore, expected to have potential for further growth. They are also "intermediate goods" which are less vulnerable to trade boycotts etc.

❑Section 2 Challenges for Kansai - Viewed in the Light of Events that Occurred in 2011

1. Restrictions on power supply and development in Kansai

Of all the regional electric power companies in Japan, Kansai Electric Power Co., Inc. (KEPCO) is the most dependent on nuclear power generation. As a result, KEPCO asked the public to cooperate in conserving electricity during the summer of 2012, reducing consumption by 15% or more compared to 2010 levels (which were the highest of any region in the country). As it addresses this challenge, the underlying strength of Kansai is being put to the test.

In the short term, greater efforts will be necessary in order to conserve electricity. In the long term, there are two other issues that will also need to be addressed.

The first concerns the development of technology and products that will help conserve electricity and promote the use of renewable energy. Playing host to a large concentration of electronics manufacturers, Kansai has long taken the lead in the development of the electronics industry. If power storage systems, LEDs and other state-of-the-art technologies become available at low cost, campaigns to conserve electricity and use renewable energy will gain added momentum. The second issue involves the question of how best to address people's ongoing concerns over the safety of nuclear power. This will require all-out efforts at the national level, not to mention the improvement of safety from both scientific and technological perspectives. An additional point that needs to be tackled at the same time is "how to ensure the safety of nuclear power as a social infrastructure". To ensure traffic safety, for example, Japan maintains a high level of security by implementing a comprehensive set of measures, including road administration and encouraging students to travel to school in groups, as well as focusing on the design of safe automobiles. In a similar vein, it will be necessary to undertake equally comprehensive measures to ensure the safety of nuclear power - going well beyond the regulations established by competent authorities.

Photo 5-1 The Sakai Mega Solar Power Plant

Much is expected from the Sakai Mega Solar Power Plant. (Photo courtesy of KEPCO)

2. Restructuring and globalization of consumer appliance manufacturers

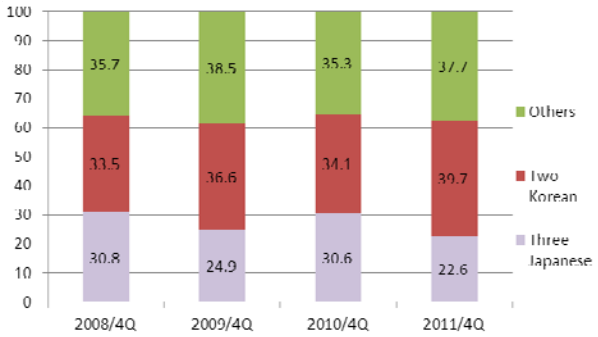
The FY2011 financial results for the eight leading electrical companies, including the Kansai-based consumer appliance manufacturers Panasonic and Sharp, showed that their electronics businesses were still largely sluggish, in sharp contrast to the brisk performance of non-electronics businesses such as those in the heavy electric and industrial equipment sectors. In fact, there have been a series of recent events that have come to symbolize this slowdown: business restructuring by the Renesas Electronics Corporation and an application filed under the Corporate Rehabilitation Law by Elpida Memory, Inc. (both Kanto-based electronic components manufacturers), as well as sensational reports of critical situations at various Kansai-based consumer appliance manufacturers. In October 2011, Panasonic Corporation announced that it would suspend operations at its Amagasaki No. 3 Plant only a few years after it was opened, whereas the Sharp Corporation was forced to report a record-high net loss of 376.0 billion yen in its consolidated financial results for the year ended March 2012.

2.1. Why has international competitiveness been eroded?

The television business, which has long been considered one of the fetters holding back consumer appliance manufacturers as they seek to boost their earnings, has finally reached a turning point. From around 2010 to 2011, all of the television manufacturers in Japan increased their production as demand associated with the switchover from terrestrial broadcasting to digital broadcasting reached its peak. However, once this demand had run its course (by

mid-2011) the domestic market began to spiral downwards. With the emergence of tougher competition vis-à-vis Korean, Taiwanese and other foreign players, and the adverse economic conditions brought about by the sharp appreciation of the yen, Japanese manufacturers suffered a reduction of market share, globally, leading some to believe that they have now lost some of their competitive edge. As shown in Figure 5-4, penetration of the three leading Japanese television manufacturers in the global television market dropped from 30.8% in the fourth quarter of 2008 to 22.6% in the fourth quarter of 2011.

Figure 5-4 FPD global market share (%)



(Source: DisplaySearch)

This data leads one to wonder if, as the market became increasingly global, Japanese manufacturers were opting for business strategies that were significantly different from those of the world's leading players or Korean manufacturers. It is true that Japanese consumer appliance manufacturers have consistently focused on enhancing product quality and brand power in their primary battlefield, the large Japanese market, by aiming to satisfy Japanese consumers who are reputed to be among the most discerning in the world. Nevertheless, when times changed and it suddenly became necessary for them to pour much of their management resources into overseas markets instead, did they fail to consider the wisdom of continuing to pursue higher quality for each product in a strategic and non-biased manner? This failure may have prevented them from effectively narrowing down their business portfolios.

2.2. Globalization: Three key points and the establishment of frameworks

Each of the consumer appliance manufacturers has drawn up a drastic reform plan and begun putting it into practice. Some of the measures are new to them, e.g., sharing manufacturing plants with international partners. Bearing in mind the topics discussed in the preceding paragraph, the following key points have been selected for further examination as they are considered vital if such manufacturers wish to globalize their businesses effectively.

The first thing that manufacturers need to do is to rapidly further their "selection and concentration" strategy, just as many of the leading global players have already done. Those leading global players have also initiated industrial reorganization and made intensive investments in selected product categories and, as it turns out, they have managed to avoid excessive competition in their respective product areas. The second thing that manufacturers need to do is capture the demand for follow-up purchases in emerging countries and elsewhere. For this to happen, market segmentation can be expected to assume greater importance than ever before. Specifically, manufacturers will be required to keep abreast of market trends while also taking cultural and other characteristics of different markets into consideration, and develop products accordingly. The third and last key point is that manufacturers must continue adding higher value by tapping into their sophisticated technological capabilities with products such as 3D TVs and TVs using energy-conserving LED panels - products which are considered to have high potential in developed countries. Such products are expected to limit price erosion through the "commoditization of products."

In addition to these three key points, the author wishes to add some further items for consideration concerning frameworks. First of all, it will be necessary to have a long-term product development system which is completely different from the conventional approach of customer-demand-oriented development. Here, one may refer to the development concept adopted by the Toyota Motor Corporation, which ranks among the top global consumer businesses in terms of profitability and other such parameters. While responding to customer requests that are received on a daily basis by bringing out new models or lines, they also work on, for example, the development of basic technologies and vehicles based on new concepts that they hope will be appreciated in ten years' time. Toyota foresaw a new paradigm of growing environmental consciousness among consumers and, backed by management decisions, began long-term strategic development efforts culminating in the eventual release of hybrid cars requiring little in the way of customer persuasion in their marketing.

Furthermore, manufacturers cannot be too careful about their management of intellectual property rights, including international technological patents, and the potential risks arising from differences in cultures and business practices among various countries, such as risks concerning the forms of contracts. In addition, greater efforts are essential if manufacturers are to build a more comprehensive framework for globalization, which will include the use of internationally oriented human resources.

2.3. Pros and cons of industry hollowing out, and issues to avoid

Trying to increase the overseas production ratio as manufacturers globalize their operations is one rational solution to stimulate performance. Expansion into overseas territories is often regarded as the flipside of the hollowing out of industry, but survey results show that it can be both harmful (fewer jobs, etc.) and beneficial (higher productivity)[8].

For Kansai-based manufacturers, the process of moving overseas has reached the stage where they are now beginning to build a global supply chain in a bid to capture demand from emerging countries and elsewhere. The pros and cons of this approach are itemized below, in terms of the current economy, and possible issues to avoid are also discussed.

When manufacturers accelerate the shift of production offshore, the resultant expansion of their overseas production (which substitutes for domestic production) will primarily serve to push down domestic production. However, if production factors in Japan are to be redistributed smoothly by the addition of greater value to the remaining production bases in Japan, or by stimulation of the export of intermediate goods by capturing overseas demand, it can be expected that this trend will not necessarily be detrimental to the Japanese or Kansai economies on a net basis. It should be noted that, since Kansai has enjoyed a close relationship with Asia and is advantageously located in terms of any inroads into Asia, the redistribution of production factors as a result of offshore production transfer is expected to proceed more smoothly than in other regions. (In addition, returns from direct foreign investments should benefit businesses' non-operating revenues and the country's income balance, which should in turn expand the potential for reinvestment either in or outside Japan.)

Nonetheless, as the results of the "Questionnaire on Changes in Business Confidence after the Great East Japan Earthquake and Super-strong Yen"

[8] Conducted among manufacturers based in the Kinki region (Kansai Bureau of Economy, Trade and Industry)

(Chapter 6, Section 2) show, Kansai-based businesses are feeling seriously threatened by the risk of major natural disasters in Japan, in addition to the "six woes." If Kansai-based businesses that have sufficient international competitiveness or are playing high-value-added roles in global supply chains decide to relocate themselves offshore, Kansai's export competitiveness will suffer major losses, resulting in a serious shrinkage of the labor market and a drain on technology. The national and local governments are, therefore, expected to implement measures to ease the "six woes" and other difficulties within their operating environment and to improve the country's investment climate.

3. Residents' expectations for administrative reforms - viewed in the light of the growing popularity of local political party and economic realities

In the elections held since the spring of 2011 to decide the local government heads in Osaka Prefecture, candidates from the local political party, Osaka Ishin no Kai (the Osaka Restoration Association), have consistently won the support of residents. Following their dual victories in the Osaka gubernatorial election and the mayoral election in November 2011, in particular, expectations for realization of the "Osaka Metropolis Plan" grew among local residents and that plan and administrative reforms in Kansai began to draw nationwide attention.

In order to investigate the direction taken by the Osaka Restoration Association's policies, a comparison was made between Osaka Prefecture's budgets for fiscal 2008 and those for fiscal 2009 onwards, which reflect the policy line of Governor Hashimoto (also President of the Osaka Restoration Association) (Figure 5-2). It can be seen that, on the expenditure side, labor costs and construction project expenses have been reduced but general policy expenses remain rather high, due partly to the implementation of new policies. On the revenue side, on the other hand, Osaka Prefecture's tax revenues have decreased as income from corporate residents' tax and local corporate tax have dropped sharply. It can be seen that the amount of prefectural bonds issued and the balance of prefectural bonds remains high. Over recent years, the economic slump has caused a deterioration in the financial situation of local governments across the country, and Osaka Prefecture has not been immune to this trend.

Table 5-2 Osaka Prefecture's budget (100 million yen)

		FY08	FY09	FY10	FY11	FY12
Total expenditure		29,247	30,397	32,555	30,771	30,192
	General expenditure	21,681	22,925	25,064	23,157	23,051
	Labor costs	8,669	8,286	8,210	8,356	8,345
	Construction project expenses	2,082	2,303	2,064	1,840	1,763
	General policy expenses	10,915	10,962	14,485	13,174	12,753
Tax revenues		13,567	10,946	10,657	10,363	10,209
	Revenues from two corporate taxes	5,235	3,409	3,655	3,768	3,487
Prefectural bonds issued		2,737	3,619	4,046	3,948	4,475
Balance of prefectural bonds		48,735	49,923	51,802	53,869	53,117

Note: Numbers up to FY2010 are book-closing figures. Numbers for FY2011 are post-budget revision. The two corporate taxes include local transfer tax.

It turns out that none of these reform programs seems to have helped to drastically improve the fiscal balance, leading us to believe that the idea may be spreading among heads of local governments and local legislators that increases in tax revenues, i.e., growth strategies for regional economies, are extremely important. The question of whether or not such a course of action will continue is a very important one for predicting the future of Kansai, and thus demands close scrutiny.

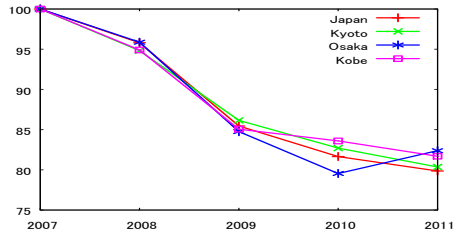
4. Shrinking domestic market and endeavors undertaken by department stores

The year 2011 saw a series of new department store openings and expansions in Kansai. As a result, the total revenues generated by Osaka department stores in 2011 amounted to 801.3 billion yen, making Osaka the only one of Japan's ten major cities to record positive year-on-year growth (0.6%)[9]. The total sales floor area in Osaka is also expected to expand further. Looking at national trends, however, we can see that the market size for department stores has been shrinking in recent years. As Figure 5-5 shows, 2011 sales at department stores across the country were only about 79% of those in 2007, in keeping with this downwards trend. Even in Osaka, which achieved positive growth in 2011, annual sales were only about 82% of those in 2007. Meanwhile, the adjacent cities of Kyoto and Kobe, where there is concern that they are losing their customers to Osaka, have also shown a downward trend. They are still performing relatively well, however,

[9] Department store sales, Japan Department Stores Association (after adjustment of the number of stores)

considering the magnitude of the decline experienced in other parts of the country.

Figure 5-5 Department store sales (2007 = 100)



Data courtesy of the Japan Department Stores Association

Contributing to this shrinkage of market size are Japan's declining and aging population, combined with a falling birthrate. As the domestic consumption pie becomes smaller, customer needs are also changing. The populations of all the prefectures in Kansai, except for Shiga Prefecture, began declining in the previous fiscal year. After hitting a peak sometime between 2005 and 2010, the population in Kansai is expected to continue to decline (Figure 5-6). Meanwhile, the percentage of elderly people in the population is increasing every year – raising their profile as consumers (Figure 5-7).

Figure 5-6 Population estimates

(1,000 people)

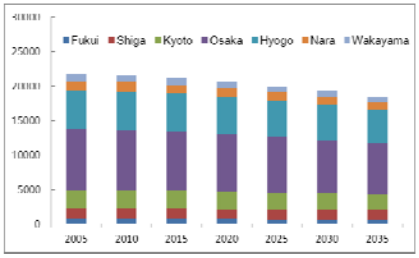
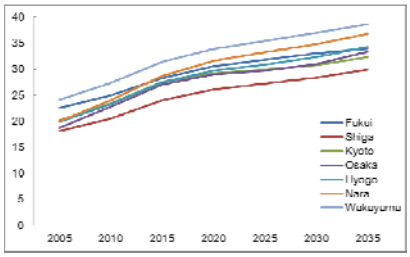


Figure 5-7 Elderly population (%) estimates



(Data courtesy of the National Institute of Population and Social Security Research)

In response to the rapidly graying population and changes in lifestyles, department stores are now having to enhance their unique appeal by tapping into their collective strength and proposal capabilities regarding the selection of goods

and the design of sales floors. In fact, department stores in Kansai are trying hard to attract customers by introducing a diverse array of initiatives, one example being the adoption of unconventional floor planning. The Daimaru Umeda Store, for example, has invited in the family-oriented Pokémon Center, as well as Tokyu Hands and Uniqlo, in order to attract customers from a wider range of age groups. JR Osaka Mitsukoshi Isetan, on the other hand, has arranged its sales floors so that products are gathered together from many different brands in order to match a chosen theme or concept. Another trend that is expected to spread is enhancing the visibility of goods by, for example, using larger fonts on displays especially designed for the elderly.

However, these measures alone are not enough to put a stop to the shrinkage of the market due to the declining population trend. To turn this around will require the development of new demand. One way to achieve this is by increasing the amount of income obtained from foreign tourists.

Since many of the foreign tourists visiting Kansai are affluent, they often shop at department stores where tag prices are higher. Therefore, the chances are high that they could help raise the level of consumption in Kansai, overall. Furthermore, as mentioned earlier, department stores in Kansai are planning to increase store space in order to achieve greater concentration. Therefore, there will be sufficiently large potential.

The question of how foreign tourists should be attracted to Kansai in the first place should be addressed not only by the department stores but also through joint initiatives involving private businesses and national and local governments. It will also be necessary to be proactive in attracting tourists to the region by means of promotional activities, etc.

Private businesses are expected to make it easier and more convenient for tourists to pay for their purchases and to expand the scope of their translation services so that they can firmly establish a growing repeat customer base. As an example of what department stores can do, the Takashimaya Osaka Store now has resident interpreters available to enhance shoppers' convenience. At the Daimaru Shinsaibashi Store, which is often frequented by Chinese tourists, other unique services are on offer, such as discount coupons distributed to customers who present a valid passport.

Such initiatives by private businesses are more efficient when they receive support from local governments and economic organizations. The Kyoto Municipal Government, for example, commissions private businesses to offer Chinese language training for staff working at stores and menu translation

services for restaurant owners. Likewise, the Kobe Chamber of Commerce and Industry offers UnionPay card settlement services at its member retailers and ensures that this card is acceptable at stores in the Kobe Airport terminal building and elsewhere. The Osaka Chamber of Commerce and Industry also supports the preparation of “finger pointing sheets” for dealing with foreign customers.

It will be important, not only for department stores but also for the entire Kansai economy, to enhance the overall appeal of Kansai as “a place for consumption” by means of such measures.

5. LCCs at Kansai International Airport and the Kansai economy

One low cost carrier (LCC) after another has now extended their services to include Kansai. Now that this country has seen the debut of full-scale LCCs, the year 2012 has been dubbed “Year One for LCCs in Japan.”

5.1. LCCs in service in Kansai

In Kansai, LCCs operate from Kansai International Airport (KIX) and Kobe Airport. Figure 5-8 shows the routes served by LCCs in Kansai.

In Japan, there used to be four LCCs (Air Do, Skymark Airlines, Skynet Asia Airways and StarFlyer), with StarFlyer connecting Haneda and KIX and Skymark using Kobe Airport as its hub port to fly to a number of other cities. However, the fares of these “conventional” LCCs in Japan were not as strikingly low as some of the leading LCCs in Europe and North America, such as easyJet, Southwest Airlines and Ryanair, so they were not considered truly “low cost” carriers.[10]

[10] EasyJet's lowest fare for a one-way ticket between London and Paris is 35.99 pounds, including taxes (as of April 27, 2012)

Figure 5-8 LCCs' services in Kansai (as of July 2012, including plans)

Departing	Domestic/Int'l	Arriving	Carriers	Departing	Domestic/Int'l	Arriving	Carriers
KIX	Domestic	Sapporo/ New Chitose	MM, BC, GK	Kobe	Domestic	Sapporo / New Chitose	BC
	Domestic	Asahikawa	BC		Domestic	Haneda	BC
	Domestic	Haneda	MQ		Domestic	Narita	BC
	Domestic	Narita	GK		Domestic	Ibaraki	BC
	Domestic	Kitakyushu	MQ		Domestic	Nagasaki	BC
	Domestic	Fukuoka	MM, GK, MQ		Domestic	Kumamoto	BC
	Domestic	Nagasaki	MM		Domestic	Kagoshima	BC
	Domestic	Kagoshima	MM		Domestic	Naha	BC
	Domestic	Naha	MM, BC				
	Int'l	Seoul/ Inchon	MM, ZE, 7C				
	Int'l	Seoul/ Gimpo	7C				
	Int'l	Jeju	7C				
	Int'l	Busan	BX				
	Int'l	Taipei/ Taoyuan	MM, 3K				
	Int'l	Hong Kong	MM				
	Int'l	Manila	3K, 5J				
	Int'l	Kuala Lumpur	D7				
	Int'l	Sydney	JQ				
	Int'l	Cairns	JQ				
	Int'l	Gold Coast	JQ				

BC: Skymark Airlines JQ: Jetstar Airways 3K: Jetstar Asia Airways
BX: Air Busan MM: Peach Aviation 5J: Cebu Pacific Air
D7: AirAsia X MQ: StarFlyer 7C: Jeju Air
GK: Jetstar Japan ZE: Eastar Jet

On March 1, 2012, Peach Aviation began operation between its hub port of KIX and Sapporo and Fukuoka. They offered significant bargains and their minimum fares at the start of operations were 3,780 yen for the Fukuoka route and 4,780 yen for the Sapporo route.

Peach was followed by Jetstar Japan and AirAsia Japan[11], which announced the start of services for domestic routes[12]. Their fares were apparently set with Peach Aviation's charges in mind, indicating that competition among different carriers is being stimulated.

Now that foreign LCCs are also coming into service in Japan, fares have begun to drop on international routes as well as domestic routes. As of April 2012, Jetstar Airways, Jetstar Asia Airways, Jeju Air, Air Busan, AirAsia X, Cebu

[11] Peach Aviation, Jetstar Japan, and AirAsia Japan are financed by Japanese enterprises such as All Nippon Airways, Japan Airlines and Mitsubishi Corporation, as well as foreign enterprises.
[12] As of July 31, 2012, Jetstar Japan flies between KIX and Narita (from 3,990 yen), KIX and Fukuoka (from 3,590 yen), and KIX and Sapporo (from 4,590 yen). AirAsia Japan began flying between Narita and Sapporo (from 4,580 yen), Narita and Fukuoka (from 5,180 yen), and Narita and Okinawa (from 6,680 yen) starting on August 1, 2012.

Pacific Air and Eastar Jet are now flying to and from Kansai. These foreign LCCs have made it possible to fly to overseas countries at fares comparable to those of domestic air routes.

5.2. Impact of LCCs

One pioneering LCC, Southwest Airlines, has successfully developed a new market by offering drastically lowered fares and providing new transportation options to those who were once forced to accept rather expensive fares and those who seldom used airplanes at all. Likewise, in Kansai, the number of passengers is expected to grow as new demand for transportation by air is created. The creation of such new transportation demand is expected to promote the interregional exchange of businesspersons and increase the number of tourists, thus contributing to the development of the Kansai economy.

Having remained sluggish, the Kansai economy requires innovation to help break down obsolete business models. LCCs are just one such example and, in order for the Kansai economy to pick up, such innovations need to spread even further.

6. Management of the Global Strategic Comprehensive Special Zone

In December 2011, the “Kansai Innovation Global Strategic Comprehensive Special Zone” was designated. By creating this special zone, Kansai intends to “establish an ‘innovation platform’ to improve global competitiveness (a mechanism to create continuous innovation aiming at commercialization and market creation).” With an eye on future markets, six priority targets/“exits” have been chosen for innovation, namely pharmaceuticals, medical equipment, advanced medical technology (regenerative medicine, etc.), preemptive medicine, batteries and smart communities - all of which are areas in which Kansai has an advantage.

The targets of this special zone for 2025 are: a substantial increase in the production value of batteries from Kansai (lithium ion batteries and solar cells) by developing diverse applications and expanding markets, and an increase in exports of pharmaceuticals and medical equipment in order to double Kansai’s share of the global market. Expectations are rising for the special zone to become one of the key growth drivers of Kansai.

Under the umbrella of the Union of Kansai Governments, various programs are being pursued in a concerted manner within Kansai. As a test case for creating next-generation businesses, this process is attracting much attention, not only from Kansai but from other parts of the country as well.

Chapter *6*

Investment Strategy in Kansai

-Changes in Business Confidence and Investment Strategies for Overcoming Crises-

The Kansai economy finds itself beset by adverse circumstances. The Great East Japan Earthquake of March 11, 2011, and the great floods in Thailand that lingered for a little more than three months from July 2011 served to sever supply chains, thereby dealing a serious blow to manufacturers' production. Worse still, the "six woes," namely, the currency appreciation that skyrocketed against the U.S. dollar to the 75 yen level toward the end of 2011, corporate taxes that are high by international standards, slow progress in trade liberalization, tighter labor and environmental regulations, and concerns over power shortages stemming from the nuclear power plant accident in the wake of the Great East Japan Earthquake, are all putting a major drag on the performance of Japanese companies.

The purpose of this Section is to make a quantitative assessment of the impact that various risk factors, including major natural disasters both at home and abroad and the "six woes," have had on business confidence based on the results of a questionnaire survey issued to businesses by the Asia Pacific Institute of Research (APIR) with cooperation from the Kansai Economic Federation (Kankeiren). It is commonly recognized that such risk factors have a negative effect on business activities, but, to the best of the author's knowledge, this is the very first quantitative comparison of the extent of such effects among the different risks.

After making quantitative analysis of the risk factors, the ways in which companies have dealt with each of them are discussed. Finally, concrete proposals are put forward for strategic investments that should be made by businesses and the roles that governments should play if Japanese companies are to overcome such risks to maintain sustainable development.

1. How have the major natural disasters and six woes changed business confidence?

1.1. Nine risk factors assumed in the questionnaire survey

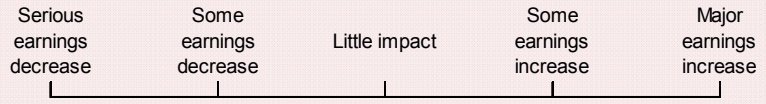
While natural disasters and the six woes obviously serve to seriously hinder business activities, it is no easy task to quantify exactly how much impact they have on business confidence. This is due to the difficulties in defining the concept

of business confidence and the fact that the magnitude of impact can vary depending on the attributes of individual companies, such as their scale of operations, the sector they are in, and their financial positions. The author attempts to quantitatively assess changes in business confidence by analyzing the findings of the "Questionnaire on Changes in Business Confidence after the Great East Japan Earthquake and Super-strong Yen," which Kankeiren and the APIR sent to their member companies.

Conducted between early February and early April 2012, this survey was intended to reveal the realities of both domestic and foreign investments by large enterprises and small and medium enterprises (SMEs) based mainly in Kansai, in the hopes of making proposals on support measures that may lead to revitalization of the Kansai and Japanese economies within the current context of the lingering impact caused by the Great East Japan Earthquake, super-strong yen, and other factors.

One of the questions of the survey asked how the risk factors affect earnings. As **management risk factors**, the following **nine headings** including the six woes were set. Changes in business confidence were assessed in terms of the "magnitude of impact on earnings," for which five choices were offered.

1) Recent rapid appreciation of the yen (forex rate well below 80 yen against U.S. dollar)



(Same scale applies to the following)

2) Burden of corporate income tax that is high by international standards
3) Hypothetical scenario of major domestic disaster where direct damage or supply chain disruption is suffered due to earthquakes in Japan comparable in scale to the Great East Japan Earthquake
4) Hypothetical scenario of major overseas disaster where direct damage or supply chain disruption is suffered due to natural disasters comparable in scale to the Great East Japan Earthquake or Thai floods
5) Increase in employers' contributions to social insurance premiums, etc.
6) Hypothetical scenario where tight electric power supply and demand balance such as that experienced in the summer and winter of 2011 continues for 2- 3 years
7) Japan's failure to participate in the Trans-Pacific Partnership (TPP)
8) Restrictions on hiring practices (regulations on fixed-term employment contracts, mandatory continued employment of senior citizens)
9) Enforcement of the interim target of the Basic Law for Prevention of Global Warming (25% reduction by 2020) without adjustments

1.2. Largest risks and risks with extensive impact (Table 6-1)

Shown in Table 6-1 are respondents' estimations of the size of impact that each risk factor might have on their earnings. If the impact on business confidence is measured according to the percentage of businesses that gave a response indicating a serious earnings decrease, it can be said that the single largest risk factor is "Major earthquakes in Japan (39.6%)," followed by "Major natural disasters outside of Japan (19.8%)," and "Rapid appreciation of the yen (12.6%)." This suggests that major natural disasters, be they in or outside of Japan, can diminish business confidence to a significant degree.

Table 6-1 Impact of risk factors on business confidence (all sectors, all scales)

Risk factors	Serious earnings decrease	Some earnings decrease	Little impact	Some earnings increase	Major earnings increase
Major earthquakes in Japan	*39.6%*	33.3%	9.0%	1.8%	0.0%
Major natural disasters outside of Japan	19.8%	*35.1%*	23.4%	0.9%	0.0%
Rapid appreciation of the yen	12.6%	*36.9%*	27.0%	6.3%	0.0%
Tight electric power supply and demand balance	9.9%	*46.8%*	25.2%	0.9%	0.0%
Enforcement of anti-global-warming measures	8.1%	31.5%	*38.7%*	1.8%	0.0%
High corporate income tax by international standards	7.2%	*34.2%*	32.4%	0.0%	0.0%
Increase in employers' contributions to social insurance premiums, etc.	6.3%	*58.6%*	13.5%	0.0%	0.0%
Restrictions on hiring practices	5.4%	*42.3%*	31.5%	0.0%	0.0%
Failure to participate in the TPP	0.9%	23.4%	*52.3%*	0.9%	0.0%

Note: Percentages for "no response" have been omitted. Italics indicate the modes for each factor.

