

Economic Impact of the Great East Japan Earthquake and Current Status of Recovery

April 27, 2011

Ministry of Economy, Trade and Industry



Yomiuri Shimbun

“ARIGATO”

“Thank you”

“**ARIGATO**” is a word to express appreciation.

The photograph shows the word “**ARIGATO**” which people affected by the Great East Japan Earthquake wrote on the shore using pine trees for the United States Armed Forces which had supported with the restoration of Sendai Airport.

“**ARIGATO**” expresses the appreciation of the Japanese people for the support by each nation and their people, including the U.S.

Message from Prime Minister Naoto Kan regarding assistance received from overseas

Tuesday, March 22, 2011

I would like to express my most sincere appreciation for the condolences and assistance Japan has received from approximately 130 countries, more than 30 international organizations, and people all around the world in response to the Tohoku-Pacific Ocean Earthquake.

The rescue workers, search dogs, and nuclear power experts from various countries, as well as the human resources support from the U.S. Forces in Japan and others, assistance with food, medical supplies, blankets, and other supplies, and offers of assistance from over 670 NGOs and other organizations have all been profoundly uplifting to the Japanese people, who have come to realize acutely that “a friend in need is a friend indeed.” ...

On behalf of the Japanese people, I would like once again to express my deepest appreciation upon having received this truly tremendous outpouring of cordial assistance from around the world.

Naoto Kan
Prime Minister of Japan

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1. Extent of the affected areas

- Adverse impact to Japanese economy is limited since the pacific ocean coast ,which suffered the greatest damage, accounts for only 2.5 % of the total Japanese economy.
- The affected areas are slightly smaller in economic size than that of the Great Hanshin-Awaji Earthquake(1995).

The extent of economic activity in the municipalities along the pacific ocean coast (Census of Manufactures)

	Shipment value		Gross value added	
	(trillion yen)	percent of total	(trillion yen)	percent of total
All Japan	335.6	100.0%	110.8	100.0%
Municipalities along Pacific Ocean Coast*	8.3	2.5%	2.8	2.5%

【Source】 Census of Manufactures 2008 (Ministry of Economy, Trade & Industry)

* Municipalities along the pacific ocean coast in Aomori, Iwate, Miyagi, Fukushima and Ibaragi prefectures

The extent of economic activity in the municipalities affected by the Great Hanshin-Awaji Earthquake* (Census of Manufactures)

	Shipment value		Gross value added	
	(trillion yen)	In percent of total	(trillion yen)	In percent of total
All Japan	311.2	100.0%	127.6	100.0%
Damaged Municipalities*	8.3	2.7%	3.7	2.9%

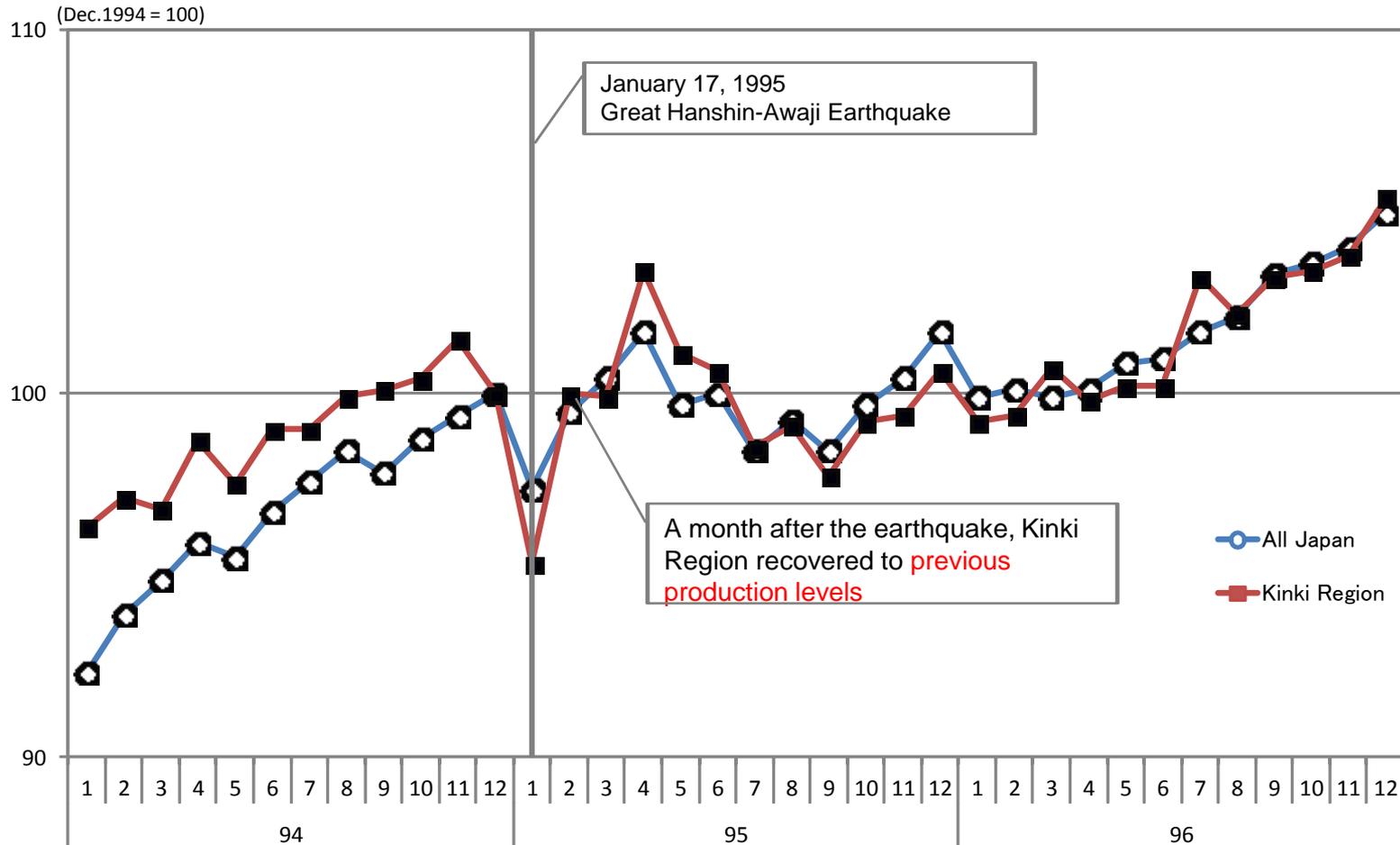
【Source】 Census of Manufactures 1993 (Ministry of Economy, Trade & Industry)