On the other hand, risk factors that the respondents did not believe would lead to a serious decrease in earnings are: “Failure to participate in the TPP” (0.9%), “Restrictions on hiring practices” (5.4%), and “Increase in employers’ contributions to social insurance premiums, etc.” (6.3%). However, one point deserves attention when gauging the impact on business confidence based solely on the percentages of businesses that said a certain factor would cause a serious decrease in earnings: there are some factors that do not have serious impact in and of themselves, but can have an extensive effect on business confidence due to the generally held recognition among businesses that they contribute to lower earnings to some extent[13]. In fact, as many as 58.6% of businesses believed that their earnings would be reduced to a certain degree if they face an “Increase in employers’ contributions to social insurance premiums, etc.” In a similar vein, over 40% of businesses (46.8% and 42.3%) believed that a “Tight electric power supply and demand balance” and “Restrictions on hiring practices” would squeeze their earnings to some extent.

[13] The author would also like to add that more than half of the businesses (52.3%) said that “failure to participate in the TPP” would have little impact. One month before this survey, the APIR sent out the “Questionnaire on the TPP and Liberalization of Trade and Investment” to the same list of member companies. As a result, of the 134 valid responses, more than half (69 respondents, 51.5%) said that failure to participate in the TPP was either “Slightly disadvantageous” or “Disadvantageous.” At the same time, however, as many as 34 businesses (25.4%) (including those who once said that it would have no impact) answered “Unsure.” The fact that failure to participate in the TPP was chosen as the factor with the least amount of impact in this survey is presumably attributable to the difficulty in predicting what kinds of opportunities and threats would be presented to them, as the TPP involves as many as 21 areas for negotiation.

1.3. Impact by sector/scale (Table 6-2)

Percentages of businesses who responded that these risk factors would lead to a serious earnings decrease were then compared by dividing respondents according to sector (manufacturing and non-manufacturing) and scale (large enterprises being those capitalized at ¥100 million or over and SMEs capitalized at less than ¥100 million).

Table 6-2 Impact of risk factors on business confidence by sector/scale

Risk factors	Serious earnings decrease (from	By sector		By scale	
		Mfg.	> Non mfg.	Large	< Small/Medium
Major earthquakes in Japan	39.6%	51.9%	28.8%	36.1%	50.0%
Major natural disasters outside of Japan	19.8%	30.8%	10.2%	18.1%	25.0%
Rapid appreciation of the yen	12.6%	19.2%	6.8%	10.8%	17.9%
Tight electric power supply and demand balance	9.9%	15.4%	5.1%	7.2%	17.9%
Enforcement of anti-global-warming measures	8.1%	13.5%	3.4%	7.2%	10.7%
High corporate income tax by international standards	7.2%	11.5%	3.4%	4.8%	14.3%
Increase in employers' contributions to social insurance premiums, etc.	6.3%	5.8%	6.8%	2.4%	17.9%
Restrictions on hiring practices	5.4%	7.7%	3.4%	1.2%	17.9%
Failure to participate in the TPP	0.9%	1.9%	0.0%	0.0%	3.6%

Note: Percentages for "no response" have been omitted. Percentages by sector are higher for manufacturers, except for "Increase in employers' contributions to social insurance premiums, etc."

By sector, the percentage of businesses who responded that these risk factors would lead to a serious earnings decrease was higher for manufacturers than for non-manufacturers. More than half of the manufacturers believed that “Major earthquakes in Japan” would lead to a serious earnings decrease and 30% of them indicated that “Major natural disasters outside of Japan” would result in the same. From these data, it can be gathered that their supply chains are so intricate with so many points in their manufacturing process where various raw materials from different suppliers are input that even a single division in the entire chain caused by a major natural disaster may result in an enormous impact on their production. In contrast, only less than 30% of non-manufacturers replied by saying that they might experience a serious earnings decrease even in the event of “Major earthquakes in Japan.”

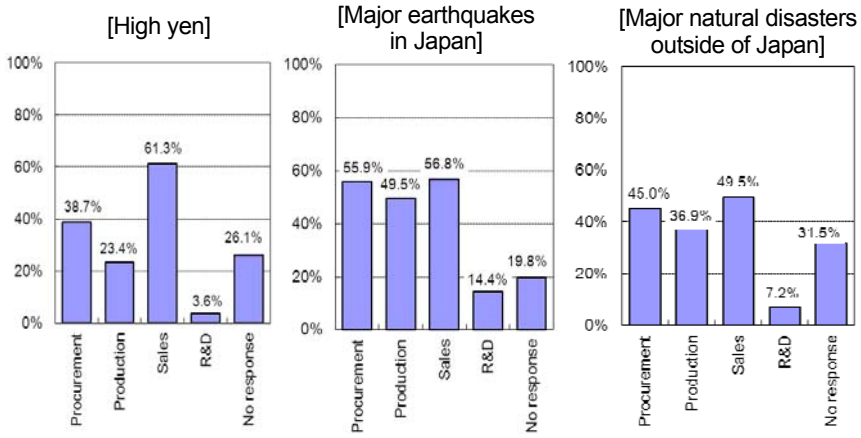
By scale of operations, more SMEs responded that these risk factors can lead to a serious earnings decrease than large enterprises. Half of the SMEs stated that “Major earthquakes in Japan” would result in a serious earnings decrease. Also, nearly 18% of them said that an “Increase in employers’ contributions to social insurance premiums, etc.” and “Restrictions on hiring practices” would cause a

serious earnings decrease, which is well above the overall mean value of 5-6%. This reveals that the various types of costs associated with employment put a major burden on SMEs, which in turn causes their business confidence to atrophy.

1.4. Functions vulnerable to such risks (Figure 6-1)

Let us take a look at what functions companies in the manufacturing/ non-manufacturing sectors each believed could be affected by the three risk factors that have thus far been seen as most likely to cause a serious earnings decrease. The choices given were “Procurement,” “Production,” “Sales,” and “R&D” (multiple answers allowed).

Figure 6-1 Functions vulnerable to risk factors (all sectors, all scales)



The results indicated that the “Sales” function is affected most by each of these risk factors. In particular, as high as 61.3% of respondents claimed that their “Sales” functions were affected by “Rapid appreciation of the yen.” If we look at major natural disasters both in and outside of Japan, however, the percentage of those who assumed that their “Procurement” function would be affected was nearly equal to that of those who believed that their “Sales” functions would be affected. This presumably reflects the realities that, once supply chains are disrupted by major natural disasters, enterprises might not only lose channels through which to distribute their products, but also encounter difficulties in procuring components and other materials.

By sector, as will be detailed below, the percentage of businesses claiming that their functions would be affected by the risk factors was higher for manufacturers than for non-manufacturers. For example, as high as 75.0% of manufacturing businesses responded that “Rapid appreciation of the yen” would affect their “Sales” functions, but only 49.2% of non-manufacturing businesses said the same, which reflects the fact that the earning structure of manufacturing businesses is heavily dependent on export markets. Also, responses indicating that “Procurement” and “Production” functions would be affected by major natural disasters in or outside of Japan were received from a considerably high percentage of manufacturing businesses, whose supply chains assume great importance in their production process. More specifically, up to 76.9% indicated that their “Procurement” functions would be affected should an earthquake comparable in scale to the Great East Japan Earthquake occur in Japan, while 78.8% responded that their “Production” functions would be affected. On the other hand, for every risk factor the vast majority of non-manufacturing businesses said that their “Sales” function would be affected, and less than 30% of them said that functions other than “Sales” would be affected should a major earthquake occur in Japan, with the exception of the “Procurement” function, which 37.3% of them said would be affected.

2. How businesses should go about dealing with major natural disasters and the six woes

2.1. Measures against risks (Figure 6-2)

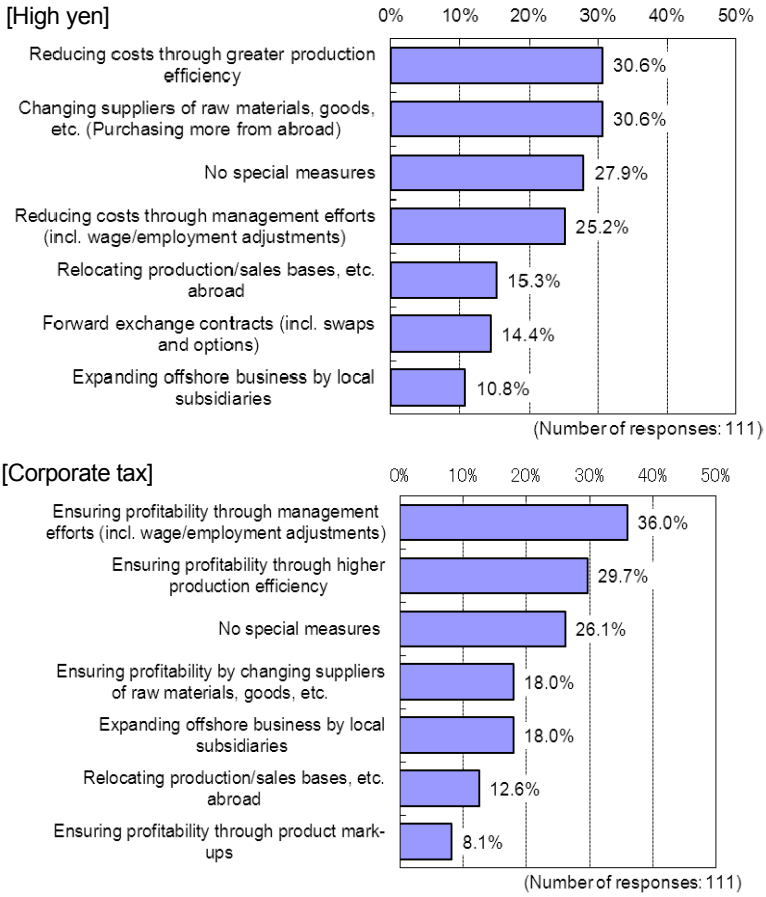
Here, the questionnaire survey results are used to determine how businesses would go about dealing with the top three risk factors that can result in a serious earnings decrease, as well as the “Burden of corporate income tax that is high by international standards.” Shown below are the top six most frequently chosen measures of those offered as choices.

The top three measures chosen to address **“Rapid appreciation of the yen”** were “Reducing costs through greater production efficiency” (30.6%), “Changing suppliers of raw materials, goods, etc. (purchasing more from abroad)” (also 30.6%), and “Reducing costs through management efforts (including wage/employment adjustments)” (25.2%); however, as high as 27.9% of businesses answered “No special measures.”

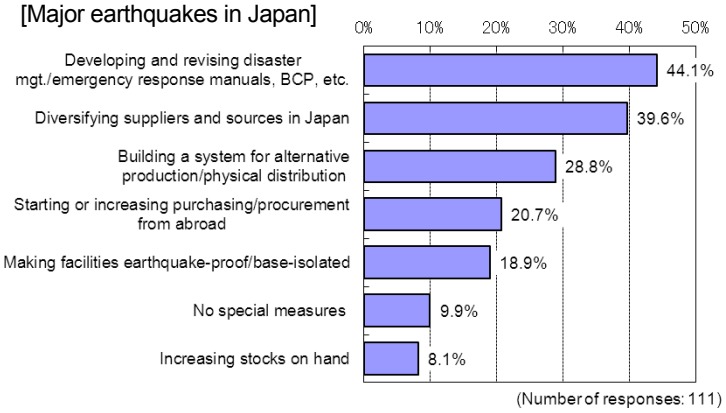
The top two measures for **“High corporate income tax”** were “Ensuring profitability through management efforts (including wage/ -employment adjustments)” (36.0%) and “Ensuring profitability through greater production

efficiency" (29.7%), which were followed by "No special measures" chosen by 26.1% of businesses.

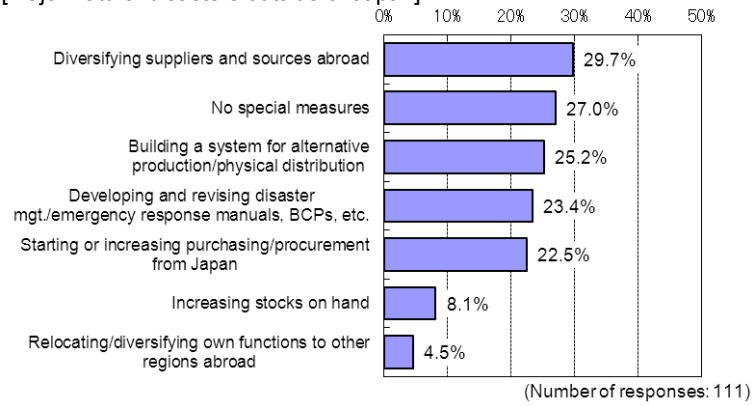
Figure 6-2 Measures taken against risk factors (all sectors)



[Major earthquakes in Japan]



[Major natural disasters outside of Japan]



To prepare for **"Major earthquakes in Japan,"** over 40% of businesses (44.1%) chose "Developing and revising disaster management/emergency response manuals, BCP (Business Continuity Planning for continuance of a company or its business during times of emergency), etc." Other measures that showed high percentages included "Diversifying suppliers and sources in Japan" (39.6%) and "Building a system for alternative production/physical distribution" (28.8%).

The top three measures against **"Major natural disasters outside of Japan"** were "Diversifying suppliers and sources abroad" (29.7%), "Building a system for alternative production/physical distribution" (25.2%), and "Developing and revising disaster management/emergency response manuals, BCP, etc." (23.4%). It should be noted, however, that as high as 27.0% of businesses responded that

they would take “No special measures.” In summary, for economic risk factors, such as appreciation of the yen and burden of high corporate income tax, enterprises mostly choose to reduce costs through greater production efficiency and management efforts in order to build a profit-generating production system. For major natural disasters, on the other hand, many businesses choose to make drastic reviews of their risk management programs by developing and revising disaster management/emergency response manuals and BCP.

2.2. Specific measures by sector and scale

To deal with **“Rapid appreciation of the yen,**” half of the manufacturing businesses, who have a large exposure to international business, said that they are “Reducing costs through greater production efficiency.” Otherwise, they are focused on reorganizing their production systems by “Changing suppliers of raw materials, goods, etc. (Purchasing more from abroad)” (48.1%) and “Reducing costs through management efforts (including wage/employment adjustments” (34.6%). Also, 26.9% of manufacturing businesses said that they have taken more drastic measures, such as “Relocating production/sales bases, etc. abroad.” In sharp contrast, however, nearly half of the non-manufacturing businesses replied by saying that they have taken “No special measures.” Also, 39.3% of SMEs, which generally conduct little international business, said that they have taken “No special measures.”

Concerning **“High corporate income tax,”** regardless of sector and scale, a high percentage of businesses (36.0%) said that they have been “Ensuring profitability through management efforts (including wage/employment adjustments).”Among non-manufacturing businesses, however, the largest percentage (as high as 39.0%) claimed that they have taken “No special measures.”

For **“Major earthquakes in Japan,”** high percentages of businesses have been “Developing and revising disaster management/emergency response manuals, BCP, etc.,” regardless of sector or scale (38.5% of manufacturing businesses, 49.2% of non-manufacturing businesses, 47.0% of large enterprises, and 35.7% of SMEs). Among manufacturing businesses, as high as 57.7% have been “Diversifying suppliers and sources in Japan,” and up to 42.3% of them have been “Building a system for alternative production/physical distribution.” As these data suggest, because manufacturing businesses can be seriously affected if their supply chains are disrupted, they attempt to reduce the risk against major natural disasters by building dual production systems.

Concerning **"Major natural disasters outside of Japan,"** there is a strong tendency for manufacturing businesses, which depend heavily on overseas suppliers for procurement of components, to opt for building a system that allows procurement of components without delay. The percentages of businesses that have chosen "Diversifying suppliers and sources abroad," "Building a system for alternative production/physical distribution," and "Starting or increasing purchasing/procurement from Japan," were 46.2%, 38.5%, and 32.7%, respectively. High percentages of non-manufacturing businesses (39.0%) and SMEs (39.3%), both of which have low overseas components procurement rates, responded by saying that they have taken "No special measures."

3. Enterprises' contingency plans in terms of business infrastructures – BCP and relocation/diversification –

3.1. Enterprises forced to revise BCP due to the Great East Japan Earthquake (Figures 6-3, 6-4)

As detailed in the previous section, in the face of the unprecedented amount of damage inflicted by the Great East Japan Earthquake, a number of enterprises were forced to make drastic revisions in their procurement, production, and sales infrastructures. Here, the responses to questions on BCP are examined to determine specifically how enterprises went about revising their business infrastructures. When asked about the status of their BCP, only 37.8% of businesses said that they "Have such planning already," but at the same time 39.6% said that they "Do not have such planning, but intend to develop it in the future." If these two groups are combined, it can be expected that nearly 80% of the businesses will have BCP at some point in the future, indicating that their interest in BCP has increased remarkably after the experiences faced in the wake of the Great East Japan Earthquake.

Figure 6-3 Status of BCP

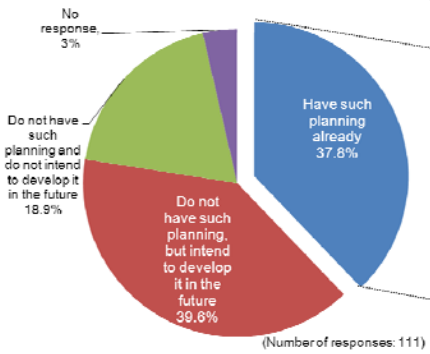
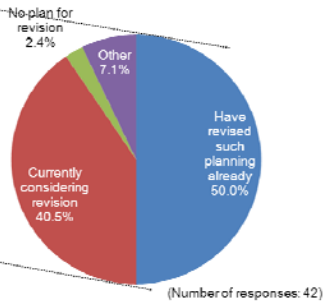


Figure 6-4 Revisions to BCP



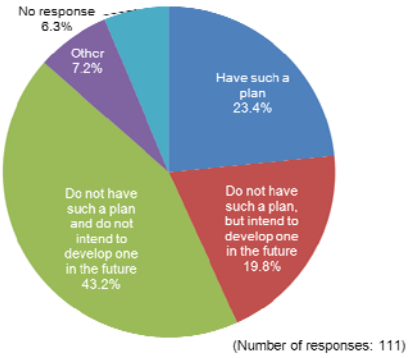
By scale of operations, nearly half of large enterprises (49.4%) claimed that they “Have such planning already,” while 34.9% of them said that they “Do not have such planning, but intend to develop it in the future,” which together accounted for over 80% of the total. On the other hand, only 3.6% of SMEs “Have such planning already.” If this percentage is combined with those that claimed they “Do not have such planning, but intend to develop it in the future,” the percentage still stands at 57.2%, while on the other hand as high as 42.9% of them “Do not have such planning and do not intend to develop it in the future.” The small amount of interest in BCP shown by SMEs is possibly due to the fact they do not have extra resources to develop one, and they may believe that they do not need to bother to have BCP as the small scale of their operations allows them to deal flexibly with major natural disasters.

Shown in Figure 6-4 are the responses by businesses who stated that they have BCP to the question of whether they have revised it following the Great East Japan Earthquakes, other earthquakes and tsunamis, and the Thai floods. The greatest number of businesses (50.0%) said that they “Have revised such planning already,” followed by “Currently considering revision” (40.5%). This question revealed that as much as 90% of businesses have taken the opportunities presented by recent cases of major natural disasters to either revise or consider revising their BCP in one way or another.

3.2. 40% of businesses are considering relocation and diversification of functions (Figures 6-5, 6-6)

Let us look into the responses to the question about another way to review their operations, i.e. whether they plan to relocate/diversify their functions and develop backup operations.

Figure 6-5 Whether they have plans to relocate/diversify their functions



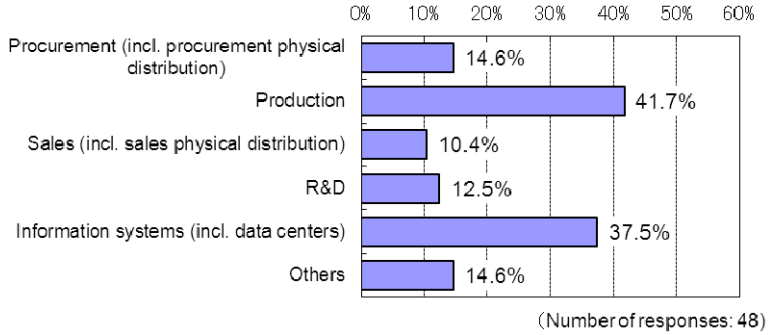
23.4% of businesses said that they “Have such a plan” and 19.8% claimed that they “Do not have such a plan, but intend to develop one in the future.” If these two are combined, 43.2% of the respondents have such a plan either now or expect to create one in the future. This percentage is the same as that for businesses who “Do not have such a plan and do not intend to develop one in the future.”

Businesses who indicated that they have a plan, concrete or otherwise, to relocate or diversify their functions, were also asked for which functions they are planning to do so and the candidate regions for relocation and diversification. For functions, “Production” accounted for the largest portion at 41.7%, followed by “Information Systems (including data centers)” at 37.5% (Figure 6-6). Concerning the regions in which they plan to relocate/diversify their functions, “Asia” came first at 32.1%, followed by “Kanto” (28.6%) and “Kansai” (21.4%)[14], revealing that they are planning or scheduled to relocate their production mainly to Asia. It should be noted that there was a strong tendency among businesses who currently own factories in Kansai to relocate/diversify their functions to Asia. Concerning the regions to which they are planning to

[14] Concerning places in Asia that are near Japan, few businesses listed South Korea, Taiwan, or Hong Kong as candidate host areas, while many opted for places in China. Many places in ASEAN countries were also cited.

relocate/diversify “Information Systems,” “Kanto” topped the rest at 47.1% and “Kansai” came second at 35.3%, together accounting for over 80%. The tendency of businesses to list regions in Japan where they currently have no operations was observed, which is believed to be part of the general move to diversify and build dual operations.

Figure 6-6 Functions for possible relocation (multiple responses)

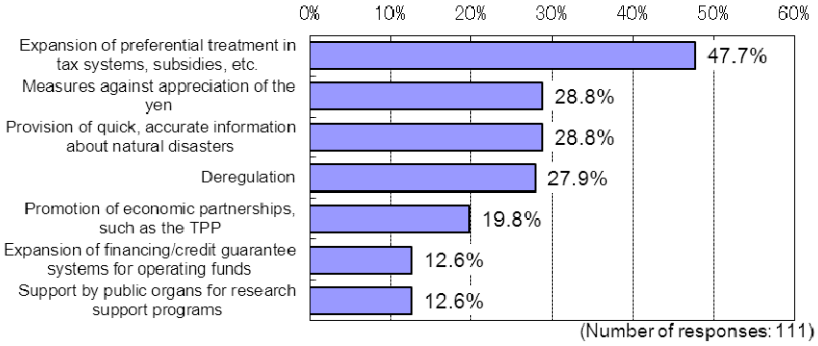


4. Requests for governments

As symbolized by the occurrence of major natural disasters and the six woes, businesses now find themselves in a situation that is brimming with risk factors. In response, they have attempted to build risk-resistant business infrastructures by reducing costs through greater production efficiency and management efforts or diversifying suppliers and other sources. To mitigate damage caused by natural disasters, in particular, they have reviewed the ways in which they manage such risks and shored up their organizations so that they can act flexibly and rapidly.

Here, the roles and support measures that should be taken up by governments in reducing such risks are examined in light of the questionnaire survey findings. (Figure 6-7)

Figure 6-7 Support measures that governments are expected to offer



Concerning support measures that businesses expect from national and local governments, nearly 50% of them expected from governments “Expansion of preferential treatment in tax systems, subsidies, etc.” Also, “Measures against appreciation of the yen” and “Provision of quick, accurate information about natural disasters” were both chosen by 28.8% of the businesses. By sector and scale of operations, too, “Expansion of preferential treatment in tax systems, subsidies, etc.” accounted for a large portion, with 55.8% of manufacturing businesses and 39.3% of SMEs seeking such measures, suggesting that many businesses expect governments to increase preferential treatment in the form of taxation and subsidies, etc. Likewise, a high percentage of businesses desire “Provision of quick, accurate information about natural disasters,” regardless of sector or scale of operations. The number is particularly high among SMEs (35.7%), thus implying that they have a relatively high need for information provision. This is presumably because, unlike large enterprises, which can utilize their peer and human networks to gather information on their own, SMEs have no choice but to depend on governments for information gathering as they have few other sources of such data. In particular, when natural disasters break out, the ability to quickly access accurate information on disasters is crucial in allowing businesses to take appropriate actions. It can therefore be said that governments are expected to provide such information that has the characteristics of a public asset.

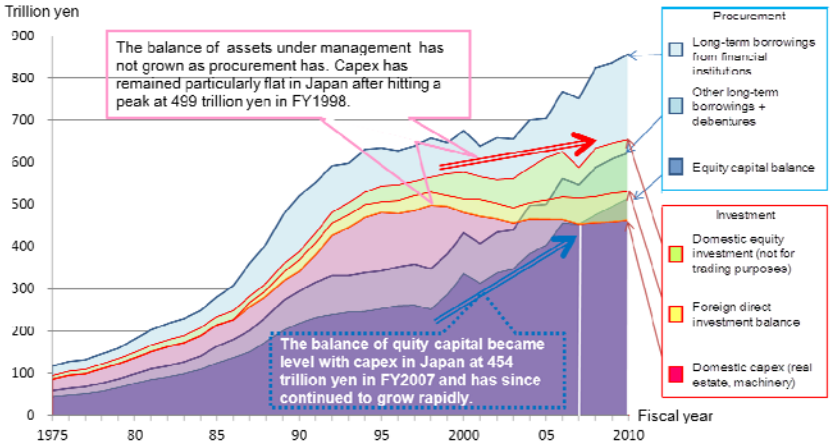
Due to their heavy dependence on external finances, SMEs have a high need for “Expansion of financing/credit guarantee systems for operating funds” (21.4%) to consistently maintain their operations. Meanwhile, because they are heavily dependent on export markets and are often exposed to competition with

international companies in the global market, high percentages of manufacturing businesses (32.7%) and large enterprises (33.7%) desire "Measures against appreciation of the yen." Likewise, high percentages of those groups (26.9% and 24.1%, respectively) also would like to see "Promotion of economic partnerships, such as the TPP" by the government.

5. Overcoming the risks: Proposals

5.1. Investing sentiment as viewed from businesses' balance sheets

Figure 6-8 Long-term trends in B/S (capex/equity capital) of Japanese businesses



Note: All sectors and all scales (excluding finance and insurance businesses). For the balance of foreign investments only, the above numbers show the balance as of the end of each calendar year.
Source: The Ministry of Finance's Financial Statements Statistics of Corporations. Numbers for foreign direct investments are taken from the International Investment Position of Japan by the Ministry of Finance, but such data has also been compensated for by public documents, etc. by the Bank of Japan and other institutions for 1994 or earlier (such data lacking in certain years).

Businesses now find themselves beset with numerous risks, including major natural disasters like the Great East Japan Earthquake and Thai floods. So far, businesses have taken a variety of measures by which they might stand up to such risks, as well as government regulations, both in and outside of Japan; however, it is certain that these risks have served to wither the investing sentiment among such enterprises. By referring to Figure 6-8, let us look at the general trends in "capital expenditures/equity capital" of Japanese businesses as a consequence of long-term changes in investing sentiment.

While the balance of domestic capital expenditures by Japanese companies has shown a tendency to decrease or level off after hitting a peak at approximately 500 trillion yen in FY1998, their equity capital has rapidly accumulated without interruption. While it is true that a part of this has been used for foreign direct investments or equity investments in affiliated companies in Japan, the amount of equity capital has grown more quickly than the sum of those two, with the result that the balance of equity capital already topped the amount of capital expenditures in FY2008.