* 10 cities and 10 towns which Disaster Relief Act was applied to in Hyogo Prefecture.

2. Reconstruction and recovery following the Hanshin-Awaji Earthquake

- Negative effects in the quake-hit area as well as nationwide were temporary with production levels showing a sharp recovery after dropping in the aftermath of the Great Hanshin-Awaji Earthquake.

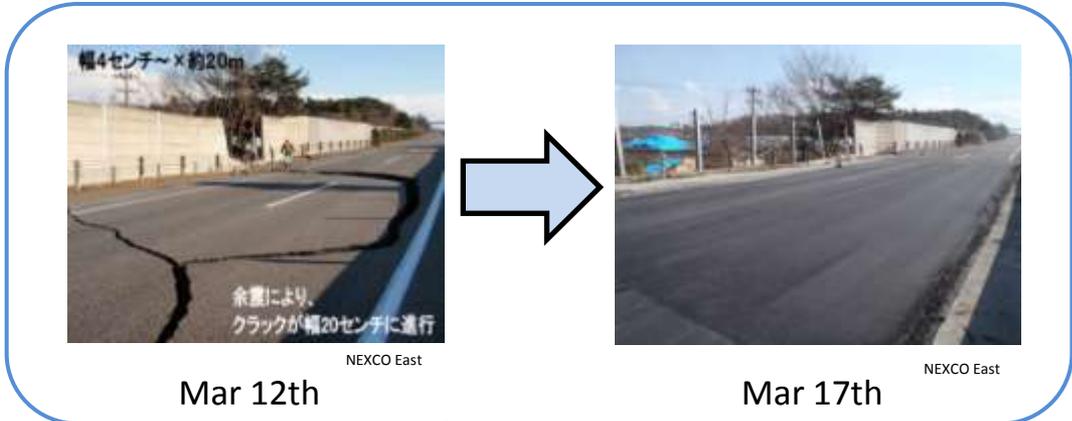
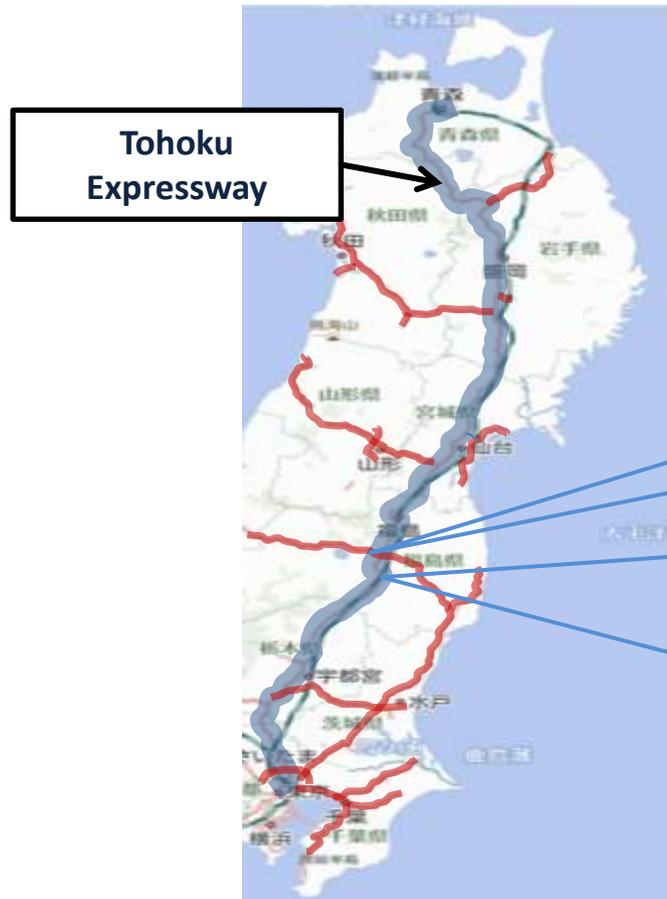
Mining and manufacturing production before and after the Great Hanshin-Awaji Earthquake