One must wonder if it is not a stretch of intuition to interpret this more than decade-long abnormal situation called the "lost decade," i.e., "businesses having the money to spend but choosing not to reinvest it," as being one in which "all businesses, from small to large, are evading any forward-looking investment decisions from a mid- to long-term point of view as they are beset by regulations and risks that demand high levels of decisions and strategies."

5.2. To overcome the risks

For businesses to achieve continued development over the mid and long term, they must take one step forward to overcome the risks and maintain sustainable growth. Based on the analysis thus far, this paper makes the following concrete suggestions regarding what investment strategies businesses must employ and what roles governments are expected to play toward that end.

Expectations for a change in sentiment: Strengthening investment incentives

In response to an open-ended question on support measures by governments, some businesses wanted governments to "revise tax and other incentives in order to make Japan a hub of innovations," along with the oft-heard opinion that "investment tax breaks and subsidies for the promotion of employment would be effective." It may be safe to assume that such desires are shared by all, and that they represents the wish for governments to "do something to change the ongoing trend that seems to take a mild decline for granted," rather than the expression of an opinion of one company asking governments to "make it easier to benefit from investments."

Over the past decade or so, Japanese enterprises have significantly enhanced the soundness of their management, including internal controls and other governance structures. They should take pride in the fact that the overall equity ratio as calculated from the Ministry of Finance's Financial Statements Statistics of Corporations improved from 19.2% in 1998 to 35.6% in 2010. What we need

now are leaders in each industrial sector who can leverage their management soundness to change course to a pro-growth policy.

Meanwhile, governments are expected “now more than ever” to introduce investment tax breaks and subsidies that will have a far-reaching impact on businesses in an attempt to give a positive shock that will effectively stimulate the lingering torpor of capital expenditures in Japan.

Perspective for Kansai (1): Making Kansai a “smart area” by promoting green investments

Kansai plays host to a diverse range of manufacturing businesses, including those for batteries, parts and components, and electronics. These businesses should turn the decreasing power supply capacity to their own advantage and intensively make green investments in order to make Kansai the world’s leading “smart area.” For this to become a reality, it would be necessary to implement a tax reduction for “green investments” and develop “green infrastructures” by, for example, building charging stations for electric vehicles and promoting the switchover to LED lighting.

Perspective for Kansai (2): Attracting more data centers

As it becomes urgent to prepare for a major earthquake that might occur directly beneath the Tokyo Metropolitan Area, Kansai is expected to play no small role in backing up information processing functions and hosting a portion of such functions. Data centers are the lifelines of businesses and, as such, there has been considerable technological progress in this area toward the creation of a stable dual functionality. Kansai should take every opportunity available to attract investments in this regard in order to become a data center hub. In so doing, Kansai should tap into its accumulation of universities and the high level of their human resource development capabilities so that it can accelerate its efforts to develop and recruit engineers with the advanced information processing skills required for maintaining and managing data centers.

Perspectives for second-tier/small- and medium-sized businesses: Regional network to address the risks

When earthquakes or other disasters occur in an area where industries are concentrated, a major influence spreads throughout the world via supply chains. It is thus important for businesses to form alliances that enable them to complement each other during times of emergency, going beyond each individual

business' approach of developing an alternative production system. It is also necessary to develop a system that allows those concerned within a region to support such an initiative. At present, Kansai is developing a menu of programs that should help businesses to find alternative places for their production. In this regard, local governments and economic organizations play an important role in providing support measures that meet the specific demands of disaster-stricken businesses, such as setting up a one-stop contact for consultation.

Developing disaster management/crisis response manuals and BCP throughout the region will make it possible to transform our society into one that is prepared for emergencies. The questionnaire survey has revealed that SMEs are lagging behind in the development of BCP, but if governments act as intermediaries it can be expected that information will be communicated smoothly and accurately, thereby encouraging SMEs to develop such planning. To promptly address the risks, it will also be important to develop risk management experts.

In addition to the development of an information network, assisting affected businesses – particularly SMEs – in financing short-term operating funds is essential so that they can continue their operations in the wake of disasters. It is thus necessary to pursue the creation of funds for lending of emergency funds, along with prompt implementation of an emergency guarantee system, through cooperation with financial institutions. The author wishes to add that emergency assistance should be followed by down-to-earth support and assistance for thorough restoration/reconstruction planning. This is one of the important lessons that Kansai has painfully learned from the experiences of the Great Hanshin-Awaji Earthquake.

Part III

Business Opportunities in Kansai

Chapter 7 Smart City and Biomass Energy

The etymology of “innovation” shows that it is derived from the Latin word “*innovare*” for renew (“*in*” means “inside” and “*navate*” means “change”). The Cabinet Office of Japan defines innovation as follows:

“Innovation is sometimes paraphrased as technical improvement or management innovation, etc. Innovation creates new values for goods and systems by creating new technologies and ideas that bring about substantial changes in society”

Innovation that greatly changes industry and society can be developed endogenously under a talented leader with a creative brain. However, much innovation can also be developed exogenously by changes in the outside environment. Some might say that Japanese society has been in a gradual decline for many years with regard to innovation. In this chapter, we will look at possible sources of innovation by focusing on important industries (environment, tourism and finance) involved in the growth strategy of Kansai (Part Ⅱ), as well as “Japan’s Post-disaster Reconstruction” (Special Topics).

1. Introduction

In this chapter, we put forward our vision of the Smart City. The Smart City is a city that expands its use of renewable energy and increases its level of energy efficiency, while reusing the food waste which used to be considered no more than garbage. Promoting the use of renewable energy is not cheap since not only the costs of constructing new power plants but also the costs of system stabilization must be met. These costs are burdens for consumers, but they also represent new investment opportunities and sources of additional demand. This section will shed light on the economic effects of using renewable energy, discuss some of the challenges associated with its use, and present the results of a public opinion survey on its adoption.

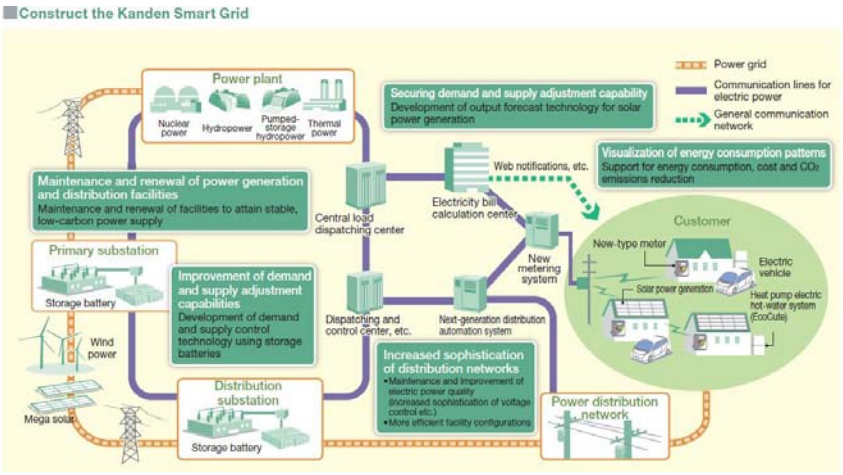
With regard to the recycling of waste, we will discuss various possibilities for reducing environmental impacts in agriculture and the food industry. We will also show how the reduction of environmental load during the production process can have a “brand value” and, as a result, we will explain how it may be possible to

"kill two birds with one stone" – achieving both demand creation and environmental preservation.

2. Possibilities and challenges associated with the use of renewable energies

2. 1. Smart Grid

Figure 7-1 Image showing the "smartization" of a city



Source: http://www1.kepco.co.jp/english/action/pdf2011/e2011.pdf, p24.

Nuclear power generation has been one of the basic "pillars" supporting global warming prevention measures in Japan[15]. However, since the Great East Japan Earthquake, Japanese society's attitudes towards nuclear power plants have changed dramatically. Many Japanese are now requesting a gradual decrease in the share of nuclear power generation while keeping the level of CO2 emissions from thermal power generation below a set limit and expanding the use of renewable energies such as wind, sunlight and small-scale hydro-power. It will, however, be difficult to expand the use of renewable energies that can substitute for nuclear power from their current share of only about 5%[16], and this process may take several decades. It will be necessary, in the foreseeable future, to make

15 The "medium- to long-term road map" issued in December 2010 focused on nuclear power generation.
<http://www.challenge25.go.jp/roadmap/roadmap_detail.html#about_roadmap>
16 See the Web site of the Ministry of Environment
<http://www.env.go.jp/earth/ondanka/mlt_roadmap/comm/com05_h20a/ref02.pdf>

use of various sources of power, including existing power generation and power accumulation facilities, as efficiently as possible. The system proposed to achieve this is the so-called Smart Grid[17]. The Smart Grid is designed to stabilize the electricity grid by efficiently combining small and decentralized power supplies, like those using renewable energies, with large-scale and fixed power supplies such as nuclear or thermal power plants (as shown on the left-hand side of Figure 7-1). Smart Grid technology can also help people visualize power consumption and the electricity demand response by means of a Smart Meter installed on every door (as shown on the right-hand side of Figure 7-1). The term "demand response" for electric power refers to the ability to control the demand for electricity based on signals received back regarding its use.

Under the current electricity price structure, the high cost of power generation means that profitability has often been a major obstacle to the introduction of renewable energies. This limitation has, however, now been considerably eased by the new Feed-in Tariff (FIT)[18] system for renewable electric power, introduced in July 2012. The entry risk for power generation activities has now been greatly reduced since the FIT system allows all suppliers of renewable electricity to sell it at a fixed price for a specified period of time. Significant expansion in the use of renewable energies is, therefore, expected – making it possible to stabilize the electricity supply by means of the "smartization" of cities and to even out electricity demand by introducing a demand response system. Then, if it is possible to reduce demand for electricity by setting a high electricity price, supply and demand stringency will be eased - especially during the daytime in summer when power demand usually peaks. This could be addressed by saving cheap nighttime power in storage batteries or electric vehicles and providing electricity from private generation systems during the daytime. Dynamic pricing, which tries to adjust demand for electricity by adopting flexible pricing, according to the level of electric power use recorded by the smart meter (Photo 7-1), is another example of a demand response system in operation.

2.2. Economic effect of smart grids

Since power generation using renewable energies is very dependent on weather conditions such as sunshine or wind, the use of system stabilization measures to

17 According to the Resources and Energy Agency, "The system aims to realize electric power supply with high efficiency, high quality and high reliability by applying ICT to the unification of information on dispersed power supplies such as photovoltaic generation etc. and that of customer demand, in addition to the comprehensive use of the current concentrated power supply and transmission grid." <http://www.meti.go.jp/report/downloadfiles/g90727e01j.pdf>

18 Details of this system will be explained in Column 1.

adjust the demand and supply for electricity is essential. According to the report of "Research on the electricity delivery network of the next generation" published by the Ministry of Economy, Trade and Industry (METI), the level of investment in photovoltaic power plants is expected to reach 3.9 trillion yen, based on the assumption that the amount of photovoltaic generation will reach 28 million kW by the year 2020[19]. On the other hand, the level of investment in system stabilization measures is only expected to comprise 3.4 trillion yen, based on the same assumptions. The economic impact of this process has been provisionally calculated at 9.2 trillion yen, in terms of the production effect, and at 371,000 people, in terms of the employment effect[20].

However, the associated regional economic effects are not so predictable, since the above calculation was based on the national I-O table for Japan as a whole. Therefore, in this section, we use the interregional input-output table of METI[21] to provisionally estimate the regional economic effects (the first round effects) of these new investments[22].

First, we calculated the economic effect of the investment needed for photovoltaic power plant installation (3.9 trillion yen). Here, we have assumed that 60% of this cost is for solar panels and 40% is for the construction work involved in solar panel installation[23]. In terms of the regional distribution of this investment, we have assumed that the investment share in solar panels might be the same as the current regional production share (70%[24] in the Kinki region), and that the construction investment share might be the same as that in electric power generation, in keeping with local demand. After the initial demand increase was set by means of the procedure described above, we calculated the production ripple effect, the value-added increase effect, and the employment creation effect.

19 This report does not calculate the economic ripple effect of the investment in photovoltaic power plants.
20 This METI report calculates the economic ripple effect of system stabilization investment based on several scenarios. The initial value of investment is for "output power control of all the solar power in the case of singularity", which is scenario 2 in the report.
21 Interregional Input-Output table, 2005 (53 sectors by 9 regions)
22 We followed the original regional divisions used in the METI calculation. However, we aggregated all regions except Kanto, Chubu and Kinki into the "other region" category in the tables shown in this section. In this book, Kinki contains the same number of prefectures as Kansai.
23 This information is based on an interview with a person in charge within the power industry.
24 This number is based on Murakami, K. (2012), "Is it possible for the solar battery industry in Kansai to be reborn by the special district of Kansai international innovation strategy?" APIR Trend Watch No. 1. <http://www.apir.or.jp/ja/trendwatch/_pdf/1394_Pdf.pdf >

Photo 7-1 KEPC smart meter

Source: Kansai Electric Power Co., Inc.

Table 7-1 shows the results of this simulation[25]. The production ripple effect, the value-added increase effect and the employment creation effect in Kinki amount to about 3.1 trillion yen, 1.1 trillion yen, and 150,000 people, respectively (representing a 30 - 40% share, overall). Considering the Kinki region's relatively small economic size (no more than 15% of the total for Japan as a whole), these figures are remarkably large. These results are a reflection of the large production share for solar panels concentrated in the Kinki region.

Next, we calculated the economic effect of the investment in system stabilization measures (3.4 trillion yen), following a similar procedure to that used in the previous simulation. The main component of this investment is storage batteries, and all high-capacity storage batteries are currently produced in the Chubu region[26]. We assumed that the investment share for other components would be the same as the regional production share for corresponding investment goods. Once the initial demand increase was set, using the above procedure, we then calculated the economic effects.

Table 7-2 shows the results of this simulation. The production ripple effect, the value-added increase effect and the employment creation effect in Kinki amount to 0.6 trillion yen, 0.3 trillion yen, and 30,000 people, respectively, while the corresponding figures for Japan, as a whole, are 7.3 trillion yen, 2.8 trillion yen, and 310,000 people. The relative magnitude of these values suggests that the Kinki region would account for about 10% of the effects felt across the whole

25 The effect calculated in the METI report is the total of the first round effect and the second round effect, taking into consideration the consumption increase associated with the employment increase, while the calculation presented in this section includes only the first round effect. That is why the effect described in this section is smaller than those described in the METI report.

26 Currently, the standard high-capacity storage battery used for system stabilization is the NAS battery made by NGK Insulators Ltd. Their production base is located in the Chubu region.

country. Reflecting the current de facto monopolization of NAS battery production by the Chubu region, the economic effect of investment in system stabilization measures would be centered on the Chubu region and have relatively little effect in Kinki. Incidentally, the Kansai region has a large industrial cluster of lithium-ion battery producers and this cluster is one of the target industries within the Kansai Innovation Comprehensive Global Strategic Special Zone. Unfortunately, the current generation of lithium-ion batteries is not suitable for use as storage batteries for system stabilization because of their low capacity and short lifespan. If these problems can be solved by technological improvement in the future, however, significant economic effects resulting from their adoption could be expected.

Table 7-1 Economic effects of investments in solar power generation

	Initial demand		Production effects		Value added effects		Employment effects	
		Share		Share		Share		Share
Kanto	766	19.6%	2,125	26.3%	939	28.6%	133.4	29.1%
Chubu	375	9.6%	983	12.0%	390	11.9%	56.0	12.2%
Kinki	1,888	48.4%	3,075	38.0%	1,143	34.9%	149.7	32.6%
Others	871	22.3%	1,906	23.6%	808	24.6%	120.0	26.1%
Japan	3,900	100.0%	8,088	100.0%	3,280	100.0%	459.1	100.0%

(Note) The unit used for employment effects is “1000 persons” and the unit used for other items is “billion yen”

Table 7-2 Economic effects of investments in system stabilization

	Initial demand		Production effects		Value added effects		Employment effects	
		Share		Share		Share		Share
Kanto	298	8.6%	1,589	21.8%	723	25.5%	82.1	26.2%
Chubu	2,915	84.7%	4,328	59.5%	1,540	54.3%	166.5	53.2%
Kinki	106	3.1%	615	8.4%	268	9.5%	31.6	10.1%
Others	122	3.5%	742	10.2%	302	10.7%	32.9	10.5%
Japan	3,442	100.0%	7,275	100.0%	2,834	100.0%	313.1	100.0%

(Note) The unit used for employment effects is “1000 persons” and the unit used for other items is “billion yen”

2.3. Japanese consumers and renewable energies

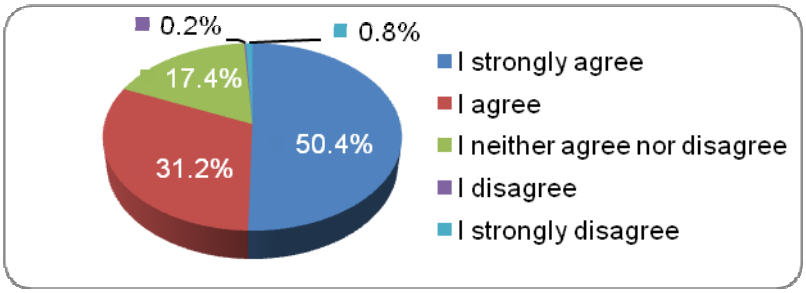
As described earlier in this section, expectations regarding “safe” renewable energies have risen since the Great East Japan Earthquake. The introduction of FIT will certainly raise power generation costs for the electric power companies, but the electric power companies are allowed to impute this cost increment in the

selling price of electricity under the FIT system. Therefore, it is inevitable that household electric power charges will increase.

To help assess the possible impact of such changes, we implemented an "awareness survey" on the introduction of renewable energies and smart grids and an "acknowledgment survey" on the introduction of FIT on March 16, 2012, throughout the Tokyo Electric Power Company and Kansai Electric Power Company areas. There were 500 respondents in this survey (242 male and 258 female), with the following age structure: 33.2% in their 60s, 16.0% in their 50s, 17.6% in their 40s, 19.0% in their 30s, and 14.2% in their 20s.

First, we observed that a large majority (81.6% of all respondents) were in favor of the introduction of renewable energies (Figure 7-2). Such strong support for renewable energies was common throughout both the Tokyo Electric Power Company and the Kansai Electric Power Company areas. In terms of gender, 55.6% of males and 45.7% of females answered "favor very much" - a difference of 9.7 percentage points. In terms of age, the percentage answering "favor very much" was lowest for people in their 20s (33.8%) and highest for those in their 60s (59.0%) - a marked difference of 25.2 percentage points.

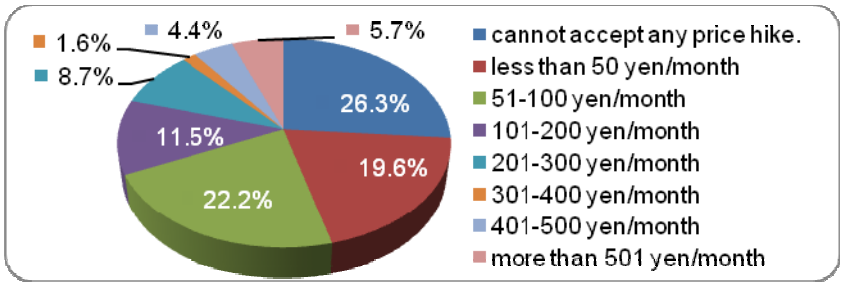
Figure 7-2 Pros and cons regarding the introduction of renewable energies



Source: author's survey

Next, we asked what an acceptable increase in the price of electric power might be, to help cover the costs associated with investments and smart grid introduction. The most frequent answer was "any increase in electric power charges is not acceptable" (26.3%), followed by "an acceptable electric power charge increase would be 51 to 100 yen per month" (22.2%) (Figure 7-3). Based on these answers, we estimated that the WTA amount for a power charge increase associated with the introduction of a smart grid for electricity use would be 109 yen per month.

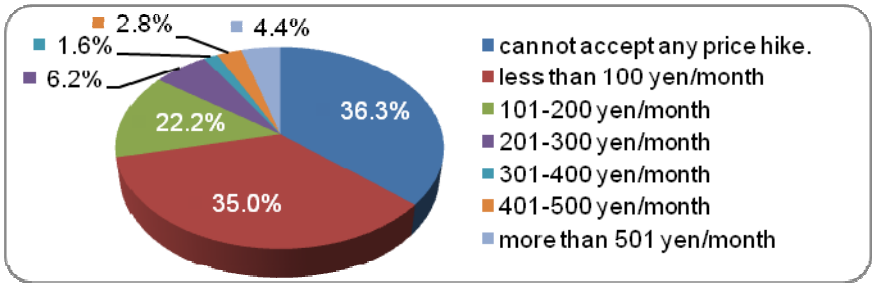
Figure 7-3 Acceptable electric power charge increases associated with smart grid introduction



Source: author's survey

Finally, we asked what an acceptable increase in electric power charges might be due to the introduction of FIT. The most frequent answer was "any electric power charge increase is not acceptable" (36.4%), followed by "an acceptable electric power charge increase would be less than 100 yen per month" (35.0%) (Figure 7-4). Based on these answers, we estimated that the WTA amount for an electricity price increase associated with the introduction of FIT would be 130 yen per month.

Figure 7-4 Acceptable electric power charge increases associated with FIT introduction



Source: author's survey

In short, while the majority of respondents approved of the introduction of renewable energies, the WTA amount for any electric power charge increase associated with the introduction of a smart grid or FIT was no more than 100 yen. This amount is similar to the estimated electric power charge increase (70-100

yen per month) for a standard household in response to the 2.5 million kW increase in renewable energy capacity planned for this year. However, since the government's target for the introduction of renewable energy before 2020 is 28 million kW, the figure of 2.5 million kW in 2012 is less than 10% of the overall target. Therefore, an additional electric power charge increase at least as big as that calculated above can be expected every year from 2013 onwards in order to accomplish the set target. Japanese consumers will not accept it.

3. Possibility of recycling food residues

3.1. How to measure environmental load (EF, WF)

According to the United Nations, the world's population reached seven billion in 2010 and will exceed nine billion by 2050. A growing population increases the demand for food and rising food requirements also mean increased demand for land and water. Further arable land development, however, will only come at considerable social cost. For instance, if forests are converted into arable land, this will cause environmental destruction, biodiversity loss and global warming. Global warming will also make the supply-demand balance for water more unstable, resulting in more floods and water shortages. Land and water will become increasingly scarce resources in the 21st century.

At present, one seventh of the world's population already suffers from hunger and one sixth of the population does not have access to clean water. Japan already imports a large amount of food from abroad. In other words, Japan is effectively "importing" a large amount of the land and water resources required for food production. The environmental load related to resource use can be measured in terms of the Ecological Footprint (hereinafter referred to as EF). The EF is the land area needed to support our level of consumption. The EF for Japan is estimated at 1,400 m^2 per person, and 73% of this is imported for food consumption purposes. Similarly, the amount of water needed to support our level of consumption is called the Water Footprint (hereinafter referred to as WF). The WF for Japan is estimated at 1,379 m^3 per person, and 73% of this is imported. Therefore, it can be seen that a pressing issue for Japan is how best to address the problem of resource demand expansion.

3.2. Example of the recycling of food residue in the Kansai region

What can we do in order to reduce the EF and WF? It should be noted that 25% of all food served in Japan is disposed of as garbage. If food residue such as this

can be recycled into animal feed, savings could be made in the amount of land and water used for feed production. Such recycled feed is called “Eco-Feed” – based on the fact that it is environment friendly (Ecology) and saves on feed cost (Economy). In this section, we will outline the status of Eco-Feed supply in the Kansai region, and measure the environmental effects of food residue recycling in terms of the EF and WF.

3.2.1. Kinds of food residue and the recycling rate for Eco-Feed

Table 7-3 shows the estimated total volume of food residue generated by the food industry in the Kansai region (six prefectures, with the exception of Fukui) per year and a breakdown of its components, by use. A total of 3,754 thousand tons is generated per year, of which 56% is recycled into feed, 22% is recycled into fertilizer, etc., and the remainder (23%) is incinerated and disposed of in landfills.

Table 7-3 Volumes of food residues and component breakdown, by use, in Kansai

Food industry	Total volume (thousand tons / year)	Component breakdown by use (%)				
		Recycle				Incineration and landfill disposal
			Fertilizer	Feed	Others	
Manufacturing	3,025	92%	16%	68%	8%	8%
Wholesale	38	56%	28%	15%	12%	44%
Retail	224	32%	11%	15%	7%	68%
Restaurant and catering	467	13%	4%	3%	6%	87%
Total	3,754	77%	14%	56%	8%	23%

Source: Data were estimated by the author, based on the Status Survey on Recycling of Resources from Wasted Food, compiled by the Ministry of Agriculture, Forestry and Fisheries.

The recycling rate for food residue varies, depending on which stage of the food system is involved - from production through to consumption. Approximately 70% of the food residue from the food manufacturing industry is recycled into feed. The recycling rate is especially high for the residue from the first stage of food processing, such as bran (for instance, wheat bran) from the flour-milling industry or oil seed meals (for instance, soybean meal) from the oil and fat manufacturing industry. In cases such as these, the residues can be recycled quite efficiently since they are uniform, available in large amounts, and are derived from a relatively small number of sources. In comparison, the recycling rate into feed is not as high for residue from the second stage of food processing (for instance, tofu refuse or bread crumbs).

The recycling rate for food residue generated at the wholesale or retail stage (outdated food or cooking rubbish, for example) is only 15%. In the case of

leftover food and cooking rubbish from the food service industry (restaurant and catering waste), the recycling rate into feed is only 3%. It is difficult to recycle these residues effectively because they are a mixture of various types, only available in small amounts, and are derived from a lot of different sources.

3.2.2. Current situation of Eco-Feed and pilot projects

The ministerial ordinance issued along with the revision of the Food Recycling Law in 2007 specified a high priority for feed production from food residue. Recent high grain prices have also provided added impetus for the production of Eco-Feed, since this can be substituted for grain-based compound feeds. Moreover, an increasing number of commercial enterprises are interested in Eco-Feed as they recognize that environmentally friendly activities will raise the corporate value of their operations.

Most of the food residue generated from the second stage of food processing or during the distribution of food used to be incinerated and disposed of in landfills. However, the scope for the manufacture of Eco-Feed from these residues is now growing. For instance, there are experimental initiatives now underway to make use of tofu refuse, press cake rubbish, noodles, vegetable rubbish, tea leaves, fish processing waste such as boiled fish paste and animal residue such as ham and sausage production waste.

3.2.3. The use of pickled plums for plum liquor and tofu refuse for Eco-Feed

Eco-Feed made from the steeped plum waste produced during the manufacture of plum liquor is an interesting example of waste utilization in the Kansai region. Osaka produces 70% of Japan’s plum liquor, so a large amount of steeped plum residue is generated during manufacture. The Research Institute of Environment, Agriculture, Forestry and Fisheries in Osaka prefecture has developed new technology that uses this waste to make feed for beef cattle. The “Society of Osaka Plum Beef” has now been established by beef cattle fattening farmers in the area and has established a good reputation for its brand in Osaka.

The tofu refuse generated during tofu manufacture is also useful as a protein source for cattle feed. However, it is perishable and not suitable for transport because its moisture content is very high. In the past, this has meant that most tofu refuse has been incinerated and disposed of in landfills. Now, however, new technology is being developed to help preserve it and reduce the volume by means of dehydration.

Table 7-4 Effect of using Eco-Feed on the EF and WF for beef

Feed	Amount of feed (kg/head)		EF (m^2/kg beef)		WF (m^3/kg beef)	
	Conventional Feeding	Eco Feeding	Conventional Feeding	Eco Feeding	Conventional Feeding	Eco Feeding
Forage	694	694	0.60	0.55	0.18	0.17
Grains	2,681	1,941	25.99	17.55	14.88	9.98
Steeped plums	0	1,323	-	-	-	-
Dry tofu refuse	0	1,009	-	-	-	-
Other byproduct feeds	1,630	1,028	-	-	-	-
Total	5,005	5,994	26.59	18.10	15.06	10.15

Note: The EF values per unit of feed were obtained from FAOSTAT< http://faostat.fao.org/ >.
The WF values per unit of feed were obtained from the Water Footprint Network < http://www.waterfootprint.org/ >.
Source: The data were estimated by the author.

We estimated the change in EF and WF resulting from the use of steeped plum and dry tofu refuse instead of grain (corn and barley).

Using Eco-Feed, the EF per kg of beef is reduced by 31.9% from 26.59 m^2 to 18.10 m^2, and the WF per kg of beef is reduced by 32.6% from 15.06 m^3 to 10.15 m^3, as shown in Table 7-4. The EF and WF of the steeped plum and tofu refuse are assumed to be zero. This is because the EF and WF have already been calculated at the main product stage, so they are zero by the time the residue stage is reached. Note that Eco-Feed is also heavier than conventional type feed because Eco-Feed made from soaked plums contains more moisture.

3.2.4. Eco-Feed from the distribution industry and food service industry

Progress is also being made in the recycling of food residue generated by the distribution industry and food service industry into Eco-Feed for pig fattening. The Research Institute of Environment, Agriculture, Forestry and Fisheries in Osaka prefecture has developed a new boiler called the “Washing Cooker” that removes oil from food residues using steam and hot water and then dries them for use as feed for pigs.

We think that Eco-Feed could be substituted for 30% of the compounded feed currently used commercially. Our estimate of how the use of Eco-Feed could reduce EF and WF is shown in Table 7-5. By using Eco-Feed, the EF per kg of pork could be reduced by 18.5% from 9.20 m^2 to 7.50 m^2, and the WF could be reduced by 18.6% from 6.34 m^3 to 5.16 m^3.

Table 7-5 Effect of using Eco-Feed on the EF and WF for pork

Feed	Amount of feed (kg/head)		EF (m^2/kg pork)		WF (m^3/kg pork)	
	Conventional Feeding	Eco Feeding	Conventional Feeding	Eco Feeding	Conventional Feeding	Eco Feeding
Commercial compound feed	265	216	9.20	7.50	6.34	5.16
Eco-Feed	0	49	-	-	-	-
Other byproduct feeds	109	109	-	-	-	-
Total	374	374	9.20	7.50	6.34	5.16

Note: The EF values per unit of feed were obtained from FAOSTAT< http://faostat.fao.org/ >.
The WF values per unit of feed were obtained from the Water Footprint Network < http://www.waterfootprint.org/ >.
Source: The data were estimated by the author.

3.2.5. Energy generation from food residue

It is not only food production that strains the supply-demand balance for land and water resources. Countries are now being urged to adopt measures for energy security and to help mitigate global warming. As a result, the production of energy crops such as corn or sugarcane for use as raw materials for biofuel has expanded. In other words, a scramble for resources has started between food and fuel.

One potential limitation to the manufacture of Eco-Feed from food residue generated by the distribution industry and food service industry is the risk that such residues may contain many foreign substances. However, it would still be perfectly acceptable to recycle such food residues into energy in order to reduce land and water use. One example of this is the methane fermentation technology used to generate biogas. Methane fermentation does not require each residue component to be strictly separated, and so the technology is already in commercial use. After purification, biogas can be used for city utility gas as well as power generation and boiler fuel. That is why Osaka Gas has now started to purchase biogas.

However, in order to expand the use of methane fermentation technology, there are some practical limitations still to be overcome. One is the cost of raw material collection and transportation, since the sources are diversified and the amount of food residue produced per site by the distribution industry and food service industry is quite small. Another problem is storage, since food residue is quite perishable.

However, the Kansai area is relatively well-suited to the use of methane fermentation technology for the following reasons:

1) The density of food manufacturing industry, food retail and restaurant businesses is relatively high, so that collection and transportation costs are comparatively inexpensive.
2) It is easier to find customers for electric power or city utility gas, produced by recycling, than it is for feed or fertilizer.

Therefore, the top priority should be to develop a small biogas system that can economically handle the relatively small amounts of food residue generated from supermarkets etc. Osaka Gas has already started to develop a small cogeneration system to produce biogas as a fuel, using equipment that can collect 0.7 m^3 to 70 m^3 of biogas from 10 kg - 1 t of garbage. The next-highest priority should be to set up a large-scale methane fermentation facility on the coast near Osaka to accept food residue from the metropolitan area, just like the “Bio-energy” initiative in Tokyo’s Chuo Ward. The possible outputs from such an undertaking would be electricity to sell to power companies and the in-facility use and sale of refined biogas to utility companies. It is important that food-related companies bear the processing cost of the food residue involved and that the processers can collect large amounts of food residue in order to make this system work efficiently. Since the revised Food Recycling Law requires food-related companies to raise their recycling rate every year, it should be possible for this system to operate successfully.

4. Concluding Remarks

The smart city is a town that takes environmental conservation into consideration by using various innovations such as decentralized power generation and renewable energies to improve energy efficiency, while saving resources by reducing waste. This chapter has emphasized that the introduction of renewable energy is also a way of creating new demands. By investing in photovoltaic generation facilities, the Kansai region where the solar panel industry is concentrated will benefit from relatively large ripple effects compared to the overall economic size of this region (15%). On the other hand, the development of large-capacity batteries is required in order for the Kansai region to benefit from any significant ripple effects associated with system stabilization investment.

Our survey suggested that the overall level of consumers’ environmental awareness was unexpectedly low. The attitude that “I agree with the plan in general, but will not compromise on details” was very noticeable. Environmental awareness involves the consumer making a certain payment on behalf of the

environment, which used to be regarded as part of the external economy. However, the results of the survey indicate that the amount people are willing to pay monthly is no more than a few thousand yen (equivalent to a cup of coffee), even though there is now considerable momentum to switch to renewable energies as a result of the Great East Japan Earthquake.

Our analysis in this chapter has shown that there is potential to reduce the amount of food residue and garbage produced in the Kansai region by expanding Eco-Feed conversion and methane recovery. However, the problem of paying the cost of these activities has yet to be resolved. Needless to say, efforts to reduce the cost by means of technological innovation in industry have an important role to play in the construction of smart cities, but the public must also recognize that they need to pay a fair share of the cost as well.

Before we end this chapter we would like to express our hopes for collaboration among the various local governments in the Kansai region so that the necessary innovation in industries may be accomplished in order to produce truly “smart cities”. “Local production and local consumption of energies” would be even more preferable, to some extent, from the viewpoint of energy security. It is, however, necessary to keep the geographical area of “local production and local consumption of energies” above a certain minimum size in consideration of efficiency requirements for stabilization investments in distributed power systems. Similarly, when processing food residues, a certain minimum quantity is also required to ensure efficiency. Therefore, we think that the role of local government alliances, like “the Union of Kansai Governments”, is important in order to achieve the necessary adjustments of size and scale. Some type of new funding scheme like a domestic CDM within the region or some form of regional environmental taxation is also possibly needed to provide the fiscal resources to construct smart cities in the Kansai region. Financial planning of this sort is another important issue that the Union of Kansai Governments might need to address.

Column 1: Feed-in Tariff (FIT) for renewable energies and Payment for Ecological Services (PES)

The practical use of renewable energies such as photovoltaic power, wind power, small-scale hydro-power, geothermal power and biomass power is becoming increasingly achievable. The “Feed-in Tariff” (FIT) system, whereby existing electric power companies have an obligation to purchase electricity at a fixed price for a specific period, started operation in July 2012.

Purchase prices were set at 42 yen for a large-scale photovoltaic generation facility (for 20 years) and at 23.1 yen for a large-scale wind power generation facility (for 20 years), after discussion by the procurement cost calculation committee of METI on June 18, 2012. It is expected that there will be quite a few participants since business should be profitable at these price/period settings.

However, when existing electric power companies buy electricity from new entry power generation companies dealing in renewable energies, the purchasing price will be higher than the present power generation unit cost. Moreover, the existing electric power companies need to commit to new capital investments for system stabilization and such expenses will cause an additional rise in the unit cost. The electricity price will, therefore, also rise for consumers.

Incidentally, when the Tenth Conference of the Parties (COP10) of the Convention on Biological Diversity was held in Nagoya in 2010, the necessity for payment for ecosystem services (PES, Payment for Ecological Services) was confirmed, internationally. The PES concept is based on the idea that since human society is making use of the natural ecosystem by way of its genetic resources etc., we also need to pay to protect the ecosystem in return.

The nuclear power plant accident caused by the Great East Japan Earthquake created new momentum for the introduction of renewable energies. In other words, the cost of introducing renewable energies can be thought of as a prevention cost targeting the adverse effects on the environment that can be caused by nuclear accidents. Therefore, in a wider sense, the cost of introducing renewable energies can also be thought of in terms of PES. It should be made clear to the public that environmental preservation is a costly process and that it is necessary for all consumers to share responsibility.

Column 2: Payment for ecosystem service (PES)

The concept of biodiversity has been widely known since the Tenth Conference of the Parties (COP10) of the Convention on Biological Diversity (CBD) held in Nagoya in 2010. Even before this conference, the Japanese business community

had already recognized the importance of biodiversity conservation and PES, in which the beneficiary of the ecosystem service also bears the maintenance and management costs of the ecosystem. As a matter of fact, the Japan Business Federation (*Keidanren*) had already issued the "Declaration of Biodiversity by Keidanren" in March 2009.

"*Palm detergent*" ("*Yashinomi senzai*" in Japanese) made in *Saraya* (Osaka City) is a familiar example of PES. A percentage of the return from sales of this detergent is allotted for environmental conservation activities involving palm oil, the raw material grown on Borneo Island. By means of this mechanism, the consumers of the detergent who are the main beneficiaries of the ecosystem service also bear the maintenance and management costs. In practice, PES not only lets the consumers receive beneficiary and cost considerations but also supports effective measures for biodiversity conservation. Now that there is increasing demand from society for firms to consider various environmental preservation activities, promoting PES is also a way in which commercial enterprises can improve the image of their own products.

Column 3: Environmental labels and regional brands

Good communications are necessary between the producer and the consumer so that producers can make it clear that they value environmental protection highly. The "environmental label" fills this role in society by serving as a communication tool. The environmental label concept includes various items such as the "Eco Mark"[27] for manufactured products and the "Organic JAS Mark"[28] for agricultural goods. The Eco Mark is given to a product that has a low environmental load throughout its entire life cycle and the Organic JAS Mark is given to a product that is produced without using either prohibited fertilizers or agricultural chemicals.

The Ministry of the Environment maintains a Web site called "Payments for Ecosystem Services (PES) - an introduction to good practices in Japan". This Web site describes cases such as the "*Flying Stork*"[29] in Hyogo prefecture and "*Fish Cradle Rice*"[30] in Shiga prefecture. Both have their own environmental labels (or marks). The former is an initiative attempting to restore the agricultural farm environment so that storks can live there, and the "*Flying Stork*" mark is

27 Japan Environmental Association Web site <http://www.ecomark.jp/ecomark.html>
This mark is also attached to "Palm detergent", as described in Column 2.
28 Ministry of Agriculture, Forestry and Fisheries Web site
<http://www.maff.go.jp/j/jas/jas_kikaku/yuuki.html>
29 Toyooka City Web site <http://www.city.toyooka.lg.jp/www/contents/1140136975453/index.html>
30 Shiga Prefecture Web site <http://www.pref.shiga.jp/g/noson/fish-cradle/index.html>

bestowed on farmers that adopt environment friendly cultivation techniques. This example shows that both farmers and consumers can practice PES by contributing to the wild stork's return. The latter is a project that connects rice fields to Lake Biwa through a system of waterways, allowing the rice fields to be used as a habitat for various lake fish species (for example, *nigorobuna*) and the "*Fish Cradle Rice*" mark is bestowed on farmers who have adopted environment friendly farming techniques. This example shows that both farmers and consumers can practice PES by contributing to the environmental preservation of Lake Biwa.

Such initiatives are helping establish a "regional brand" or a "local brand" for farm products and illustrate one of the ways in which agriculture may develop in the future.

Chapter 8 Inbound Tourism

It seems to be inevitable that the Kansai region's "resident population" will eventually decline. However, if an increase is brought about in the "nonresident population," i.e., traffic to and from the Kansai region, such will serve as a major factor in compensating for the decline in the "resident population." For this to happen, it can be said that tourism is one area that represents an important growth strategy for expanding the "nonresident population." While growth in the number of domestic tourists remains low in Japan, the number of foreign tourists offers much room for growth, and their consumption expenditure per capita is far greater than that of Japanese tourists. Put another way, a rise in the number of foreign tourists visiting the Kansai region will directly stimulate the regional economy, which is good reason to pay close attention to this industry of tourism, particularly inbound tourism.

As many regions and cities around the world engage in fierce competition to attract foreign tourists, it is necessary to accurately comprehend the ever-diversifying demands of tourists and map out effective promotions if the Kansai region is to hone its international competitiveness as a tourist destination chosen by foreign tourists.

Of the many different groups of foreign tourists, one that merits special mention includes inbound tourists from other parts of Asia that are currently experiencing rapid economic growth. Stimulating the regional economy by expanding the inflow of such tourists will assume its place as one of the core strategies for the sustainable growth of the Kansai region.

This chapter will review the present state of inbound tourism in the Kansai region, discuss new initiatives for inviting foreign tourists, and shed light on various issues in this regard.

1. Present state of foreign tourists in the Kansai region

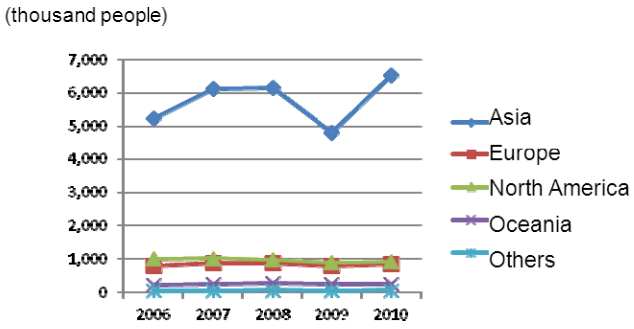
1.1. Increase in the number of Asian tourists and expectations for their contributions to the regional economy

Thanks in part to campaigns by the national and local governments to promote inbound tourism there has been a rise in the number of foreign tourists visiting

Japan, reaching 8.6 million in 2010. Nevertheless, Japan ranks 30th in its number of foreign visitors (see Column), and the country's position in the Asia region as a whole appears relatively small compared to the size of its population and scale of its economy.

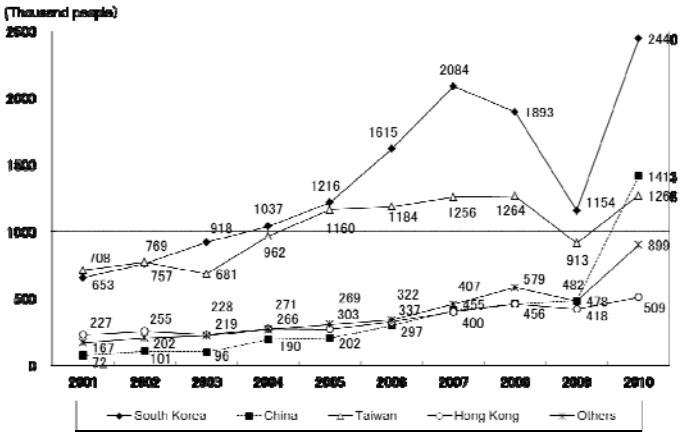
Looking at the statistics of by-region/by-country increases in foreign tourists to Japan in recent years, the largest increase can be observed in those from other parts of Asia, including South Korea, China, Taiwan, and Hong Kong (Figures 8-1 & 8-2). Having maintained strong economic growth, China has shown explosive growth in its number of tourists going overseas – little wonder given the sheer size of the country's population – and this number is expected to swell even larger going forward.

Figure 8-1 Foreign tourists in Japan



Source: Statistics on Tourism for Japan, Japan National Tourism Organization (JNTO)

Figure 8-2 Foreign visitors to Japan from Asia

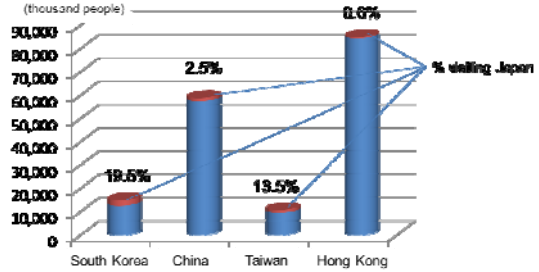


Note: The number of tourists dropped in 2009 due to the outbreak of pandemic influenza.
Source: Statistics on Tourism for Japan, JNTO

1.2. Tourism demand from Asia is not fully tapped into

Taking a closer look at the figures for South Korea, China, Taiwan, and Hong Kong, which send the greatest numbers of tourists to Japan, the fact is that those visiting Japan account for only a small portion of their total numbers of tourists going overseas. For example, tourists from China to Japan in 2010 numbered 1.41 million (Figure 8-3), a meager 2.5% of the total number of Chinese tourists going overseas that same year (57.39 million). It is thus safe to say that Japan has yet to fully tap into the huge tourism demand of the Asia region.

Figure 8-3 Percentages of tourists to Japan among overseas tourists from South Korea, China, Taiwan, and Hong Kong

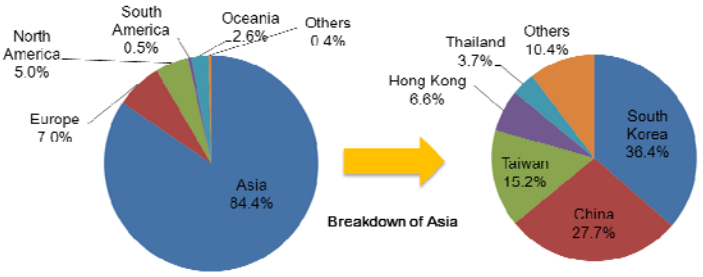


Source: JNTO Destination Survey of Overseas Visitors to Japan 2010

Compared with domestic tourists, the per capita consumption expenditures of foreign tourists tend to be high, and this is expected to contribute to regional economies. According to the 2010 Tourism Trend Survey in Osaka City, for example, overnight visitors to the city of Osaka from within Japan spent an average of 38,477 yen, whereas those from overseas spent 62,643 yen.

Partly due to the relatively close proximity to key cities in China, up to 84.4% of people passing through immigration at Kansai International Airport (KIX) are from other parts of Asia (Figure 8-4). As KIX serves as a hub for low cost carriers (LCCs), it is hoped that the number of foreign tourists will accelerate in the future (Table 8-1).

Figure 8-4 Foreign visitors legally entering Japan at KIX (2010)



Source: Statistics on Tourism for Japan, JNTO

Table 8-1 LCCs serving KIX (8 carriers connecting 11 cities)

Carriers	Destination	Services per week
Peach Aviation	Seoul (Incheon)	21
	Hong Kong	7
	Taipei	7
Jeju Air	Seoul (Incheon)	7
	Seoul (Gimpo)	7
	Jeju	5
Air Busan	Busan	7
Eastar Air	Seoul (Incheon)	14
Cebu Pacific	Manila	3
AirAsia X	Kuala Lumpur	4
Jetstar Asia Airways	Singapore (via Taipei)	14
	Singapore (via Manila)	4
Jetstar Airways	Cairns	2
	Sydney (via Cairns)	2
	Gold Coast	5
Total		109

Note: 2012 summer schedule (Source: New Kansai International Airport Co., Ltd.)

1.3. Typical itinerary of tourists from Asia

Tourists from Asia prefer to travel around the country, and they are most likely to visit several tourist attractions and stay in different places.

For example, the “Golden Route” for tourists from China is KIX - Kyoto - Mt. Fuji - Tokyo (Akihabara) - Narita.

The statistics on foreign tourists’ visits to each prefecture show that Osaka, Kyoto, Hyogo, and Nara are ranked high among prefectures in the Kansai region (Table 8-2).

Table 8-2 Percentages of visits to each prefecture

2010		
Rank	Prefectures	%
1	Tokyo	60.3
2	Osaka	26.1
3	Kyoto	24.0
4	Kanagawa	17.8
5	Chiba	15.0
6	Aichi	10.9
7	Fukuoka	9.1
8	Hokkaido	8.8
9	Yamanashi	8.2
10	Hyogo	7.6
11	Nara	7.5
12	Oita	5.0
13	Kumamoto	4.3
14	Hiroshima	4.1
15	Tochigi	3.6

Source: JNTO Destination Survey of Overseas Visitors to Japan 2010

The average length of stay for foreign tourists is approximately seven days. While in Japan, tourists from China, in particular, allocate a large portion of their traveling expenses to “souvenir and goods purchases,” suggesting that many of them visit Japan for shopping, while those from South Korea, Taiwan, and Hong Kong spend a great deal on “food and drink,” leading to the conclusion that they are highly interested in “cuisine” (Table 8-3).

Table 8-3 Amount of money spent by foreign tourists in Japan (per capita)

(Yen)

	Average length of stay (days)	Per capita spending	Travel	Accommodation	Food & drink	Entertainment, admission fees, etc.	Souvenirs, goods	Other expenses
Total	7.4	108,667	8,859	16,815	18,904	5,910	58,034	145
South Korea	5.6	58,937	6,350	8,347	10,224	3,927	30,066	23
China	6.3	131,236	2,537	3,836	5,911	2,273	116,568	112
Taiwan	7.2	106,347	7,965	10,890	13,675	3,587	70,191	39
Hong Kong	6.2	150,688	9,485	15,987	27,476	5,530	92,149	61

Source: JNTO Consumption Trend Survey of Overseas Visitors to Japan, 2007 - 2008

The above trend corresponds almost exactly to the results of a survey about their expectations of visiting Japan (Table 8-4).

Table 8-4 Overseas tourists' expectations before visiting Japan

(%)

2010	South Korea	China	Taiwan	Hong Kong
Food	53.1	45.8	62.3	75.6
Hot springs	46.0	51.3	49.4	43.1
Shopping	40.8	59.1	56.7	69.2
Historic/traditional landscapes and spots	35.6	—	47.6	32.7
Urban landscapes, bustling areas	31.1	39.1	—	—
Nature, four seasons, rural landscapes	—	63.6	64.4	50.2

Source: JNTO Destination Survey of Overseas Visitors to Japan 2010

2. Initiatives to increase the number of tourists from other parts of Asia

2.1. Long-term goals

As a part of the Inbound Travel Promotion Project (Visit Japan Project), the Japanese government is currently pushing forward a program to attract 30 million international visitors annually in the future. Under the program, promotions are initiated by identifying 15 countries and regions as priority markets, which include 12 countries and regions from which many foreign tourists visit Japan, namely South Korea, Taiwan, China, Hong Kong, Thailand, Singapore, the U.S., Canada, the U.K., Germany, France, and Australia, as well as the three promising countries of India, Russia, and Malaysia.

In concert with the program, government-private promotions are being conducted in the Kansai region by the Union of Kansai Governments, the Foundation for Kansai Region Promotion, economic organizations, and related

businesses in the travel and transportation industries. In the "Kansai Sightseeing and Cultural Promotion Plan," which was drawn up in March 2012, for example, the Union of Kansai Governments set the target number of foreign tourists in Japan at 10 million (currently estimated at around 3 million). The next section will review the tourism markets that Kansai's local governments, etc. are targeting as they shoot for this numerical goal.

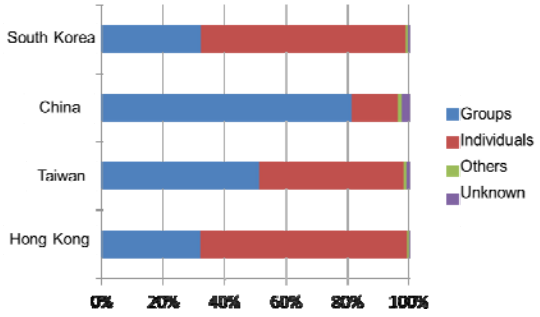
2.2. Trends in the inbound tourism market

2.2.1. Increasing individual visitors and wealthy tourists

As the percentage of repeat visitors from other Asian countries rises, a growing number of tourists prefer to travel independently, particularly those from South Korea and Hong Kong (Figure 8-5). Large portions of Chinese tourists still travel in a group, but they too are expected to make a steady shift toward private travels.

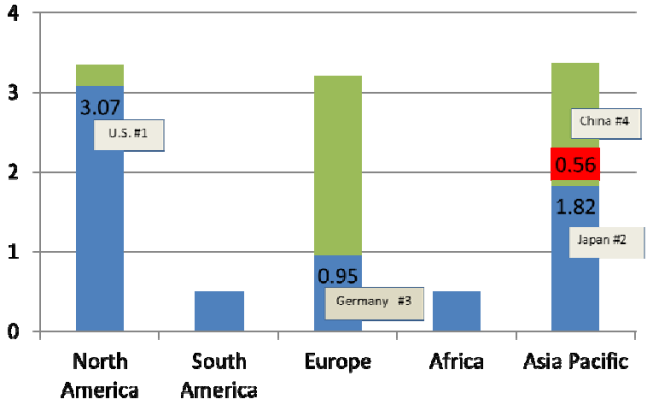
Another concern that warrants attention, if a rise in tourist spending is to be achieved, is the question of whether the rapidly rising number of wealthy people in Asia can be attracted (Figure 8-6). Going forward, a variety of actions need to be undertaken, such as the development of tourism contents and infrastructures as a host country, so that this visitor demographic may enjoy sightseeing in Japan both comfortably and safely.

Figure 8-5 Tourists from South Korea, China, Taiwan, and Hong Kong by type (2010)



Source: JNTO Destination Survey of Overseas Visitors to Japan 2010

Figure 8-6 Wealthy population* in each geographical region



*Individuals owning investable assets of US$1 million or more
Source: Capgemini 'World Wealth Report 2012'

2.2.2. Shift to "new tourism" and "hands-on tourism"

At present, the general trend in tourism in Japan is a gradual shift from the conventional pattern of visiting one sightseeing spot after another to a more theme-oriented, hands-on tour. Major examples of this include eco-tourism for people wishing to sightsee while simultaneously conserving natural and cultural heritages, health tourism for people wanting to receive treatment or promote health, industrial tourism for people wanting to learn about manufacturing through industrial cultural assets and industrial products, and hands-on tourism of traditional cultures in local regions. In order to increase the popularity of such new tourism categories, it is important that each local region recognizes its own attractive points and promotes such tourism as a part of regional development with efforts to communicate newly re-discovered appeal.

2.2.3. Attracting "MICE"

Meetings and incentive travel of businesses, etc., international conventions of international bodies, academic societies, etc., exhibitions, tradeshows, and other events have a huge ability to attract visitors. Despite the lingering effects of the massive earthquake, Japan placed third in the number of international conventions hosted in 2011 at 598 (the first being Singapore at 919 conventions and the United States coming in second at 744).

In order to attract MICE (Meetings, Incentive travel, Conventions, Exhibitions/Events), it is an important requirement to offer an irresistible tourism

menu, in addition to providing convention centers and accommodations possessing the quality and capacity required from a host of international conventions.

2.3. Promotions and environmental improvements in the Kansai region

Some tourism promotion organs in the Kansai region have begun initiatives that take into account the aforementioned trends in the market. Detailed below is an example of such initiatives.

1) Strategic Use of Blogs

Some of the basic tools for promoting tourism - brochures, DVDs, and web sites – are still in extensive use, but one promotional technique for individual tourists that draws much attention for its efficiency and effectiveness is “word of mouth” by power bloggers. Particularly in South Korea, where ICT has achieved a high rate of diffusion, large portions of tourists gather information about their destinations on the Internet before beginning their trips. Accordingly, influential popular bloggers are invited to join hands-on tours in Kansai and report their experiences (“blogger fam trip”) (Table 8-5).

Table 8-5 Examples of blogger fam trips

Purpose	Investigatory trip to report the first-hand impressions of Kansai in winter from Koreans' viewpoint
Invited	Two power bloggers
Destinations	Fukui - Kyoto - Osaka (crab cuisine, sake, *maiko* (apprentice *geisha*), Zen meditation, etc.)
Purpose	Promoting "healthy Kansai." Urban women from Seoul are invited to try Japanese cooking, etc. (Jam-making class in Wakayama, kibi dango-making class in Fukui, etc.)
Invited	Four from woman's magazines, three bloggers
Destinations	Mie - Wakayama - Osaka, Fukui - Shiga - Kyoto - Hyogo

Note: The above trips were arranged in fiscal 2011 by the Foundation for Kansai Region Promotion.
Data: The Foundation for Kansai Region Promotion

2.3.1. Stressing Kansai’s advantage of a rich cultural heritage in hands-on experience

Not only a focal point of UNESCO World Heritage sites (Table 8-6), the Kansai region also boasts a time-honored legacy of food culture, traditional culture, industrial art, etc. Riding the tailwind of the “cool Japan” boom, attempts have been made to develop travel packages that incorporate hands-on experiences in traditional culture and Japanese cooking.