【Source】 Indices of Industrial Production (Ministry of Economy, Trade & Industry)
Changes in Industrial Production (Kinki, Ministry of Economy, Trade & Industry)

3. Reconstruction and recovery following the recent earthquake : (1)Tohoku Expressway

- The Tohoku Expressway is a transport and commercial artery which connects Tohoku and Kanto regions. Numerous factories are located along the route.
- 347 km out of 675 km of the expressway was destroyed in the earthquake on March 11, but traffic restriction was lifted on March 24th, following the completion of emergency restoration measures.



3. Reconstruction and recovery following the recent earthquake : (2) Railroads

- None of the 26 trains operating at the time of the earthquake derailed, nor was there any serious damage to elevated bridges and stations, or collapse of tunnels.
- The entire Tohoku Shinkansen will have resumed operation by April 30th.

Scheduled resumption of operations as of April 18th



Morioka to Shin Aomori
Resumed operation April 13th

Ichinoseki to Morioka
Resumed operation April 23th

Sendai to Ichinoseki
Around April 29th

Fukushima to Sendai
Resumed operation April 25th

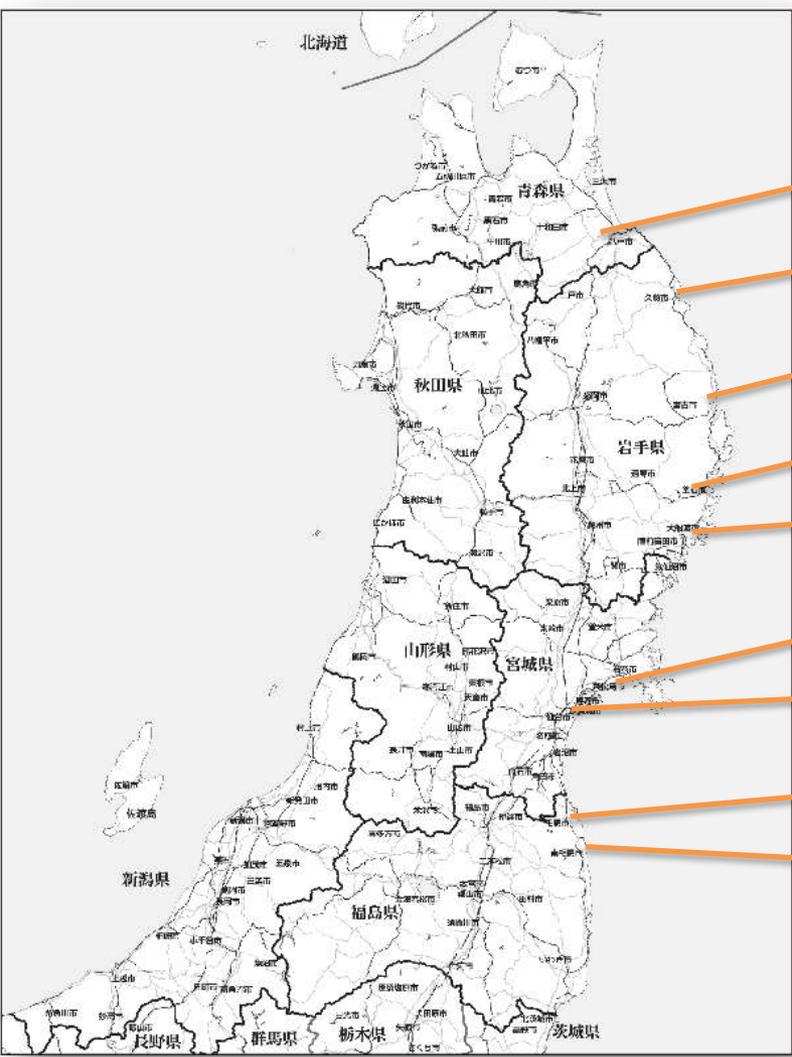
Nasushiobara to Fukushima
Resumed operation April 12th



JR East

3. Reconstruction and recovery following the recent earthquake : (3) Sea Ports

- Quays of all major ports in the quake-hit pacific coast from Aomori to Ibaraki became useable by May 24th.
- The ports damaged by the tsunami are gradually recovering function.