Table 8-6 UNESCO World Heritage sites in the Kansai region

Designation	Components	Location	Inscribed in
Buddhist Monuments in the Horyu-ji Area	Horyu-ji, Hokki-ji	Nara Prefecture	December 1993
Himeji-jo		Hyogo Prefecture	December 1993
Historic Monuments of Ancient Kyoto (Kyoto, Uji and Otsu Cities)	Kamowakeikazuchi Shrine (Kamigamo Shrine), Kamomioya Shrine (Shimogamo Shrine), Kyo-o-gokoku-ji (To-ji), Kiyomizu-dera, Enryaku-ji, Daigo-ji, Ninna-ji, Byodo-in, Ujigami Shrine, Kosan-ji, Saiho-ji, Tenryu-ji, Rokuon-ji (Kinkaku-ji), Jisho-ji (Ginkaku-ji), Ryoan-ji, Hongan-ji, Nijo Castle	Kyoto Prefecture, Shiga Prefecture	December 1994
Historic Monuments of Ancient Nara	Todai-ji, Kofuku-ji, Kasuga Taisha, Kasugayama Primeval Forest, Gango-ji, Yakushi-ji, Toshodai-ji, site of Heijo-kyo	Nara Prefecture	December 1998
Sacred Sites and Pilgrimage Routes in the Kii Mountain Range	[Yoshino and Omine] Yoshino-yama, Yoshino Mikumari Shrine, Kinpu Shrine, Kinpusen-ji, Yoshimizu Shrine, Ominesan-ji	Wakayama Prefecture, Mie Prefecture, Nara Prefecture	July 2004
	[Kumano Sanzan] Kumano Hongu Taisha, Kumano Hayatama Taisha, Kumano Nachi Taisha, Seiganto-ji, Nachi-no-otaki, Nachi Primeval Forest, Fudarakusan-ji		
	[Koya-san] Niutsuhime Shrine, Kongobu-ji, Jison-in, Niukanshobu Shrine		
	[Pilgrim routes] Omine Okugake-michi (including Tamaki Shrine), Kumano Sankeimichi route <Nakahechi (including Kumano River), Kohechi, Ohechi, Iseji (including Shichirimihama and Hana-no-iwaya)>, Koyasan Choishimichi		

Source: National Federation of UNESCO Associations in Japan

2.3.2. Development of transportation passes to enhance convenience for tourists

The Kansai region has an extensive railway and bus network, which allows one to travel from Osaka to the neighboring key tourist cities of Kyoto, Kobe, and Nara within about 30 minutes. For example, transportation tickets valid from KIX to Kyoto, Nara, etc. are available, and travelers need not bother with tickets if they purchase the “Surutto Kansai” pass, which allows them to take advantage of the services of 58 railway and bus operators in the Kansai region, as well as Okayama and Shizuoka. The 3-day and 2-day ticket versions of this pass can be purchased from travel agencies outside of Japan (called the Kansai Thru Pass). Foreign tourists may also purchase the “Japan Rail Pass,” which is offered by the six companies that make up the Japan Railways Group and valid for JR railways, buses, and one ferry service (JR West Miyajima Ferry).

3. Bringing about innovations in the tourist industry

As the business model of the tourist industry shows a tendency to target segmented markets rather than the mass market, it is essential to develop segment-marketing capabilities to accurately identify the diverse demands of travelers in order to enhance the international competitiveness of the Kansai region's tourist industry. To become successful in the global tourist market, it is necessary to have at hand a system of contents that are able to meet the most diverse demands of international tourists. This is why the conventional tourist industry is in need of innovation. The key to success is to listen to what the tourists have to say. Accordingly, the Union of Kansai Governments has announced its policy to build up fundamental statistics on foreign tourists in a bid to closely monitor their demands (see Column).

3.1. The need to understand the realities of foreign tourists' travels

To understand trends among foreign tourists that travel around the country rather than staying in just one tourist destination, it is not enough to simply conduct surveys on certain sightseeing spots; instead, it is necessary to monitor the realities of the sightseeing behaviors of foreign tourists throughout the entire Kansai region. In more concrete terms, for the Kansai region overall to increase the percentage of visits, lengths of stay, and consumption by foreign tourists, it is essential to have a proper understanding of where and how they travel around places within the Kansai region and to design tourism promotion strategies accordingly. This requires the development of statistical infrastructures for understanding in more detail the patterns of travel by foreign tourists, who tend to visit more than one tourist place in the Kansai region.

Also, in order to promote wide-area sightseeing by foreign tourists, it is important to gain detailed data on their consumption in order to analyze what impact it might have on the revitalization of the Kansai economy.

3.2. Collecting basic data required for the promotion of wide-area tourism

Shown in Table 8-7 are points that need to be understood and their aims, with regard to wide-area tourism statistics on foreign tourists in the Kansai region.

Table 8-7 Points that need to be understood in wide-area tourism statistics on foreign tourists

Category	Items	Aims
Destinations, travel routes	○ Main destinations/ accommodations ● Travel route within Japan ● Primary means of transportation	- Understanding how they travel within the Kansai region
Consumption	○ Total amount of consumption ● Places of purchase, contents of consumption ● Spending on food and beverages	- Understanding their consumption behaviors - Estimating economic ripple effect
Specific theme	● Levels of interest and participation ● Satisfaction	- Evaluating programs on specific themes and designing strategies for the future
Tourists' basic attributes	○ Country/region ○ Purpose of visit ● Level of income ○ Previous visits to Japan, etc.	- Specifying groups of tourists to be targeted - Analyzing relationships with their traveling behaviors
Satisfaction/degree of interest, etc.	○ Satisfaction with travel ○ Places they are interested in ● Status of development of hosting environments	- Understanding overall satisfaction and what they are interested in - Developing infrastructures and fostering a spirit of "hospitality"

○: Data available from other statistics ●: Data specific to the overall Kansai region is desired.

3.3. Marketing perspectives required for the development of tourism statistics

It is private businesses that play the main role in the promotion of tourism for foreign visitors. It is thus necessary to demonstrate that the development of wide-area tourism statistics will be enormously beneficial to marketing activities by private businesses.

What tourism behaviors do tourists from Asia follow as they visit one place after another? What benefits can be expected when various products (itineraries), prices (costs), places (transportation), and promotions (sales) are introduced? It is imperative to have private businesses understand that preparation of reliable statistics is a highly effective way of answering such questions and thus beneficial to their businesses as well. What needs to be taken note of here is that marketing strategies are pursued on various terms. If the wide-area tourism statistics to be developed are lacking in real-time and marketing perspectives, there is a risk that such statistics may not be very attractive to private businesses.

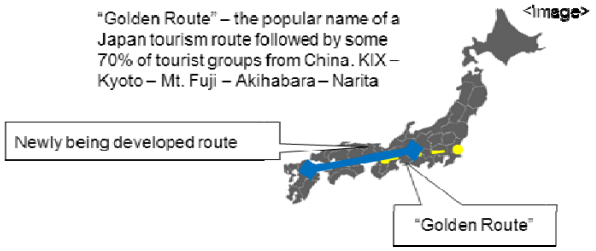
4. Marketing Kansai even further

A series of programs for promoting “Kansai” as a brand-name international tourism zone are slated for the “Kansai International Tourism Promotion Year” of 2013. Many programs that are being planned or studied focus on its “food culture,” which is highly popular among foreign tourists, in a bid to communicate appeals of the Kansai region, “the home of gourmet.”

It is expected that a fact-finding survey on the behaviors of foreign tourists will be conducted by taking up the opportunity presented by such extensive promotions.

With regard to the promotion of wide-area tourism, there have been movements among cities in the Kansai region and West Japan as a whole to develop a new wide-area travel route that may replace the “Golden Route.” Specifically, the six regions of Chubu, Hokuriku, Kansai, Chugoku, Shikoku, and Kyushu have joined hands to develop a “West Japan wide-area tourism route,” with a view toward attracting wealthy Chinese tourists.

Figure 8-7 West Japan wide-area tourism route



Prepared by APIR from data provided by the Kansai Ecoomic Federation

Column: Statistical survey from a "Kansai" perspective

For a brighter future for Kansai, the Union of Kansai Governments was inaugurated with a view toward realizing strategic initiatives under its responsibility as an independent public entity. In March 2012 their Wide-Area Tourism/Culture Promotion Bureau announced a "Kansai Sightseeing and Cultural Promotion Plan," which lays down priority areas, projects, etc. that Kansai needs to strategically work on in concert together in order to enhance the appeal of Kansai as a tourism zone.

In the background of these efforts is a sense of urgency about the present situation where Japan is lagging behind other countries in the international tourism competition. Statistics on foreign tourist arrivals (Figure 8-8) indicate that Japan ranked 30th at 8.6 million even before the major earthquake of 2011. Going forward, however, it is believed that the number of foreign tourists shows potential for growth. As such, the tourism industry is regarded as essential for revitalization of the Kansai economy.

Responses to diversification of the inbound market, planning of strategic marketing, and upgrading methods for information communications are all listed in this plan as issues involved with international tourism. To address these issues, there is a need to draw up programs based on concrete data, and thus it is urgently requested that data be gathered on the realities and demands of foreign tourists visiting the Kansai region.

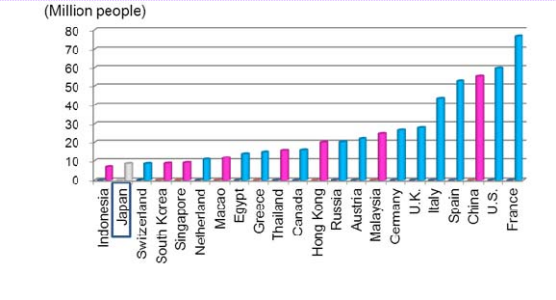
It is true that statistical surveys by the Japan Tourism Agency and local governments provide some insight into trends in the actual conditions of foreign tourists in Japan. In order to market "Kansai" to the world, however, it is required to conduct statistical surveys with "Kansai" in mind to gather data that has been unavailable thus far, such as how the wide-area tourism route should be promoted effectively, which regions should be targeted, etc.

With the primary goal of gathering data on the following, the Union of Kansai Governments is preparing for a new, practical statistical survey of foreign tourists, which it hopes to conduct by March 2013.

- Travel routes within/outside the Kansai zone
- Relationship between sightseeing goals and travel routes
- Participation in events, etc.
- Wishes for nightlife and entertainment
- Interests in environmental conservation, healthcare services, sports, etc.
- Means of transportation

To conduct this survey, it will become necessary to establish a framework for cooperation among the members of the Union of Kansai Governments, as well as experts, private businesses, and others concerned, in order to enhance the economic strength of the entire Kansai region.

Figure 8-8 Foreign visitors in countries/regions, 2010



Prepared by JNTO from data provided by the World Tourism Organization and the Tourism Bureaus of each respective government

Chapter 9 Civic Pride in Aqua Metropolis Osaka

The setting for urban and community development has entered an era of dramatic change. As highlighted by new growth strategies and new trends in public services, people have begun to discuss and debate their visions of urban design. Additionally, questions are also being raised about the processes involved and their benefits, the individuals or groups that should be in charge, the value of closer communication, and how these and other factors improve the vitality of urban and community development. Furthermore, a change is also under way in perceptions of the features or attractions hitherto considered to be urban strengths. In particular, the focus of attention has expanded beyond purely physical factors to include the very citizens that live within an urban setting. Given this context, the topic of this chapter will be on proposals for policies that harness the appeal and vitality of the city together with theoretical frameworks for that purpose. These proposals are based on a model of Osaka as a city of waterfront districts and incorporate considerations for the necessity of a transition in urban policy as well as the emergence of the increasingly diverse range of stakeholders now involved in urban and community development processes.

1. New perspectives in demand: Urban policies that resonate with citizens

Urban-related policymaking is in transition. Suffice it to say that in Japan and abroad, mounting interest in the drama of change in urban administration and the establishment of governance structures with cities and urban and rural zones as their units of implementation has transcended its former level as a localized political phenomenon and already entered a more-advanced stage comprising a search for new forms of urban governance for the next generation. Given this backdrop, one problem is that measured in terms of citizen perceptions, many sophisticated policies for improved urban competitiveness -- as well as their benefits -- have not been readily embraced. One outcome of this has been a vicious circle marked by growing citizen discontent with political uncertainty and policy in general. Of course, among the major background factors contributing to this situation, government administrators conceivably have been pressured by the need to deal with a wide array of issues on the one hand yet due to fiscal strains,

do not have adequate budgets to fund the implementation of individual policies on the other. Another conceivable problem is the potential logical divide separating government officials that professionally administer public policies from citizens that are the intended beneficiaries of those policies. Further, from the standpoint of reinforcing the functions that serve as engines of urban support, the series of trends toward urban policies adapted to globalization, creative urban theory, and deregulation-based policies of urban renewal can all be understood as having value. Nonetheless, in the eyes of the citizens that actually reside and work within urban settings, these policies have little if any direct relevance to their lives. The reason is that such policies probably do not translate into tangible improvements in standards of living, public safety, or levels of affluence.

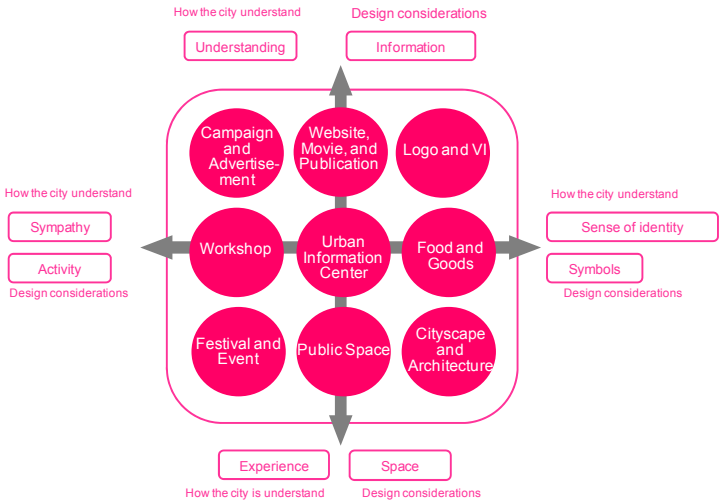
That being the case, in what direction should urban policies of this nature be oriented and pursued? To answer that question, we need ideas for the implementation of policies that overcome limits to policy effectiveness, help cities establish their identities in an age of intense global competition with rivals, maximize the potential that cities can have for creativity, and additionally afford a meaningful impact on citizen lives. Specifically, we need new concepts of urban policy that guarantee interaction with citizens and put emphasis on delivering tangible objectives and benefits to those citizens.

The first step with this approach would be to formulate projects that can be expected to generate a multifaceted array of policy benefits rather than following the traditional pattern of offering up lofty visions of future urban imagery that citizens perceive to be removed from reality and unlikely to have any relevance to actual urban life or activity. This approach should strive to eliminate many of the issues facing current-day urban policy, namely, by pursuing flexible policy management through external project assessments and dialogue with citizens and delivering tangible benefits.

2. Three perspectives on civic pride

What is civic pride? This question is addressed in Figure 9-1 with a lattice of individual, specialized viewpoints that systematically illustrates approaches to the city and strategies for their coordination. Understanding the city in terms of a set of interdisciplinary perspectives is a fundamental approach that demands a response transcending existing systems and frameworks and that identifies the appeal that cities possess.

Figure 9-1 Urban communication points



Source: Civic Pride, Sendenkaigi Co., Ltd., 2008.

Civic pride itself is not something that can be designed. The technologies to cultivate civic pride are inherent in the way channels of communication are designed into the city setting. In addition to the unidirectional conveyance of information for promotional purposes through the worldwide web, merchandise, posters, etc., the methods of strategically designing the "total communication" of the city through its buildings, public spaces, and events are also important, as demonstrated by the example in Photo 9-1. Not only do these factors respectively contribute to the bonds linking a city with its citizens, but they also have the synergistic effect of cultivating civic pride if designed to act in tandem and incorporate reciprocal relationships.

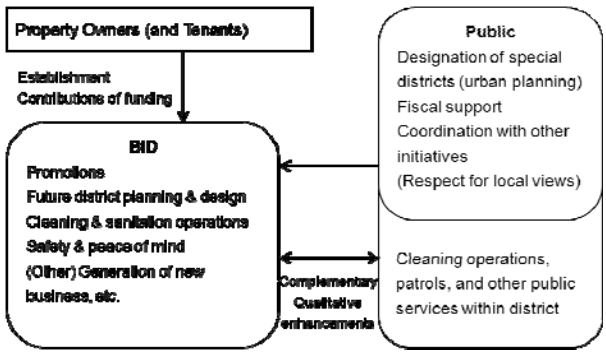
Photo 9-1 Amsterdam civic pride campaign, "I amsterdam"

To date, efforts in urban planning have concentrated their energies in the formation of appealing cities by applying perspectives that strive to give the city a unique "identity" and urban "structure." These perspectives together comprised undertakings focused on the development of hard infrastructure together with mechanisms shaped by an emphasis on objective assessment. By contrast, efforts to generate urban appeal in the years ahead will call for mechanisms that effectively integrate the subjective attributes and autonomy of individual citizens into the urban development process. Urban development approaches that enable individual citizens to experience for themselves the "meaning" of their city will be crucial. Civic pride is cultivated through the respective influences exerted by these domains of "identity," "structure," and "meaning" and may be defined as a perspective that fuses these separate domains into one. Within the context of policy presentation as well, developing branding models that show awareness of these connections between the city and its citizens will also be important.

3. Area management mechanisms: Lessons in urban governance from the US

Figure 9-2 lists the features of the "business improvement district" (BID) model. Broad benefits are attainable with the full-scale implementation of area management as exemplified by the BID model that has been applied principally in the US. For example, BIDs give cities fresh vitality and new appeal. When implemented by highly motivated local actors, unforeseen benefits can be expected, including the effective multi-purpose utilization of idled public spaces or the creation of new opportunities for private-sector participation.

Figure 9-2 The business improvement district model



The area management perspective will be indispensable to the task of identifying urban policies that resonate with citizens and enabling a diversity of stakeholders to coexist and build a city of vitality and appeal. Various hurdles will confront implementation, from securing the financial resources that will fund the development and operation of relevant institutional frameworks and identifying appropriate performance benchmarking methods and approaches to the management of public spaces to the adoption of suitable measures in deregulation at the time of implementation. At this stage, it will be important first and foremost to hold discussions aimed at identifying suitable actors for implementation of the urban policies that will encourage these activities.

Area management comprises the comprehensive and sustained administration of a wide array of themes, including the management of public spaces, citizen events and activities, business operations, security, and the entities that are assigned responsibility. In effect, it is an ongoing activity involved in utilizing the "community" itself as a tool. This may be described alternatively as a form of business management. However, under current urban policies, awareness of administering a city as a business operation remains weak. In reality, most municipal sections are engaged in independent duties. Those that handle the management of public spaces assume that their primary mission is in the arena of hard space development and maintenance. Similarly, the sections that respectively handle programs of business stimulation, the implementation of events, and citizen participatory forms of community development all tend to be solely engaged in their operations on an autonomous basis. Indeed, the lack of an actor that accepts urban management as its prime mission is the main reason why little or no progress has been made in promoting area management despite expectations otherwise. Solving that issue could set the stage for a turning point in the status quo.

4. Tangible renewals of urban space: The Barcelona model and the notion of the city as a stage

The Spanish architect Oriol Bohigas was appointed Director of Barcelona's Office of City Planning in 1979. Following Spain's transition to a democracy, Bohigas has devoted his energies to the pursuit of urban renewal policies in Barcelona. He categorically rejects the conventional master plan-based approach to urban planning and insists on the project-specific methodology that accumulates a spiraling record of success from one project to the next. Instead of refining the visions of a single, gigantic and comprehensive plan that may take

anywhere from 10 to 20 years to implement, Bohigas focuses on architectural projects that can be put into effect immediately. As the photos in Photo 9-2 demonstrate, Bohigas has based his approach on a view of the community in its entirety as a public space and has incorporated into urban planning around 100 renewal projects large and small with the goal of creating the largest public spaces possible.

Photo 9-2 Public spaces in Barcelona

The implementation of a project-type strategy of urban renewal stands out as a classic example of Bohigas' stance. One reason for the public's distrust of urban planning in Barcelona was that even though projects had been drawn up, little or no progress was ever made in putting them into motion and as a consequence, poor environmental conditions were left unaddressed. In particular, the lack of any progress whatsoever in over a century on planned but uncompleted roadways not only aggravated an already seriously deteriorating physical environment but also intensified citizen distrust of urban planning as a matter of policy. Urban planning and design are actions intended to improve the living environment and reaffirm the joys of urban life. Accordingly, Bohigas laid emphasis on the tangible sense of renewal citizens would experience through the implementation of many projects marked by high visibility.

If the city as a whole is considered to be an accumulation of many localized issues, renewal of public spaces at the localized level is something that must be done in any case. Then, if the accomplishments of this effort can be demonstrated in visible form, it will be necessary next to link those localized renewal benefits together into a larger embodiment or representation of the progress made. In other words, the Bohigas strategy has been to start with improvements on a localized or "partial" scale and achieve ripple effects that would lead to improvement on a comprehensive or "total" scale. In light of the harsh economic conditions Barcelona faced at the time, this approach would be a two-pronged strategy: the prioritized development of urban spaces with emphasis on streets, open spaces, parks, and other assets that could be developed with limited budgets,

and project fragmentation with short-term scheduling, which had the effect of boosting the viability of urban plans. This two-pronged strategy of urban renewal in Barcelona would later be known by the term, "*microurbanisme*."

Urban designers had struggled to transform Barcelona into a contemporary metropolis that integrated new aspects of "urbanity" by eliminating from the contemporary design context certain "distortions" that trends in modernization had left behind. Examples of those "distortions" included the loss of waterfront spaces due to urban space renewal policies that assigned priority to the development of roadways; the endangerment of historically valuable districts by potential implementation of street development projects in urban plans that assigned priority to automobiles; featureless urban spaces created through single-purpose zoning practices; open spaces transformed into parking lots; housing complexes in impoverished suburban neighborhoods; and large-scale, abandoned factory sites left behind by twilight industries and shifts in industrial structure. Under a fresh drive in urban renewal backed by the notion of reversal, even the "distortions" have been recognized to be legacies or assets derived from past efforts in urbanization and urban planning, and strategic steps have been taken to integrate them into urban planning for current-day Barcelona. In other words, this comprised a process of abandoning the modernization-oriented development of urban spaces and rewriting the urban planning script. It was a reaffirmation of the lasting urban use-value afforded by spaces such as those described above.

5. Model study: Undertakings in Aqua Metropolis Osaka from the perspectives of urban vitality and appeal

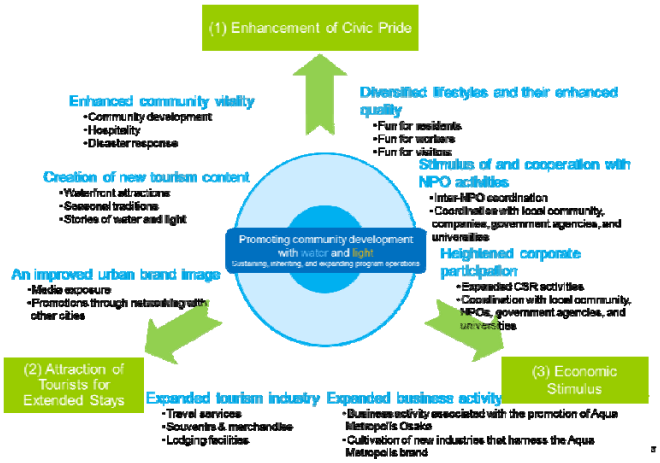
Osaka had long been forgotten as a city of waterfront districts. That image, however, was revived around 10 years ago with the finalization of an urban renewal project for the "renewal of Aqua Metropolis Osaka." This set the stage for a series of undertakings aimed at transforming the waterfront areas into spaces that citizens would once again admire and appreciate. In particular, as measures in safety, security, and environmental protection, work moved forward on the development of levees, embankments, and other river management systems, the preparation of flood hazard maps and manuals for evacuation-related decision-making, and improvements in water quality. Efforts proceeded in parallel on a variety of projects that were designed to develop pier and waterfront facilities as well as recover the former vitality of river and waterfront districts.

Work also moved forward on plans to convene an International Conference of Aquapolises in 1990.

Photo 9-3 Kitahama Terrace

In 2009 the Aqua Metropolis Osaka 2009 was held as an event symbolizing the renewal of Osaka's waterfront districts. This was not an event designed solely for the purpose of expending available budget appropriations; rather, it was planned and implemented as a program with the goal of reviving Osaka's waterfront heritage for future generations. This program featured not only a continuation of earlier undertakings in hard infrastructure development but was also highlighted by a soft program element that sought to increase the pool of people skilled in the utilization of waterfronts as appealing spaces. Another feature was the parallel implementation of deregulations and social experiments aimed at facilitating the utilization of river and park spaces. Shown in Photo 9-3 and one of the many undertakings that exemplify the accomplishments of this program, Kitahama Terrace is a facility based on riverfront architecture that projects out from a levee over a riverbed. Inspired by Aqua Metropolis Osaka 2009, this was an undertaking that brought citizens and private businesses together and showcased a broad array of actions including proposals for Osaka’s new seasonal traditions and ways of enjoying the waterfront areas, community-based-tourism-oriented goods and services, and efforts to stimulate community development in surrounding neighborhoods. Figure 9-3 displays the goals of Aqua Metropolis Osaka.

Figure 9-3 The goals of Aqua Metropolis Osaka



In 2011, the Aqua Metropolis Osaka program entered its next stage. As an assemblage of members from the Osaka prefectural and municipal governments and the local business community, the Aqua Metropolis Osaka Promotion Committee put the final touches on its Aqua Metropolis Osaka Plan for Community Development with Water and Light. This step set a higher standard for program goals in that it called for a shift from renewal themes to the creation of new symbols for Osaka. The goals range from the implementation of urban designs of higher quality and the cultivation of a civic pride in Osaka's waterfront heritage through the integration of waterfront resources and their enjoyment into everyday life to the adoption of Aqua Metropolis Osaka as an urban brand symbolizing Osaka. To those ends, the aim is to harness the amassed experiences of Aqua Metropolis Osaka 2009 and launch a series of new undertakings including steps to heighten public turnout through social experiments and deregulation, tender new proposals for the prudent use of waterfront resources, cultivate leaders and formulate community designs for waterfront-related community development ventures, encourage private investment that harnesses waterfront resources, and promote economic stimulus. Additionally, as a response to next-generation policies for new public services and new growth strategies, further study will be devoted to the creation of stronger promotional frameworks and suitable platforms for cooperation.

6. A proposal for the creation of a Civic Pride Plaza

Lastly, in consideration for the findings of studies conducted so far, we tender an in-depth proposal for the cultivation of civic pride in Aqua Metropolis Osaka together with the creation of urban vitality and appeal. This proposal takes into account several goals of the Aqua Metropolis Osaka program: namely, the enhancement of civic pride, the attraction of tourists for extended stays, and economic stimulus.

(1) Establishment of Civic Pride Plaza as an influence on communication, urban design, and promotional activities
(2) Pursuit of area management through the acquisition of funding, design of programs, and provision of space based on area promotions and organizational operations
(3) Tangible achievements in urban design (the development of urban space) that harness tools for social experimentation and heighten urban mobility in coordination with redevelopment projects

Figure 9-4 summarizes the specifics of this proposal. The individual components are not to be pursued independently but rather in close coordination with one another and contribute to comprehensive improvements in the vitality and appeal of Aqua Metropolis Osaka. For example, through coordination with area promotions, improvements in local brand image, and consequent acquisition of and sharing of financial resources, the Civic Pride Plaza and undertakings in area management conceivably would bring about mutually complementary benefits that improve community vitality district-by-district as well as the appeal of Aqua Metropolis Osaka at large. This in turn can be expected to contribute to enhanced levels of civic pride with respect to Aqua Metropolis Osaka.

Figure 9-4 Proposals for the enhancement of Aqua Metropolis Osaka's urban vitality and appeal

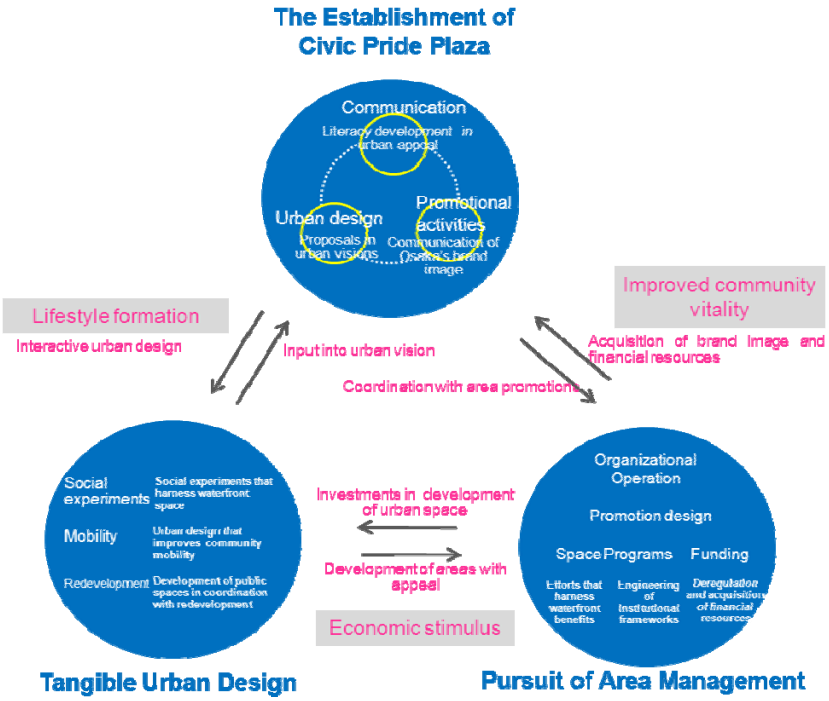
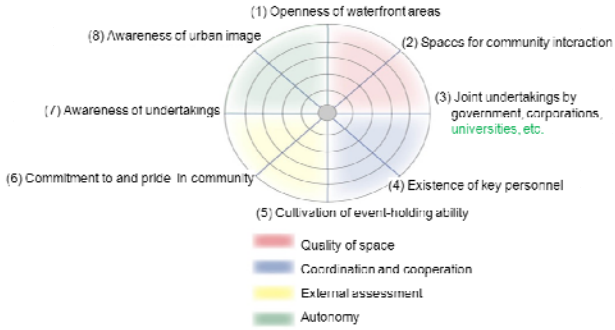


Figure 9-5 Benchmarks of Aqua Metropolis Osaka's urban vitality and appeal

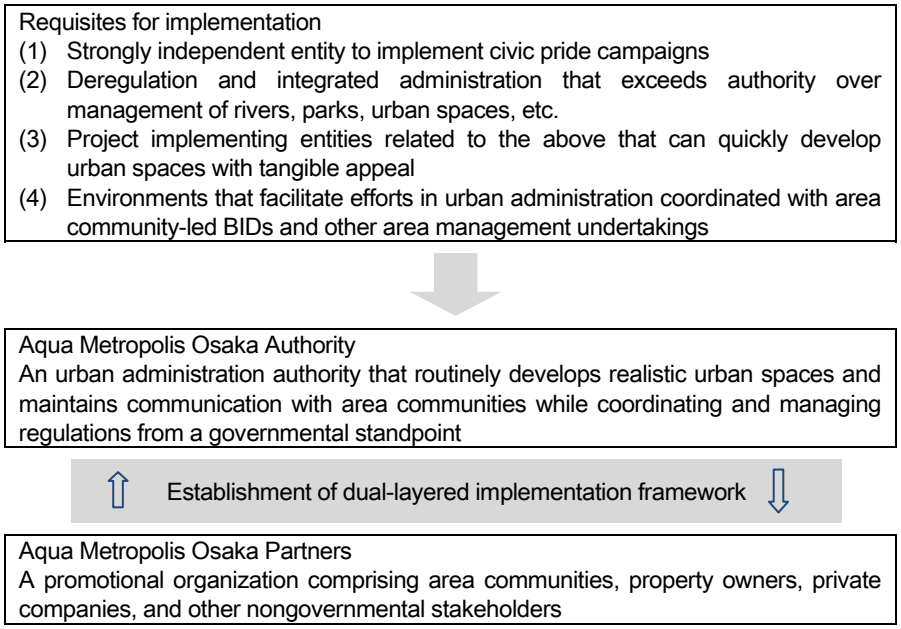


Additionally, using urban space as a stage, the coordination of Civic Pride Plaza activities with efforts in urban design would foster heightened interactive exchange between citizens and government and among citizens themselves, and create venues for a more-tangible understanding of urban visions. This process also could be expected to play an instrumental role in the formation of urban lifestyles. That in turn arguably would have an influence on not only local residents but visitors as well. This is a perspective that will contribute to the goal of attracting more tourists for extended stays. The combination of area management with urban design will have the effect of highlighting the appeal of urban design (development of urban spaces) and accordingly can be expected to foster ties with organizations that invest in and handle those spaces, and provide additional economic stimulus.

These proposals incorporate many aspects of urban vitality and appeal that cannot be fully measured with conventional frameworks for the assessment of cities or programs. To perform such assessments, the benchmarks listed in Figure 9-5, namely, the quality of space, levels of coordination and cooperation, levels of autonomy, and external assessments conceivably will be useful.

Finally, in putting these proposals into motion, it arguably will be necessary to rely on a dual-layered administrative framework, as illustrated in Figure 9-6, that comprises an organization for the coordination and management of regulations from the government's perspective (Aqua Metropolis Osaka Authority) and a promotional organization consisting of area communities, property owners, private companies, and other nongovernmental stakeholders (Aqua Metropolis Osaka Partners).

Figure 9-6 Proposal promotion framework



Special Topics

Chapter 10 **Japan's Post-Disaster Economic Reconstruction**

Chapter 11 **Nankai-Trough Mega-Earthquake: Projected Economic Damage**

Chapter 10 Japan's Post-Disaster Economic Reconstruction

1. Introduction

For the people of Japan, it was a case of déjà vu. The nightmare of Kobe 1995 was repeated on 11 March 2011 in Tohoku[31]. However, the severity of the damage was more than threefold greater this time. Almost 15,000 people died and hundreds of thousands of families lost their homes that day. The seaboard area of the Tohoku region, which stretches to the north-east part of Japan's mainland, was washed away by the sea. As if to add insult to injury, a series of nuclear power station accidents in Fukushima followed in the immediate aftermath. The Tohoku earthquake became an unprecedented triple disaster for Japan.

In Kobe, the damaged infrastructure was rebuilt within 5 years of the disaster. However, its economy slid into a prolonged decline, except for the short period during which reconstruction spending provided a temporary boost. The legacy of this disaster is still lingering in permanently lost opportunities and weakened local public finance. No one can guess how long it will take for Tohoku to recuperate, nor is there any public consensus regarding when the post-disaster reconstruction phase will be considered over.

In this essay, we compare the economic reconstruction efforts of Kobe and Tohoku. Our method will be historical and descriptive. Each disaster has its own distinctive characteristics. Disasters of the magnitude of the Kobe and Tohoku earthquakes are a rare occurrence and, therefore, defy any statistical analysis. All we can hope for is to extract as much information as possible from one historic event to shed light on the other, for which the recovery process has barely started. In doing so, we also hope that our lessons can be shared with other disaster-prone Asian countries.

2. Asia as a Disaster-prone Region

2.1. Asia's share of natural disasters

Asia is a region that is prone to natural disasters. According to the international disaster database of the Center for Research on the Epidemiology of Disasters,

[31] The official name of the Kobe earthquake of 1995 is the 'Great Hanshin-Awaji Earthquake.' Similarly, the Tohoku earthquake is a combination of '2011 earthquake off the Pacific coast of Tohoku' and the tsunami that followed; that is, 'the Great East Japan Earthquake.'

the total number of natural disasters worldwide from 1900 to 2010 was 12,169, of which 34 percent were concentrated in Asian countries (see Table 10-1).[32] In terms of the total deaths caused by natural disasters worldwide during the same 111 years, 80 percent occurred in Asian countries.

Table 10-1 Natural Disasters in Asian Countries 1900-2011

	Number of Occurrences		Number of Deaths	
Asian Countries	4,156	34.2%	25,878,967	79.7%
World Total	12,169	100.0%	32,480,939	100.0%

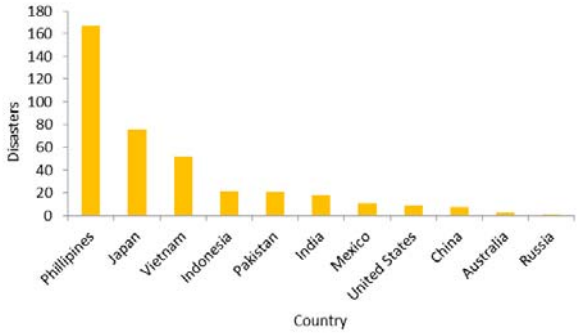
Data: EM-DAT

Moreover, the top 10 countries by number of events in 2010 reported in the *Annual Disaster Statistical Review* 2010 (Guha-Sapir et al., 2011) are: China, India, the Philippines, the USA, Indonesia, Mexico, Russia, Australia, Vietnam and Pakistan.[33] We calculate the total number of natural disasters per 100,000 km^2 of land territory for the 10 countries and Japan, with the results displayed in Figure 10-1. The Philippines tops the list, followed by Japan and Vietnam. In fact, Japan has the highest incidence of disasters per land area among OECD countries.

[32] According to the Center for Research on the Epidemiology of Disasters database, EM-DAT, an incident is recorded as a disaster if any of the following conditions are satisfied: 10 or more people are reported killed, 100 or more people are reported as affected, there is a declaration of a state of emergency, or there is a call for international assistance.

[33] See Guha-Sapir D., V. R. Below and S. Ponserre, 2011, *Annual Disaster statistical review* 2010. Center for Research on the Epidemiology of Disasters, Université Catholique de Louvain, Belgium.

Figure 10-1 Natural disaster occurrences per land area, 1900-2010



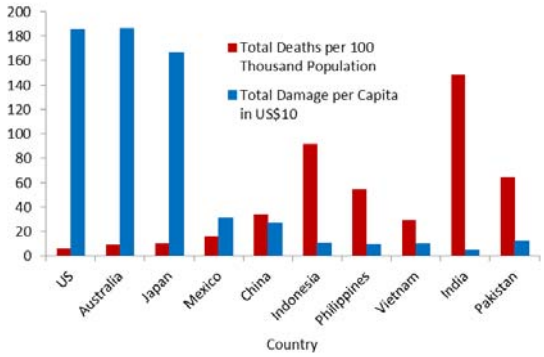
2.2. Death tolls and economic damage

Through empirical analyses using cross-country data, Kahn (2005) establishes the existence of a negative correlation between per capita GDP and the death toll resulting from disasters[34]. The statistical analysis in Kellenberg and Mobarak (2008) reveals that rising income level increases damage risk in the early stage of economic development, but it decreases damage in the later stage[35]. Padli and Habibullah (2009) find, through their panel analysis of Asian countries, that higher per capita GDP tends to produce fewer human casualties when disasters strike[36]. These studies point to the fact that the best mitigation against natural disasters is economic development.

However, there is what may be referred to as the 'paradox of development'. Figure 10-2 illustrates the point. The data used for this graph are the number of deaths and economic value of damage; other variables such as land area and other characteristics of the countries involved are not controlled for. Countries are listed along the horizontal axis in order of per capita GDP. It can clearly be seen that deaths from disasters are concentrated in the lower income countries, but economic damage is greater in the higher income countries.

[34] Kahn, M. E., 2005, "The death toll from natural disasters: The role of income, geography, and institutions, "*The Review of Economics and Statistics*, May, 87, 271–84.
[35] Kellenberg, D. K. and A. M. Mobarak, 2008, "Does rising income increase or decrease damage risk from natural disasters? "*Journal of Urban Economics*, 63, 788–802.
[36] Padli, J. and M. S. Habibullah, 2009, "Natural disaster death and socio-economic factors in selected countries: A panel analysis." *Asian Social Science*, 5, 65–71.

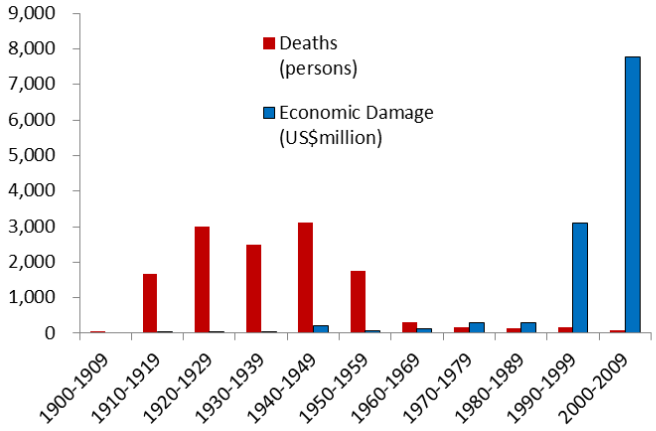
Figure 10-2 Deaths and economic damage in selected countries, 1960-2010



A similar tendency can be observed using time-series data for Japan. As Figure 10-3 illustrates, Japan's disaster casualties have been declining and economic damage has been increasing over the past 100 years. To observe the secular trend, in the graph we exclude the data for 1923 (Kanto) and 1995 (Kobe).

The paradox is that when disasters occur, economic development is associated with fewer human casualties but greater economic damage.

Figure 10-3 Disaster fatalities and economic damage in Japan

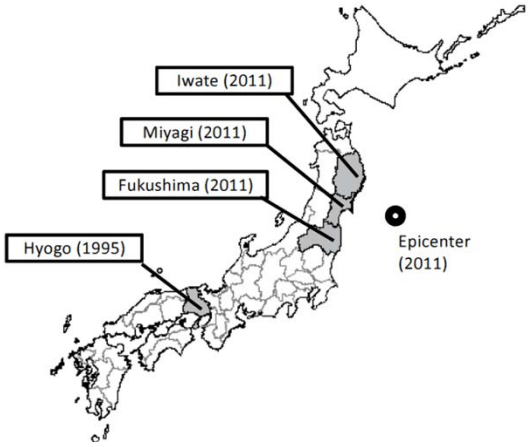


3. Triple Disaster of Tohoku

3.1. Impacts of the earthquake and tsunami

On 11 March 2011, the Tohoku region, which stretches to the north-eastern part of Japan's main island, was hit by a mega-earthquake at 14.56 hours. The seismic intensity registered magnitude 9 on the Richter scale, and an area spanning 500 km in the north–south direction felt shocks ranging in intensity from six to seven on the Japanese scale. The seismic activity was not single-peaked but was followed by a rapid succession of large aftershocks. Tohoku shook for three long minutes.[37] Hundreds of weaker aftershocks were recorded by the Meteorological Agency.[38]

Figure 10-4 Three most heavily affected prefectures in Tohoku



As shown on the map (Figure 10-4), the epicenter was located 130 km offshore of Sanriku. It was later discovered that the earthquakes were caused by upheavals along a section of the tectonic plate edges, which lie 24 km beneath the ocean surface. This created a massive tsunami that devastated the seaboard areas in Iwate, Miyagi and Fukushima Prefectures.[39] Along coastlines, the height of the tsunami was 7-8 m. But it rose to 30 m where it hit buildings lining narrow streets in the near-by towns. When the water receded, what were once people's homes and businesses were reduced to rubble; tens of thousands of tons of debris were

[37] In the case of Kobe, the main tremor lasted for 15 seconds.
[38] Sizable aftershocks were felt on 7, 11 and 12 April, 22 May, 25 and 31 July, 12 and 19 August and 10 September 2011.
[39] A prefecture is a subnational jurisdiction. Japan is divided into 47 prefectures.

left on the flattened ground. The Meteorological Agency's tsunami warning system failed to forecast the power of the water correctly.[40] Seismologists later found that the first earthquake of magnitude 9 created a tsunami and the waves were lifted again as they rushed shoreward when another jolt of magnitude 7 occurred.

The human damage from the 11 March earthquake and tsunami is reported to be 15,866 dead and 2,946 missing as of 4 July 2012. Physical damage consists of destroyed buildings, roads, bridges, embankments and levees. More than 130,000 residential buildings were demolished or washed away, and 260,000 houses and 59,000 non-residential buildings were partially destroyed.[41] Later, it was discovered that the seaboard area had sunk by 1 to 3 m and the Tohoku coastline extended out a further 5 meters into what had previously been the Pacific Ocean.

3.2. Fukushima nuclear accident

However, what was truly unprecedented was the Fukushima nuclear accident that immediately followed the double disaster. Tokyo Electric Power Company (TEPCO) operated two nuclear power stations in Fukushima Prefecture: Fukushima Dai-ichi (F1) and Fukushima Dai-ni (F2).[42] There are six nuclear reactors in F1. Among them, Reactor 4 had been de-fuelled, and 5 and 6 were in cold shutdown for planned maintenance at the time of the earthquake and tsunami.

The remaining three operating reactors were automatically shut down after the tsunami. However, multiple failures followed in the hours and days following 11 March. Equipment failed, the external power supply was completely lost, and hydrogen explosions destroyed buildings housing Reactors 1, 3 and 4. All this led to fuel meltdowns in Reactors 1, 2 and 3, and the release of radioactive materials into the air and sea. Fukushima came to be known as the worst nuclear accident since Chernobyl. Nine months later, the national government and TEPCO would agree to decommission Reactors 1 through 4 within 40 years.

The peculiar nature of the nuclear accident as distinct from the natural disasters is that it carried with it enormous economic damage without significant immediate human casualties. Apart from the nuclear plants themselves, the

[40] Japan has one of the most advanced electronic early warning systems in place. However, the early earthquake warning gives only several seconds to prepare for the coming seismic wave. In the case of the Tohoku tsunami, several cases of mechanical malfunction were reported with respect to the installed public address system. A tragic story has been told many times of a young female clerk who kept delivering tsunami warnings to the community using a microphone with utmost composure to the end, only to be engulfed by the tsunami herself. She has been missing ever since.

[41] This was the case as of 4 July 2012, according the Police Agency.

[42] The Fukushima Dai-ni was not damaged by the earthquake and tsunami.

accident did not bring about physical destruction to buildings in the vicinity, such as houses, factories and agricultural facilities. Economic damage is largely due to mandatory and voluntary evacuations in the adjacent communities contaminated by radioactivity. More than 110,000 people were evacuated. People had to abandon houses, farms, cattle, rice fields, vegetable patches, factories and commercial facilities. To this day, destroyed houses and ships, and tons of debris caused by the earthquake and tsunami are left untouched because of high radioactive fallout in the seaboard area close to the nuclear facilities.

Government officials, the TEPCO representatives and the media referred to the triple disaster as 'unpredictable' and 'beyond imagination'.

3.3. Emergency response

The national government declared the earthquake and tsunami to be an 'extraordinarily serious disaster'. By doing so, it was able to deploy extraordinary assistance programs with separate budgetary accommodations.[43] In the case of the nuclear accident, the national government declared a 'state of nuclear emergency' based on the Special Law for Nuclear Emergency Responses. Invoking this law, it issued several rounds of orders to the affected cities and townships as well as Fukushima Prefecture to evacuate residents in the area under threat of nuclear contamination.

The following numbers of emergency workers and vessels were deployed to the areas devastated by the earthquake and tsunami: 300,000 police officers, 100,000 firefighters, 4,000 Japan Coast Guard boats in the first 81 days, and 100,000 personnel from the Japan Self-Defense Force on March 16 alone and scores of medical teams. Assistance also came from abroad. Approximately 20 naval vessels, including an aircraft carrier, 140 aircraft and 16,000 military personnel from the US military stationed in Japan, engaged in 'Operation Tomodachi'. Search and rescue teams came from 28 countries and regions; emergency provisions poured into Tohoku from 62 countries and regions; and monetary donations were sent in by well-wishers from 93 countries and regions. Volunteers travelled to the mud-covered homes to offer clean-up assistance, and visited the makeshift shelters to deliver emergency supplies for victims.[44]

[43] The Prime Minister did not declare a 'state of emergency' for the earthquake and tsunami because there are no corresponding legal actions stipulated for the national government in the Basic Law for Disaster Mitigation.

[44] The total number of volunteers was 1,350,000 for Kobe and 820,000 for Tohoku. Lack of experience to accept and work with volunteers on the part of local officials is cited as the main cause for the lower turnout in Tohoku.

3.4. Reconstruction efforts

Nine months after the triple disaster, the country embarked on a full-fledged reconstruction process for Tohoku. Pursuant to the Prime Minister's request, an advisory council had been set up in the Cabinet Office. The East Japan Great Earthquake Reconstruction Planning Council met on 14 April, almost one month after the disaster. For the following two months, the council engaged in extensive research, field trips and heated discussions. The recommendations of the Council's deliberations were reported to the Prime Minister on 25 June.[45]

The document highlighted the concept of disaster mitigation and recommended building a long-term reconstruction plan. The report urged the national government to adopt recovery measures that would assist in restoring the jobs and livelihoods of those affected immediately. It suggested that the government should draft a well-conceived plan to assist recovery from the nuclear accident. It also pointed out the importance of making the reconstruction process open to new ideas, new people and new industry. On the 24 June, the 'Basic Law for Reconstruction from the East Japan Great Earthquake' was promulgated, which mandated the national government to create a new agency, the 'Reconstruction Agency'.

The national government proposed and obtained Diet approval for the first supplementary budget of ¥4tn on 1 February, the second supplementary budget of ¥2tn on 25 July and the third supplementary budget for ¥12tn on 21 November. The reconstruction process is gaining momentum 18 months after the disaster.

However, the recovery and reconstruction process is projected to be long, arduous and complicated.[46] We will recapitulate the experience of the Kobe earthquake in a search for clues.

4. Post-disaster Reconstruction

4.1. Kobe and Tohoku

On 17 January 1995, the city of Kobe and its neighboring municipalities were caught off guard by a massive earthquake of magnitude 7.3 on the Richter scale. The earthquake was caused by movement of inland-faults and the epicenter was directly beneath the modern metropolis inhabited by one and a half million people. Human casualties totaled more than 6,000, and approximately 120,000

[45] Reconstruction Design Council in Response to the Great East Japan Earthquake, 2011, *Report to the Prime Minister: Towards Reconstruction: 'Hope beyond the Disaster.'* Reconstruction Design Council, Tokyo.

[46] 'Recovery' means restoring the original form or function of damaged facilities. It is a well-defined legal term. However, there is no legal definition for 'reconstruction'. We are using the term with the meaning of 'building back to a better standard'.

houses were destroyed. Table 10-2 compares disaster damage between Kobe and Tohoku.

Table 10-2 Kobe and Tohoku

	Kobe	*Tohoku*
Date	05.46 hours, 17 January 1995	14.46 hours, 11 March 2011
Magnitude	7.3	9.0
Affected Area	Urban area	Rural area
Tsunami	None	Height 8.0–9.3m, severe damage
Nuclear Accident	None	Fukushima, severe indirect damage
Damage	Infrastructure, buildings	Infrastructure, buildings
Casualties	6437; 80% crushed	18812; 80% drowned
Buildings Totally Lost	104906	130443
Direct Economic Damage	¥9.9bn (2% of GDP)	¥30bn (6% of GDP)*

* Estimate by M. Hayashi (2012)[47]

The immediate impacts of the two disasters were different. In the case of Kobe, the affected areas were contained more or less within Hyogo Prefecture. In the case of Tohoku, 10 different prefectures recorded at least 1 death. Kobe's damage was concentrated in highly developed urban areas, whereas Tohoku's damage was over an extensive area and encompassed regions where agriculture and fishing were the main economic activities.[48] Approximately 80 percent of victims were crushed to death in Kobe, while 80 percent of the deaths resulting from the Tohoku earthquake and ensuing tsunami were by drowning.

There was no nuclear plant in the affected area in Kobe, but nuclear accidents of historic proportions occurred in Fukushima as result of the earthquake and tsunami. The direct economic damage for Kobe was estimated at ¥9.9tn by a group of researchers and local public officers commissioned by Hyogo Prefecture, equivalent to 2 percent of Japan's GDP. In the case of Tohoku, the national government estimated the damage at ¥16.9tn, or 3.5 percent of GDP. However, the final cost of the damage is yet to be determined.

To date, no scientific studies have focused on the economic damage caused by the nuclear accidents. The Investigation Committee on the State of Management and Finance of TEPCO estimated, however, that the government-assisted indemnity payment by TEPCO to households and companies that were obliged to evacuate in Fukushima may come to ¥4.5tn. The annual gross regional product of the affected cities and townships in Fukushima is roughly ¥1tn. If we assume that

[47] Hayashi, M., 2011, A quick method for assessing direct economic damage caused by natural disasters. Presented at the 72nd International Atlantic Economic Conference held in Washington, DC, 20-23 October. Also forthcoming in *International Advances in Economic Research.*

[48] There were production facilities in the affected area that were an integral part of the international supply chains. Auto makers were heavily impacted because their supply chains were broken. However, the effect was relatively short-lived.

this much output will be lost over the coming decade, the total indirect damage comes to ¥10tn. All in all, the level of damage in Tohoku is three to four times what it was in Kobe.

4.2. Regional economies

Table 10-3 summarizes some of the fundamentals of the regional economies of Hyogo and three prefectures in Tohoku (Tohoku 3). Hyogo's population is approximately the same as that of Tohoku 3, as is gross regional product (GRP) as a proportion of national GDP. Both regions account for approximately 4 percent of the national GDP. The average per capita income is a little higher in Hyogo than in Tohoku 3.

Table 10-3 Regional economies of Hyogo and Tohoku

	Population (thousand)	*GRP as % of GDP*	*Per capita income (yen, thousando)*	*Primary industry as % of GRP*
Hyogo	5,588	3.8	2,740	0.61
Tohoku	5,707	4.0	2,521	2.60
Iwate	1,330	0.9	2,267	4.56
Miyagi	2,348	1.6	2,473	2.00
Fukushima	2,029	1.5	2,743	2.29
Japan Total	128,057	100.0	2,916	1.56

Data: SNA

The primary industry ratio in GRP is 0.61 percent for Hyogo, and 2.60 percent for Tohoku 3. Compared with Hyogo, Tohoku 3 is more dependent on the agricultural, forestry and fishery industries. Among Tohoku 3, the primary industry ratio is the highest in Iwate, followed by Fukushima and Miyagi. In fact, Fukushima has the highest secondary or manufacturing industry ratio, and Miyagi has the highest tertiary or service industry ratio among Tohoku 3. Reconstruction plans must adapt to the characteristics and needs of the affected region.

4.3. Economic reconstruction from earthquakes

The Tohoku earthquake was the second largest disaster in Japan since the beginning of the 20th century. Table 10-4 summarizes the four largest natural disasters. By far the greatest natural disaster was the Great Kanto Earthquake of 1923. The tremor and the fire that broke out in the immediate aftermath killed

105,000 people and caused truly devastating economic damage. It is estimated at ¥5.5bn,[49] or 35.3 percent of GNP.

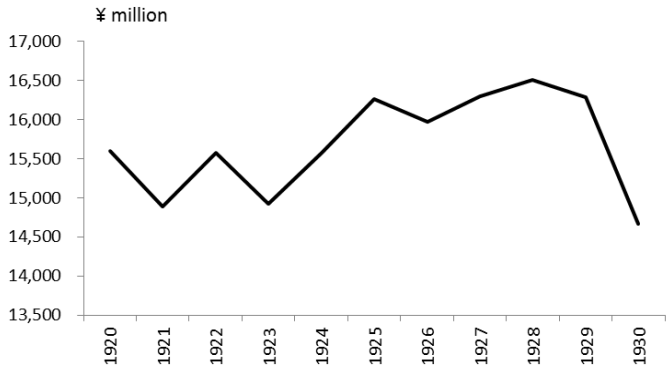
Table 10-4 Japan's four largest natural disasters

	Dead or missing	*Economic damage (% of GDP)*
Great Kanto Earthquake (1923)	105,000	¥5.5bn (35.3%)
Isewan Typhoon (1959)	5,098	¥551.2bn (4.6%)
Kobe Earthquake (1995)	6,437	¥9.9bn (2.1%)
Tohoku Earthquake (2011)	18,812 (4 July 2012)	¥30bn* (6.0%)

* Estimate by M. Hayashi (2011)

The shock had a direct impact on GNP, but the recovery was fairly rapid. Figure 10-5 illustrates the changes in Japan's GNP before and after 1923. It dropped by 4 percent in the year of the earthquake but then made a rapid recovery. GNP rose to 10 percent above the 1923 level 5 years after the disaster. This was due to massive post-disaster public spending on reconstruction. Japan had recovered from the damage by 1929. However, the worldwide Great Depression soon followed. Japan's GNP plummeted in tandem with those of the USA, European countries and natural resource-exporting countries.

Figure 10-5 Recovery from the Great Kanto Earthquake

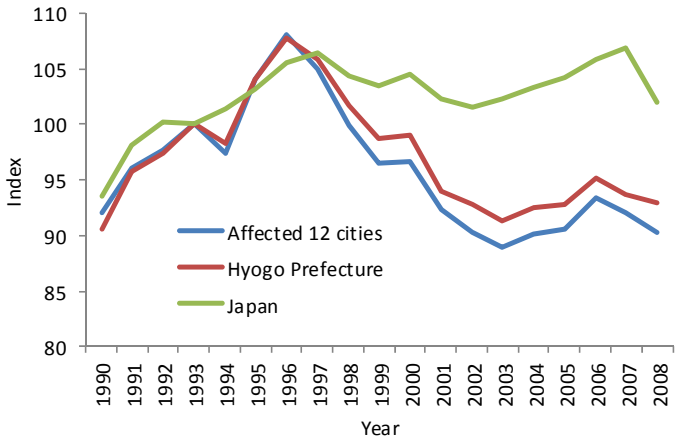


Data: Kazushi Ohkawa, 1974, *National Income,* Toyokeizai Shinposha

[49] Togashi, T., 2009, "Cliometric Studies on the Great Earthquake (in Japanese)," *Meiji University Junior College Bulletin*, **34**, 43-76.

Kobe followed a similar path. In Figure 10-6, the red line for 'Hyogo Prefecture' indicates the GRP of Hyogo Prefecture. The prefecture has 40 sub-prefectural jurisdictions, of which the largest is Kobe City. The line 'affected 12 cities' represents the sum of GRPs over the 12 cities which were affected by the earthquake. All data are normalized so that values for the 1993 fiscal year are set to 100.

Figure 10-6 Kobe earthquake and its aftermath



Data: Statistical Division, Hyogo Prefecture and SNA

Comparing with the country's GDP, it is evident that the GRP of affected localities and the prefecture rose in the immediate aftermath of the disaster. Again, this comes from the fiscal and private spending in the post-disaster reconstruction. It is also clear that a strong economy was maintained for approximately five years, after which the GRP of affected areas underwent a steady decline for many successive years.[50]

The same pattern is observable in unemployment statistics. In the middle of the reconstruction investment boom in 1997, Hyogo's unemployment rate was 3.8 percent when the national average was 3.4 percent. Hyogo's rate rose to 5.7 percent in 2003, which was much higher than the national rate of 5 percent.

[50] This observation conforms to the empirical finding of Skidmore and Toya (2002), which they obtained from their cross-country studies regarding the relationship between geologic disaster and long-run growth in per capita GDP.

4.4. Social demography

In the case of the Kobe earthquake, the population of 12 cities fell by approximately 150,000 after the disaster, equating to roughly 10 percent of Kobe's population. A vicious cycle sets in after a disaster, especially in an urban area where mutually dependent economic activities are concentrated. People who lost their homes and jobs moved out of the devastated area to find better places to live and work. Large companies were quick to relocate their employees to unaffected plants and offices elsewhere. As a natural response to the disaster, the affected localities experienced declines in population far exceeding the number of victims.

Social demographic change, then, leads to a stagnant local economy. A smaller population implies a decreased demand for transportation services, commercial activities and offices, which make up the city's business landscape. This leads to another wave of emigration, and so the cycle repeats itself.

However, the 12 cities regained their populations within five years. The current population of those cities is approximately 5 percent above the pre-disaster level, despite the fact that the population of the country as a whole started to fall after 2005. Careful examination reveals, however, that the people who moved in are not the same as those who moved out. They are largely new families. With the persistence of a relatively stagnant economy in Kobe, the reason for this phenomenon must be sought in the perceived image or attractiveness of life in Kobe.

The situation is more adverse for Tohoku. In Iwate and Fukushima, a decline in population levels due to social factors had been ongoing since 1960, and the population change which had been positive turned to negative around 2000 for Miyagi. In addition, the Tohoku population had been aging more quickly than the national average. The percentage of elderly people aged 65 years or more in the total population for Tohoku 3 had been steadily rising since the 1950s. In Miyagi, it was 20 percent, which was comparable to the national average of 20.2 percent. However, in 2005, it was 22.7 percent in Fukushima and 24.6 percent in Iwate. The region had been feeling the 'population onus' for decades preceding the disaster.

Hence, one of the greatest challenges for Tohoku is how the region can attract new people. The region would have to attract new production facilities and develop new industries or revive old industries. Social infrastructure, schools,

hospitals and nursing homes need to be rebuilt, and possibly new people from other countries have a role to play.[51]

5. Lessons for Tohoku

Can we make any prediction as to how reconstruction from the Tohoku disaster will proceed? What is to be expected in relation to reconstruction following the Tohoku disaster? Before making any assessment, we must recognize the similarities and differences between Kobe and Tohoku. The different nature of the disasters and the scope of damage have already been mentioned. Three further differences between Kobe and Tohoku can be identified; i.e., their political leadership, administrative central/local government nexus and academic community cooperation.

5.1. Political leadership

At the time of the Kobe earthquake, political leadership was provided by Prime Minister Tomi-ichi Murayama. He was 71 years old, and he had been chosen from the Japan Socialist Party to form a coalition government. He knew he was inexperienced in crisis management. He appointed a former top bureaucrat, Atsushi Shimokobe, to run the Great Hanshin–Awaji Earthquake Reconstruction Committee and to advise him.[52]

Murayama gave Shimokobe his full support. He notified Shimokobe that he would do everything in his power to assist in the recovery effort. Murayama acted exactly as Shimokobe told him to do. Shimokobe solicited requests from the affected local governments and made phone calls to vice ministers in person. The vice ministers were his friends or ex-subordinates in the national administration. Reconstruction proceeded relatively smoothly and with haste.

In 2011, political leadership had shifted to Prime Minister Naoto Kan of the Democratic Party of Japan. He and his cabinet members were not experienced in crisis management either. However, Kan insisted on demonstrating his leadership ability to his constituencies and the media. He was bound by his own political manifesto which brought him to power in peace-time. His party had proclaimed that they, as elected officials, would not be controlled by shrewd bureaucrats. He isolated himself from bureaucracy and tried to control the unprecedented triple disaster on his own. It did not occur to him that in times of national emergency, a

[51] Japan is a peculiar country in that it does not have an immigration law or a legal definition of immigrants.
[52] See T. Hayashi (2011a), 91.

prime minister should garner all possible professional help irrespective of ideology or affiliation. Kan failed to manage the political opposition adroitly. He took too long to create much needed solidarity in the administration, and he was eventually ousted.[53]

5.2. Central/local government nexus

Japan's Basic Law of Disaster Mitigation stipulates that the principle of subsidiarity should be observed. It is the responsibility of the affected local governments to provide emergency and reconstruction assistance to the victims. When local resources and capability are overwhelmed by a disaster, cities and townships request the higher jurisdiction (i.e. the prefecture) to provide administrative support. The affected prefecture would then request the national government's support if necessary. In the case of serious disasters, this process is completed within a matter of hours.

More or less the same principle applies to the reconstruction phase. It is here that the capability of local governments and the disposition of governors make a difference. In the case of Kobe, the responsibility rested almost entirely on the Hyogo prefectural government. The local government's buildings and facilities were damaged so government employees were immersed in the emergency. The governor urged the national government to take immediate action for recovery. He proposed 660 recovery projects and asked the national government for financial assistance. It was a bottom-up process.

However, in the case of Tohoku, three prefectures were heavily damaged so a consensus among governors and mayors was slow to develop. Some townships lost their mayors and office buildings entirely. As officials were working, their office buildings were washed away by the tsunami. Under such circumstances, it was not practical to insist on a bottom-up approach. Strong leadership was necessary from the central government, but it was not well prepared for such a difficult and complex disaster. For example, the national administration missed the opportunity to initiate a new, provisional tax for Tohoku reconstruction.[27]

[53] Criticism mounted regarding his mishandling of the Fukushima emergency. Failures of information sharing between his government and the TEPCO management created mistrust on the part of the Prime Minister. Confusion and failure in emergency communications among high-ranking government officials was later referred to as 'elite panic' in a report published by a private research foundation on 11 March 2012 (Rebuild Japan Initiative Foundation, 2012, *Report of Independent Investigation Team on the Fukushima Nuclear Accident* (in Japanese), 11 March, Discover Twenty-one, Tokyo.TEPCO's *Interim Report* (TEPCO, 2011, *Interim Report of the Fukushima Nuclear Accident Investigation* (in Japanese), December 2, TEPCO, Tokyo) emphasized how unpredictable the magnitude of the earthquake and tsunami were. The government's Investigation Committee on the Accident at the Fukushima Power Station Electric Power Company published an *Interim Report* on 26 December 2011, in which the committee played down the mistakes made by the government. The Diet Investigation has also published a final report on the Fukushima Nuclear Accident. However, the jury is still out.

Slowly, however, the national government lived up to expectations. By the first anniversary of the disaster, a new 'Reconstruction Agency' had been established in the administration to facilitate Tohoku's reconstruction.[54]

5.3. Intellectual community

There was a close relationship between the academic community and local administrations in Kobe. Disaster recovery provided a strong incentive for academia to engage in research and community projects. What was really needed was a warm-hearted but cool-headed approach to the misfortunes inflicted on fellow citizens and the accumulation of experience through learning by doing. University professors, consultants and non-profit organization representatives all sat at council tables on various occasions to carry out reconstruction planning.

As a result, a new institute for research on disaster recovery was established at Kwansei Gakuin University in 2005 (Institute for Research on Disaster Recovery and Revitalization), an independent non-profit institute for disaster investigation and research was inaugurated in 2006 (Hyogo Earthquake Memorial 21st Century Research Institute), and a new department was created in the Faculty of Safety Science at Kansai University in 2010. Through research and education, the lessons learned from the tragedy will be passed on to future generations.

The intellectual community in Tohoku will be able to contribute to the preparedness for great earthquakes and tsunamis that seismologists predict that will hit Japan's southern seaboard in the next 30 years. They will also be able to share their studies with other countries, such as China, India, Vietnam, the Philippines and Thailand.

6. Concluding Remarks

So, what is post-disaster economic reconstruction after all? When can we declare that the reconstruction is complete? It is certainly not when the affected communities restore the conditions that existed prior to the disaster, which is impossible anyway. Physical infrastructure can be rebuilt, but victims of disasters are lost forever and some of those left behind are never able to recover. It is not when the GRP of local economies return to pre-disaster levels, the level itself being battered by the feeble growth of the national economy and other factors. It

[54] A poll taken in the immediate aftermath showed that 60 percent of respondents were in favor of raising consumption tax for reconstruction.

is not when local governments are able to restore the fiscal balance. Even for Kobe, this is yet to happen.

In this regard, the research by Skidmore and Toya (2002) provides us with a clue[55]. Through cross-country empirical analyses, they study the effects of disasters on long-run growth. They find that the effects are different depending on the type of natural disaster. In the case of climatic disasters, the frequency of disasters is positively correlated with the 30-year average growth rate of per capita GDP in the country concerned. They hypothesize that physical destruction caused by disasters induces a forced capital formation, which embodies better technology and, therefore, higher total factor productivity.

However, they find a negative correlation between disasters and economic growth in the case of geologic disasters: earthquake damage is negatively correlated with long-run growth rates. If their findings apply in the case of Tohoku, it will suffer from slower growth for decades to come.

However, disasters create an opportunity to build back better communities and economies. What seems to be needed is a concerted effort, including the political will, to redevelop this sub-national region that has suddenly been thrown into crisis. Private investment in production and employment, public investment in infrastructure and peoples' aspiration for a better livelihood will be the keys that lead the Tohoku region onto a new growth path.[56]

[55] Skidmore, M. and H. Toya, 2002, "Do natural disasters promote long-run growth?" *Economic Inquiry*, 40, 664–87.

[56] In this regard, the country's energy policy should be different following the Fukushima accident, which revealed the technological, administrative and political vulnerabilities surrounding nuclear power generation and the long-term question of providing an optimal energy mix for the country. Another contribution that Japan can make for other countries is to propose a new nuclear safety standards based on the lessons learned daily from Fukushima.

Chapter 11 Nankai-Trough Mega-Earthquake: Projected Economic Damage

1. The Central Disaster Prevention Council's alert

1.1. Estimated damage caused by a Nankai-Trough mega-earthquake

Prior to the Great Eastern Japan Earthquake (Tohoku Earthquake), the Central Disaster Prevention Council (CDPC) had set up a subcommittee of experts and pursued continuing research on estimated damage from, and disaster prevention measures for, a mega-earthquake considered highly likely to occur at some point in the future. Table 11-1 lists districts in Japan that could be hit by an earthquake disaster along with estimates of the potential damage.

Judging from the data listed for scale and estimated damage, a Nankai-Trough mega-earthquake would be the most traumatic.[57] With an estimated maximum magnitude of 8.7, it would leave 25,000 human casualties, damage or destroy approx. 940,000 structures, and inflict economic damage of around 60 trillion yen. The magnitude of this damage to structures and the economy would be on a par with that to be expected from an earthquake with an epicenter located directly beneath the Tokyo metropolitan area and as such, damage on a large scale is predicted.

1.2. Reassessing damage

1.2.1. An unpredictable disaster

The scale of the Tohoku Earthquake that struck on March 11, 2011 far exceeded the scenario predicted by the CDPC and proved to be a natural calamity of such unprecedented proportions that it drastically altered the assumptions hitherto held about large-scale disasters.

As Figure 11-1 shows, the CDPC deemed the probability of a magnitude-8 scale subduction-zone or "trench-type" earthquake occurring in coastal waters of the Tohoku district to be high. However, estimates of the damage from such an event ranged around 2,700 lives lost, 21,000 buildings damaged or destroyed, and economic damage measuring approx. 1 trillion yen. Clearly these estimates were

[57] The Nankai Trough is a submarine trough where the Philippine plate meets the Eurasian plate. It stretches 1,000 km and 4,000 m deep in the Pacific off the southern coasts of Japan's main island of Honshu. Japan's Central Disaster Prevention Council predicts that an earthquake of magnitude 8.7 will be generated in the active fault there.

extraordinarily small compared to the scale of damage the Tohoku Earthquake actually caused.[58]

The Council had computed estimates of damage for the scenario of a large-scale trench-type earthquake. However, there were no records of large, interrelated earthquakes having occurred in or near Japan in several hundred years and in that context, clearly the scale of the Tohoku Earthquake warranted description as unpredictably huge.[59] The scope of the disaster and scale of damage to the Tohoku region caused by this unpredictably large-scale earthquake and the *tsunami* that followed far exceeded estimates the Council had published.

That realization has prompted steps to review and drastically revise earlier estimates of damage from large-scale quakes in Japan, a country prone to such disasters.[60]

1.2.2. Reassessment under way

Drawing from the lessons of the Tohoku Earthquake, efforts are currently under way to reassess estimates of the damage that would be caused by two of the mega-earthquakes listed in Table 11-1: a Nankai-Trough mega-earthquake, which refers to the simultaneous occurrence of earthquakes affecting the Tokai, Tonankai, or Nankai districts together with an earthquake directly beneath the Tokyo metropolitan area. The estimated magnitude of this Nankai-Trough mega-earthquake has been lifted to 9.1 and damage estimates are being revised in line with that parameter.[61] As of June 28, 2012 the CDPC had not yet released revised estimates of damage from a Nankai-Trough mega-earthquake. However, it is anticipated that the new estimates will be significantly higher than in the past.

[58] According to Japan's National Police Agency, as of July 11, 2012, the Tohoku Earthquake had left 15,867 fatalities and 2,909 persons missing, 130,430 structures completely destroyed, and 263,883 structures partially destroyed. According to the Cabinet Office, the disaster caused approx. 16.9 trillion yen in economic damage.

[59] "The scale of the *tsunami* triggered by this quake far exceeded all past scenarios. The main reason is that this was an unpredictably massive, magnitude 9.0 earthquake with no precedent in several hundred years of Japanese earthquake history that struck over a broad focal area interlinking multiple regions." Central Disaster Prevention Council, "Interim Report of the Expert Investigative Committee on Earthquake and *Tsunami* Countermeasures Based on Lessons from the Tohoku Earthquake: Basic Viewpoints on Future *Tsunami* Countermeasures." June 26, 2011. p. 2 (in Japanese).

[60] "Future predictive research on earthquakes and *tsunami* should focus on the largest, most powerful classes of those phenomena and take all possibilities into full account. "Central Disaster Prevention Council, *Op. cit.*, p. 7 (in Japanese).

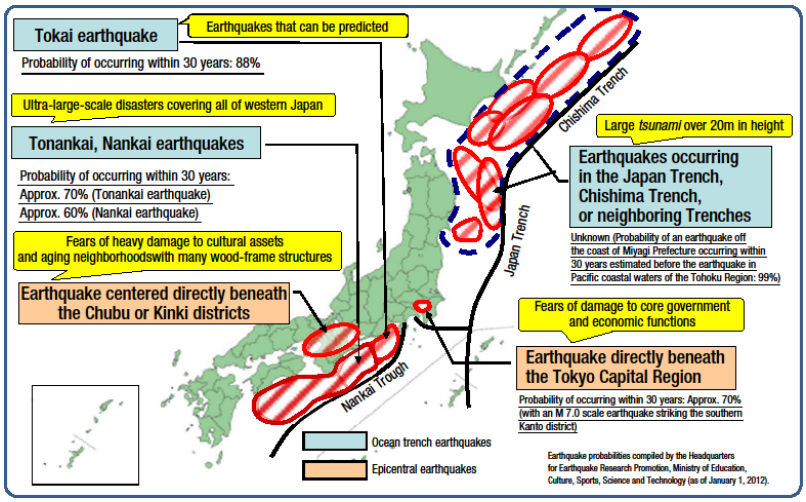
[61] Past studies did not extend their scope to earthquakes occurring directly beneath the Tokyo Capital Region because the probability and imminent nature of an earthquake commensurate in scale with the Great Kanto Earthquake were considered to be low. Revisions to this policy are expected.

Table 11-1 Projected damage caused and districts affected by a large-scale earthquake disaster

Earthquake	Type	Fatalities	Structures Damaged or Destroyed	Economic Damage	Affected Districts
Tokai Earthquake (M 8.0)	Trench	9,200	260,000	Direct: 26 trillion yen Indirect: 11 trillion yen	Chubu
Tonankai, Nankai Earthquake (M 8.6)	Trench	18,000	360,000	Direct: 43 trillion yen Indirect: 14 trillion yen	Kanto, Chubu, Kinki, Chugoku, Shikoku, Kyushu
Nankai-Trough mega-earthquake (Triple interlinkage of Tokai, Tonankai, and Nankai quakes) (M 8.7)	Trench	25,000	940,000	Direct: 60 trillion yen Indirect: 21 trillion yen	Kanto, Chubu, Kinki, Chugoku, Shikoku, Kyushu
"Trench-type" earthquakes near the Japan Trough or Chishima Trough (M 7.6-8.6)	Trench	2,700	21,000	Direct: 1 trillion yen Indirect: 300 billion yen	Hokkaido, Tohoku
Earthquake directly beneath Tokyo Capital Region (M 6.9-7.5)	Direct	11,000	850,000	Direct: 66.6 trillion yen Indirect: 45.2 trillion yen	Kanto, Chubu
Earthquake directly beneath Chubu and Kinki regions (M 6.9-8.0)	Direct	42,000	970,000	Direct: 61 trillion yen Indirect: 13 trillion yen	Chubu, Kinki

Note: Highest values are listed for damage estimates.
Source: CDPC, "Earthquake and Tsunami Countermeasures."
http://www.bousai.go.jp/5jishin/index.html (accessed June 25, 2012).

Figure 11-1 Projected damage caused and districts affected by a large-scale earthquake disaster



Source: Cabinet Office. "Current Status of Tokai, Tonankai, and Nankai Earthquake Countermeasures" http://www.bousai.go.jp/jishin/chubou/nankaitrough/pdf/nankaitrough_genjou.pdf, p.1 (accessed June 25, 2012).

2. Estimating direct economic damage caused by large-scale disasters

2.1. Why direct economic damage?

The extent of economic damage caused by a large-scale disaster is known to serve as a yardstick for the public expenditures that are incorporated into post-disaster reconstruction measures. A 10-year follow-up review of the Great Hanshin-Awaji Earthquake (Kobe Earthquake) disaster determined that the total in public expenditures disbursed for this purpose by the Japanese government and Hyogo Prefecture was closely in line with the estimated economic damage.[62] Accurately assessing the economic damage from large-scale disasters is an important task.

The entries for economic damage listed in Table 11-1 were the results of calculations of the number of buildings considered likely to be destroyed and the amounts of funding that would be needed to restore or recover inventory assets, water and sewerage infrastructure, electric power, gas, and other lifelines as well as roads, port and harbor facilities, and other public infrastructure. They were based on unit costs for re-acquisition and the recovery costs associated with the Kobe Earthquake. However, the larger the extent of damage to assets, the greater the risk of underestimating damage from a large-scale disaster with methods of estimation that calculate economic damage on the basis of the average unit acquisition cost of capital assets. This Chapter will utilize an approach to the estimation of economic damage that differs from the method enlisted by the CDPC and will compare the results.

2.2. Method of estimation

The estimate of direct economic damage from the 2010 Haiti Earthquake that was performed by Cavallo, Powell, and Becerra (2010)[63] may be cited as one study that has used preliminary calculations to measure direct economic damage from a large-scale disaster. For their Haiti Earthquake estimates of direct damage, Cavallo, Powell, and Becerra utilized data from the EM-DAT International Disaster Database run by the Centre for Research on the Epidemiology of Disasters (CRED).

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[62] Hayashi, T. Themes for Review: "Reconstruction Funding -- Securing Financial Resources for Reconstruction." Finance Subcommittee, Institute for Research on Disaster Area Reconstruction Policy, Kwansei Gakuin University and DRI Reconstruction Economics Research Institute, "Great Hanshin Awaji Earthquake Disaster Reconstruction Finance." August 16, 2005.

[63] Cavallo, E., Powell, A. and O. Becerra, “Estimating the direct economic damage of the earthquake in Haiti,” The Economic Journal, August 2010, Vol.120, No.546, pp.F298-F312

First, calculating direct economic damage with panel data from multiple countries is a fundamental idea underlying these estimations. In this context, the scale of a natural disaster and the vulnerability of the affected district are assumed to be determinants of the damage caused by that disaster. The extent of damage is explained in terms of the losses in human life. That is because the larger the scale of a disaster, the higher the risks to human life. Additionally, the vulnerability of the affected district is explained in terms of its income level and the size of its population. Second, with the results of these estimations as a foundation, the aforementioned study assessed the direct economic damage from the Haiti Earthquake by assigning values for the death toll from that disaster and the economic and social conditions in effect in Haiti when the disaster struck. Drawing on this approach, the damage from a Nankai-Trough mega-earthquake was estimated using domestic Japanese data.[8]

3. Direct economic damage from a Nankai-Trough mega-earthquake

3.1. Statistical procedure

Every year, the Fire and Disaster Management Agency (FDMA) releases its White Paper, a report documenting damage from natural disasters prefecture-by-prefecture and accordingly allowing a better understanding of total losses (direct damage) from natural disasters in general, losses in human life, and damage to buildings and infrastructure. In this Chapter, an estimate of the economic damage from a Nankai-Trough mega-earthquake was performed using the methods of Cavallo, Powell, and Becerra together with data from the aforementioned White Paper. First, a total monetary value for the damage was estimated on the basis of prefectural data in the White Paper. Next, the results of this procedure were applied together with projected human losses from a Nankai-Trough mega-earthquake to calculate the value of direct economic damage from such an event.[9]

[8] Many statistical studies on economic damage have also been performed in Japan. However, the majority have been concerned primarily with predictions of indirect economic damage; research on direct economic damage has been limited.

[9] First, for estimation purposes, the lack of monetary estimates of structure-related damage in the data for economic damage presented in FDMA White Paper was a problem. To address this, revisions were made to the data for economic damage listed in the FDMA White Paper using the results of a "statistical survey of building and structure losses" contained in the Ministry of Land, Infrastructure, Transport and Tourism's Construction Statistics Yearbook. The aforementioned "statistical survey of building and structure losses" contains monetary damage estimates for homes and other structures destroyed by windstorms, flooding, earthquakes, and other natural disasters and those data are arranged for viewing by prefecture. Second, the White Paper also lacked data for damage stemming from the 2004 Niigata Chuetsu and 2007 Niigata Chuetsu-offshore earthquakes. Revisions to the monetary values were made by augmenting the original White Paper data with official estimates of the damage from both quakes. A sum of 3 trillion yen was added to the "direct economic damage" from the 2004 Niigata quake while a sum of 1.5 trillion yen was added to the "direct economic damage"

To obtain a monetary estimate of total damage, as explanatory variables, the procedure used figures for fatalities and missing persons and 47 dummy prefectures[10] together with 611 samples dating from 1995 to 2007. Additionally, two estimates were performed: Estimate (1), which covered the entire sample set, and Estimate (2), which covered the 320 samples that remained after excluding those samples that involved no deaths, missing persons, or damage. The justification for this approach was the assumption that estimates based on large numbers of samples that involve no damage from natural disasters may distort the results obtained with this estimation procedure. Variables including prefectural GDP, per-capita prefectural GDP, population density, population, the population ratio for areas with high population densities, prefectural surface area, share of population under age 15, share of population aged 65 and older, and total government budget allocations were not deemed significant even with a statistical significance of up to 10 percent and thus were eliminated from the analysis.

The results are listed in Table 11-2. The results of Estimate (1), which covered all 611 samples, determined that the coefficient for deaths and missing persons was positively significant with a statistical significance of 1 percent and that the total value of damage had a tendency to increase by approx. 1,586 million yen per each additional fatality or missing person. Even Estimate (2), which excluded all samples involving zero damage from a natural disaster, showed that the coefficient for deaths and missing persons was significant with a statistical significance of 1 percent and gave values that were extremely close.

3.2. Estimated results

Based on these results, sample calculations of projected economic damage from a Nankai-Trough mega-earthquake were performed. Rough estimates of direct economic damage were obtained by substituting, for the number of fatalities, the 25,000 figure predicted by the CDPC and the 120,000 minimum[11] predicted by expert sources. One finding was that direct economic damage would reach approx. 40 trillion yen if fatalities totaled 25,000, the number projected prior to the Tohoku Earthquake. This damage estimate is drastically smaller than the amount projected even by the CDPC. Granted the correlations between total

from the 2007 Niigata quake.

[10] Ranging from hilly or mountainous areas to coastal zones, urbanized districts, and depopulated rural areas, the geographic and environmental features of Japan's prefectures are diverse. For this reason, the nature of damage from natural disasters tends to vary prefecture by prefecture. To eliminate such differences, estimates were performed with the addition of dummy prefectures to the explanatory variables.

[11] The Kobe Shimbun. "'Potential for 400,000 Fatalities' from Triple-Interlinked Earthquake in Tokai and Neighboring Districts." July 6, 2012.

economic damage and the number of fatalities caused by past natural disasters, it was clear that the estimate tendered by the CDPC relied on rigorous criteria. By contrast, if the projected number of fatalities was set at 120,000, the resulting total for direct economic damage rose to 190 trillion yen.[12] This enormous sum is easily over threefold the scale of the estimate for economic damage the CDPC currently cites.

Table 11-2 Estimates of direct economic damage from a Nankai-Trough mega-earthquake

Projected Death Toll		Projected Economic Damage (Trillion Yen) Estimate (1)	Estimate (2)
Case 1	25,000	39.6	39.7
Case 2	120,000	190.3	190.5

4. Long-term aftershocks: the case of Kobe 1995

Seventeen long years have passed since the Kobe Earthquake. The extent or lack of progress made by recovery efforts through that interim can be measured on a statistical basis.

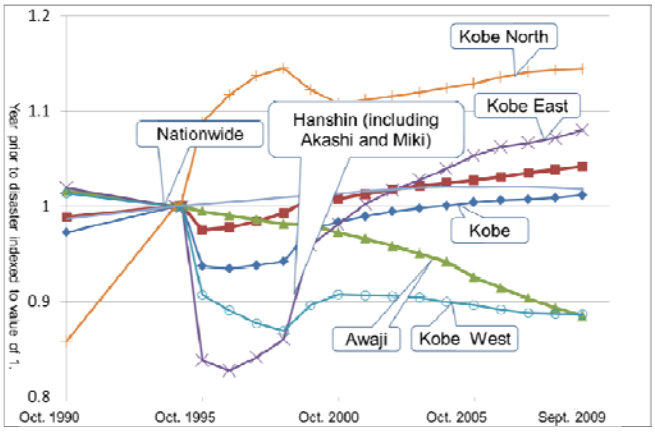
4.1. Social demographics

Population is an important indicator of the vitality of a regional economy. First, consider population trends for the quake-affected areas as illustrated in Figure 11-2.

The 10 cities and 10 smaller municipalities that were hit by the Kobe Earthquake have been arranged into three districts: Kobe, Awaji, and Hanshin (which includes Akashi and Miki). The population of Kobe fell immediately following the disaster, continued to decline for the next four years, and required 10 years to return to its pre-disaster level. The population of Hanshin surpassed its pre-disaster level five years after the quake and has continued to grow. The population of Awaji has been in a sustained decline that shows no correlation with the impact from the quake disaster.

[12] The Great Kanto Earthquake of 1923 caused approx. 105,000 fatalities and about 4.5 billion yen in economic damage (Bank of Japan estimate). That figure was equivalent to about 38 percent of the nation's GDP of 12.0 billion yen at the time. The predicted 190 trillion yen in economic damage from a Nankai-Trough mega-earthquake is equivalent to about 40 percent of the 481 trillion yen in GDP Japan recorded in 2010.

Figure 11-2 Post-Kobe-Earthquake population trends



Source: Hyogo Prefectural Government Statistics Department website

Now consider trends for three distinct sectors of metropolitan Kobe: eastern Kobe (Higashinada, Nada, and Chuo wards), western Kobe (Hyogo, Nagata, Suma, and Tarumi wards), and northern Kobe (Kita and Nishi wards). Eastern Kobe's population displayed the steepest downtrend, lasting up to four years after the quake disaster, but has since demonstrated strong growth. Much of that growth, however, has been attributed to an influx of new citizens from areas unaffected by the disaster rather than a return of former residents. Although Western Kobe also experienced a four-year population decline followed by a brief turnaround, its population has been on a general downtrend. This downtrend appears even more pronounced if we discount Tarumi, a ward that was relatively unaffected by the disaster. Northern Kobe's population climbed in the early post-disaster years because temporary housing had been set up in that sector to accommodate evacuees. Although its population contracted after the temporary housing had been dismantled, "New Town" suburban development projects have spurred a renewed uptrend.

Districts such as eastern Kobe and Hanshin have seen their populations expand beyond pre-disaster levels and thus arguably have achieved reconstruction. However, in western Kobe and other districts where population declines were clearly triggered by the disaster, indirect damage has been sustained and reconstruction remains incomplete.

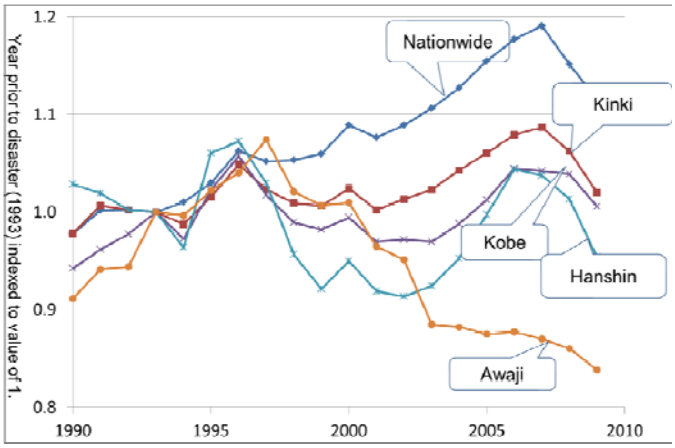
Approximately 25 percent of all wage-earners and students living in the eastern and northern sectors of Kobe commute to workplaces or schools located outside

Kobe (as of the 2000 national census). The Kobe Earthquake impacted a smaller area than did the Tohoku Earthquake and for that reason, a larger share of citizens witnessed damage from the quake only in their residential neighborhoods or only in the districts where their schools or workplaces were located. It is assumed that many more citizens would see their homes and workplaces or schools simultaneously impacted by a Tonankai or Nankai earthquake that could strike at some point in the future.

4.2. Real GRP

Next, Figure 11-3 illustrates the reconstruction process in terms of trends in gross regional product (GRP). Because the chart lines were plotted on a year-to-year basis, the collective dip corresponding to 1994 effectively highlights the decline caused by the Kobe Earthquake disaster. Over a three-year span following the 1994 decline, and in Awaji up to Japan Flora 2000 (commonly known as the Awaji Flower Exposition) in the year 2000, GRP levels were buoyed by reconstruction-related economic activity but slipped back and stagnated thereafter. In Kobe and Hanshin, GRP did not return to pre-disaster levels until around 2005. Awaji's GRP has been in a sustained downtrend up to the present. Although the economic slowdowns at the national level and within the Kinki region itself have influenced these trends, in the final analysis, measures for the cultivation of promising future industries that were implemented as part of a new industry development program included in the national government's reconstruction plans arguably were not effective enough.

Figure 11-3 Trends in real GRP following Kobe Earthquake

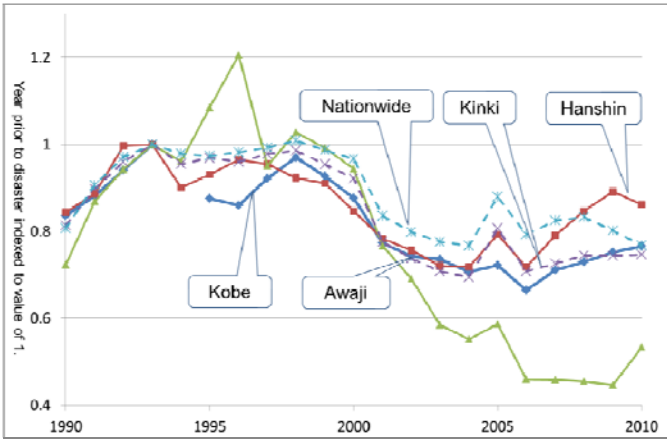


4.3. Capital stock (manufacturing industry)

Lastly, consider the trends in capital stock (Figure 11-4). In the manufacturing sector, tangible fixed assets (nominal value) trended below their pre-disaster peak until 2006. Although this has been the trend nationwide, in Kobe and Hanshin the margin of decline has been more pronounced. Note also that the relevant statistical survey for Kobe was not performed at the end of 1994, right before the disaster. As also seen with real GRP, the downtrend for capital stock in Awaji has been ongoing since the Awaji Flower Exposition in 2000.

As these data confirm, the 1995 Great Hanshin Awaji Earthquake disaster has cast a long shadow of gloom over the economy in those areas that suffered damage.

Figure 11-4 Tangible fixed assets in manufacturing sector after Kobe Earthquake



Note: Relevant survey for Kobe was not performed at end of 1994. The 1993 year-end has been set to a value of 1.
Source: Chart prepared with data from tables of industrial statistics.

5. Preparing for the disaster

Our own statistical estimates indicate that expected economic damage from a Nankai-Trough mega-earthquake would reach approx. 40 trillion yen if fatalities totaled 25,000 or approx. 190 trillion yen if fatalities reached 120,000. Given the nature of the estimates, it should be noted that expected economic damage will vary significantly with changes in the hypothetical number of fatalities. Our estimates, nevertheless demonstrated that the scenarios utilized by the CDPC for its own earthquake damage projections prior to the Tohoku Earthquake were too rigorous and that large-scale disasters with as many as 120,000 fatalities can be expected to have a devastating economic impact as well.

Another lesson drawn from the experience of the Kobe Earthquake is that the aftereffects of large-scale disasters can cause long-term economic decline in quake-hit areas. Accordingly, the emphasis in disaster-mitigation policies aimed at reducing the damage from disasters must be focused on proactive policies of disaster-resistant community development. In that context, the structural disaster-mitigation policies described below presumably would be vital as preparatory measures against a large-scale disaster comparable to a Nankai-Trough mega-earthquake.

5.1. Fiscal rebalancing as a precaution

Having projected a large-scale damage of the kind described earlier, what preparatory countermeasures would likely be expected of us? First of all, in the event a Nankai-Trough mega-earthquake actually struck and caused the massive levels of damage predicted above, we would be expected to provide huge fiscal outlays for the reconstruction effort. Tremendous amounts of funding would be needed to finance a comprehensive range of actions, from the emergency-response tasks of lifesaving and distributing food, setting up evacuation centers, and building temporary housing to projects for the restoration of public infrastructure and reconstruction work in disaster-affected areas and assistance aimed at helping disaster victims rebuild their lives. The burden of fiscal resources demanded for these purposes probably would be of such scale that marginal tax increases or the issuance of additional government bonds would not be nearly enough to compensate. Should the government prove unable to secure those fiscal resources, it is readily conceivable that efforts to restore disaster-damaged districts and help disaster victims rebuild their lives would become increasingly imperiled, economic stagnation in the afflicted districts would rob the larger national economy of its vitality, and the deteriorating socio-economic standing of disaster victims would contribute to heightened social unrest. Additionally, rising long-term interest rates stemming from an increased reliance on the issuance of more government bonds also could aggravate the fiscal burden and seriously impact the domestic economy. Making adequate fiscal preparations for a large-scale disaster will demand that the government show steady progress with its efforts in fiscal rebalancing, starting now.

5.2. Pre-disaster public investment

Second, to better mitigate the immense levels of damage from a disaster, not only will precautionary disaster mitigation policy investments be essential, but ideas for economic and social progress at the community level also will be necessary. Studies have shown that pre-disaster investments in reconstruction capacity are effective in mitigating the damage caused by a natural disaster.[13] Furthermore, exercises in international comparative analysis have underscored the finding that the higher the income level of a country, the lower the number of

[13] Toya, H. "The Mitigation Effect of Disaster Countermeasures on Disaster-caused Damage: A Panel Analysis of Prefecture-specific Data." In *Research from an Economics Perspective on the Nature of Disaster Policy Frameworks.* Economic and Social Research Institute, Cabinet Office. 2009, pp.67-89

fatalities caused there by natural disasters.[14] Protecting communities from large-scale disasters in the future will demand studies into the nature or orientation of disaster-mitigation investments, disaster-reconstruction investments, and other forms of public investment designed to improve the preparedness of those communities. In addition, it will demand that efforts be made to aid the economic advancement of these communities and reduce their vulnerability to natural disasters.

5.3. Coping with population decline

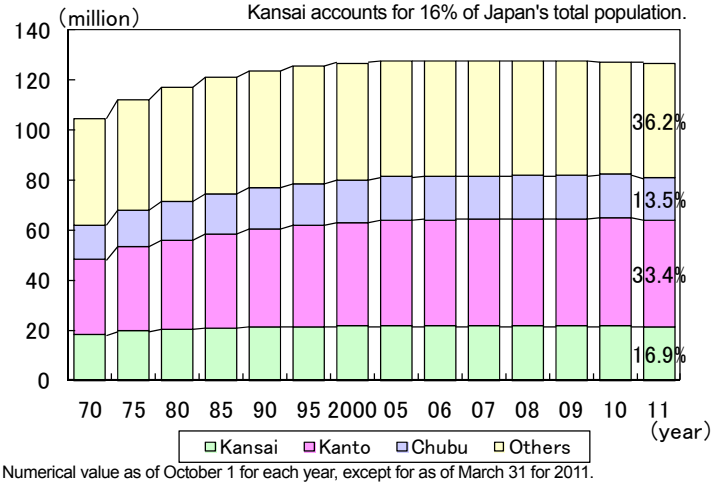
Third, population decline is another problem that demands attention. Prior to the devastation it suffered from the Tohoku Earthquake, the Tohoku region was already facing a trend in population decline. Communities typically experience dwindling demand coupled with slowdowns in economic activity if their populations begin to shrink. Should a community dealing with such circumstances be struck by a large-scale disaster, it conceivably will experience increased population outflows coupled with extreme hardship in pursuing the economic and social reconstruction of its disaster-damaged districts.

In 2005, Japan became a society with a population in net decline. This is a problem that transcends the issues of rural depopulation and marginal settlements; concerns now are that Japan at large will be economically impacted by a shrinkage in domestic demand. In the interest of reducing Japan's vulnerability to natural disasters, it will be necessary to explore strategies that improve its preparedness as a society undergoing population decline.

[14] Kahn, M.E., "The Death Toll from Natural Disasters: The Role of Income, Geography, and Institutions," The Review of Economics and Statistics, May 2005, 87(2), pp. 271-284.

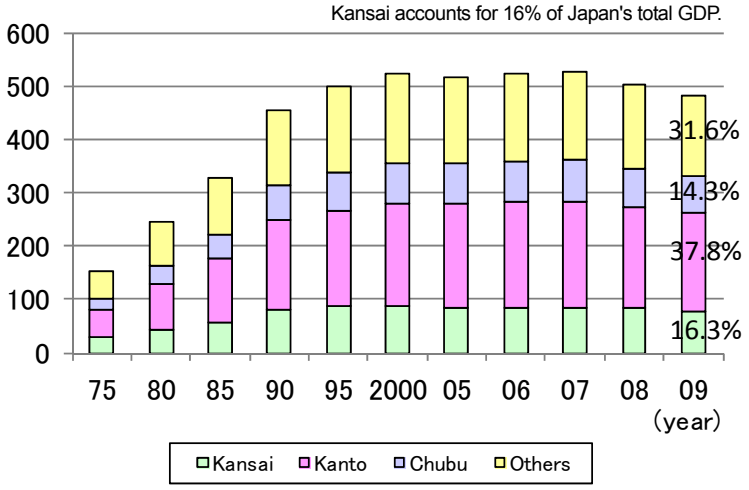
Statistical Annex

●Figure 1　Total Population



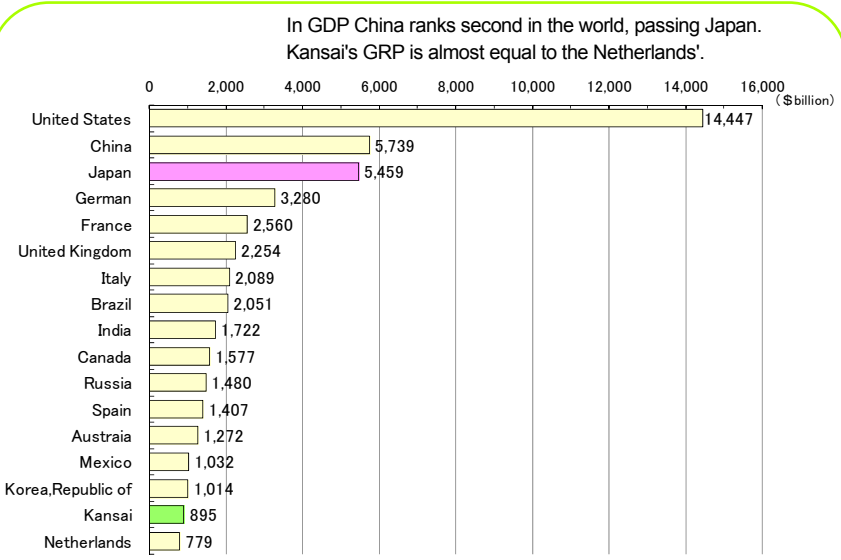
Note:　Numerical value as of October 1 for each year, except for as of March 31 for 2011.
Source: the Bureau of Statistics of the Ministry of International Affairs and Communications
"Population Census," "Population Estimates," "The Population, the Population Movements and the Households Based on the Basic Resident Register"(only for 2011)

●Figure 2　Gross Regional Products



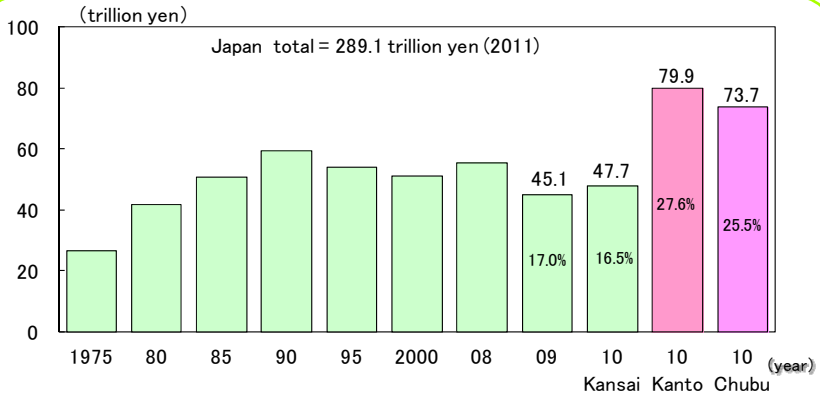
Note: Nominal. A new calculation system has been adopted since the 1990 fiscal year.
Source: the Cabinet Office "Annual Report of Regional Accounts Statistics"

●Figure 3　GDP in Cross Country Comparison（2010）



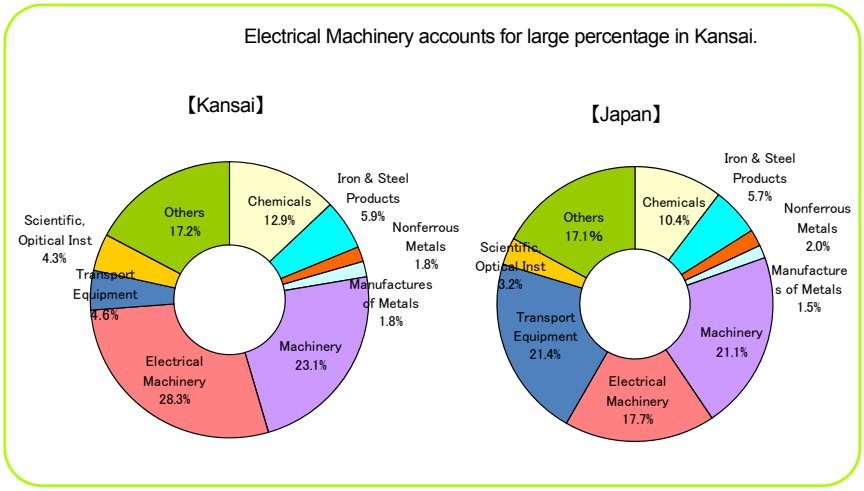
Note: 2010 Calendar year. Nominal. The value of Kansai is based on the GRP (nominal) in the 2009 fiscal year.
The exchange yen rate was 87.79 to US dollar in 2010. The value of China in the figure above, based on the current prices of US dollar, is equivalent to 3,884 billion US dollar in the constant 2005 prices.
Source: UN "National Accounts Main Aggregates Database," the Cabinet Office "Annual Report of National Accounts Statistics," "Annual Report of Regional Accounts Statistics"

●Figure 4　Values of Manufactured Goods Shipments

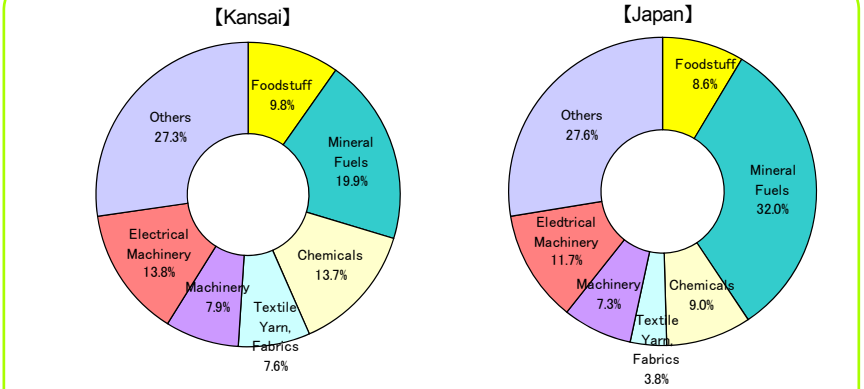


Note: The survey is with regard to establishments with 4 or more employees.
Source: the Ministry of Economy, Trade and Industry "Statistics Table on Census of Manufactures"
(The data on the summary of the census is used only for 2010.)

●Figure 5 Exports by Commodities (2011)



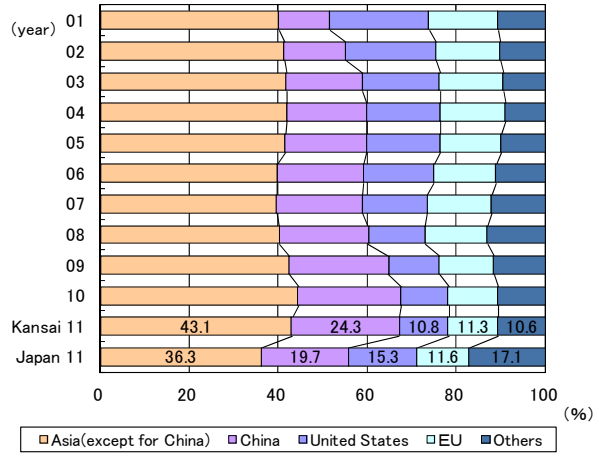
●Figure 6 Imports by Commodities (2011)



Note: Kansai consists of 6 prefectures of Shiga, Kyoto, Osaka, Hyogo, Nara, and Wakayama.
Source: the Ministry of Finance, Osaka Customs "Trade Statistics"

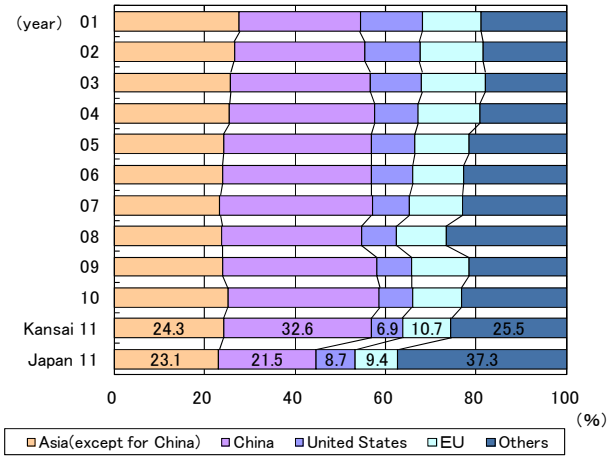
●Figure 7　Export Destination from Kansai

Asia, including China, is the most important export & import partner of Kansai,



Note: Kansai consists of 6 prefectures of Shiga, Kyoto, Osaka, Hyogo, Nara, and Wakayama.
Source: the Ministry of Finance, Osaka Customs "Trade Statistics"

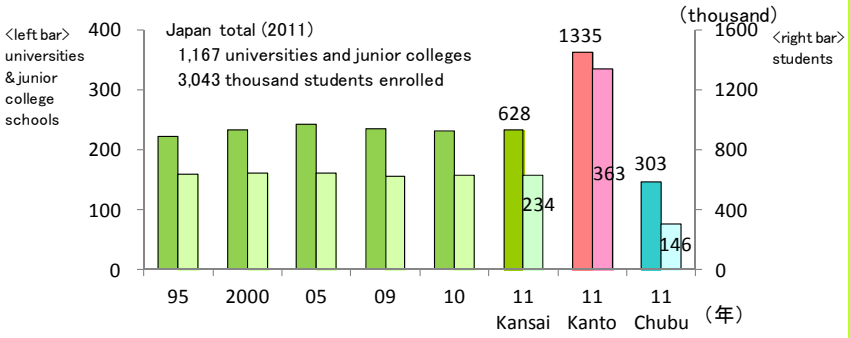
●Figure 8　Import Origin to Kansai



Note: Kansai consists of 6 prefectures of Shiga, Kyoto, Osaka, Hyogo, Nara, and Wakayama.
Source: the Ministry of Finance, Osaka Customs "Trade Statistics"

●Figure 9 Numbers of Universities, Junior Colleges and their Student Enrollment

Many higher education institutions are located in Kansai.



Source: the Ministry of Education, Culture, Sports, Science and Technology "School Basic Survey"

●Figure 10 Numbers of the National Treasures & Important Cultural Properties

50% of Japanese cultural properties are concentrated in Kansai.

prefecures	National Treasures	Important Cultural Properties	National Treasures Domestic Share (%)	Important Cultural Properties Domestic Share(%)
Fukui	6	102	0.6	0.8
Shiga	55	804	5.1	6.3
Kyoto	226	2,138	20.9	16.7
Osaka	60	662	5.5	5.2
Hyogo	20	455	1.8	3.6
Nara	197	1,313	18.2	10.2
Wakayama	36	383	3.3	3.0
Kansai	600	5,857	55.5	45.7
Kanto	324	3,577	29.9	27.9
Chubu	39	1,049	3.6	8.2
Japan	1,082	12,816	100.0	100.0

Note: The values are as of April 1, 2012.
Source: the Agency for Cultural Affairs

Asia Pacific Institute of Research

MISSION

The mission of Asia Pacific Institute of Research (APIR) is to make research contributions toward solutions development for issues facing countries in the Asia-Pacific region, thereby vitalizing economies and societies and supporting the sustainable development of the region, in which Japan and Kansai are embedded

◇ The Asia-Pacific region has increasingly important roles as the global economy undergoes major structural changes.

◇ In order to successfully address various issues in the diversity-rich Asia-Pacific region, it is necessary to bring together capable human resources, expertise, and information from around the world.

◇ Focusing our perspective on the Asia-Pacific region, we aim to provide our new platform for sharing “smart ideas” and “information” globally.

APIR’s unique advantages

Practical research and studies

We make policy recommendations in a timely manner, and then play an active role as a catalyst in conducting concrete actions.

Networking with other research institutions

We will build a global network through joint research and information sharing with researchers, universities, and research institutions, both in Japan and abroad.

REGIONAL HUB

Core facility in the “Knowledge Capital” – multi-complex for creation of new intellectual values

The Kansai region served as the home of Japan’s capital for more than 1,000 years in history. Its keystone is Osaka, a city that has long prospered as a political and economic hub and has always fostered friendly relations with other Asian countries. In this time-honored city that is unique in Japan, Grand Front Osaka will open in the spring of 2013 to bring together a diverse range of urban functions.

APIR will relocate itself to the “Knowledge Capital,” which is one of the core facilities of Grand Front Osaka. In the most ideal location imaginable, APIR will build a network with other think tanks, both in Japan and abroad, as a hub of intellect and information in the Asia-Pacific region, with a view to developing human resources that have a highly developed global perspective and capabilities for grand design and management.

RESEACH

Ⅰ. Asia-Pacific Economic Outlook

As the global economy becomes increasingly multi-polar, we aim to build convivial strategies for further development of public-private partnerships and analyze policy issues to ensure that Japan and its enterprises can establish win-win relationship with their foreign counterparts.

Ⅱ. Innovation

With a view to ensuring sustainable development of the Asia-Pacific region, we aim to help the Japanese government and companies to share good practices in applying their advanced solutions to various issues with governments and enterprises in the region. Furthermore, we study innovative ways to take full advantage of the region's powerful growth in order to expand business opportunities for Japanese industries.

Ⅲ. Regional Development Strategies

As global competition continues to intensify, the key to economic development is the region's industrial competitiveness and the unique allure that it communicates throughout the world. We take multifaceted approaches to the study of mega-region strategies, which we hope will help Japan to accumulate globally competitive industries and thus consolidate its position as a center of exchange in the Asia-Pacific region.

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