Hachinohe

Kuji

Miyako

Kamaishi

Ofunato

Ishinomaki

Sendai-Shiogama

Soma

Onahama

Quays of all the major ports became useable on March 24th

3. Reconstruction and recovery following the recent earthquake : (4) Airports

- The reconstruction of Sendai Airport which was badly damaged by the tsunami showed surprisingly rapid progress thanks to the cooperation between the US Armed Forces and Japanese Self-Defense Forces. The entire runway was restored and became useable by March 28th.
- Passenger flights from Haneda-Sendai and Osaka(Itami)-Miyagi resumed operation on April 13th, a month after the earthquake.



Kyodo

Sendai airport damaged by the tsunami as of March 13th.

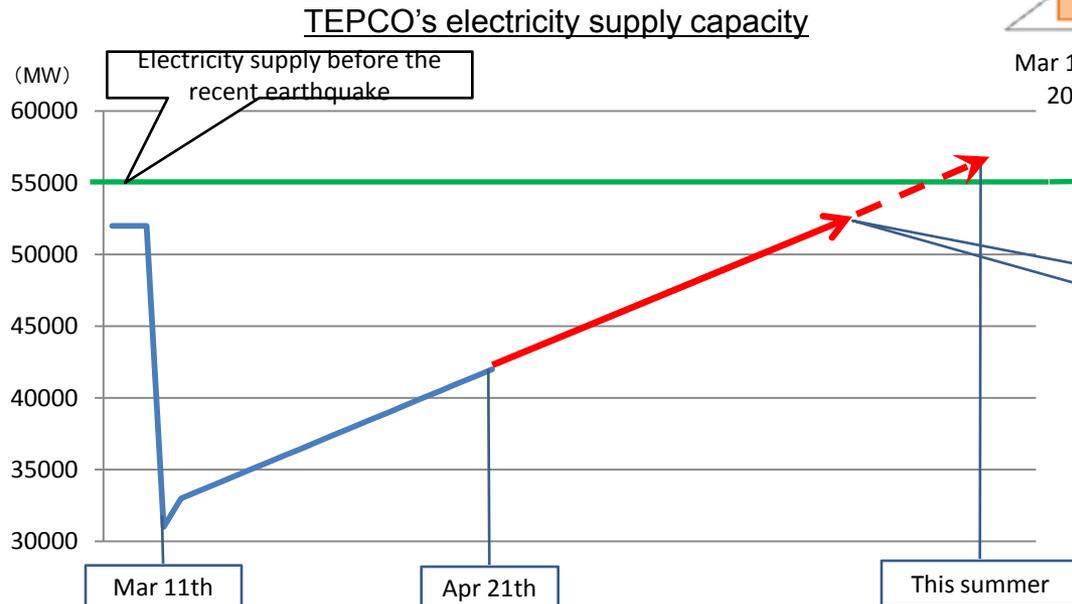
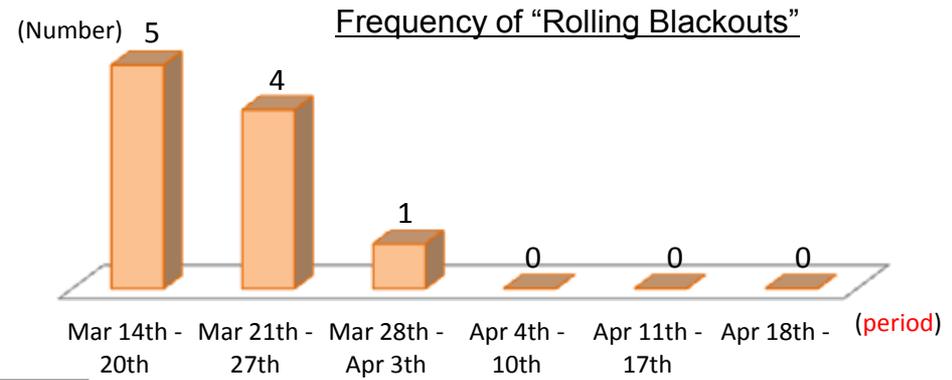


Kyodo

The first landing at Sendai airport since the earthquake on April 13th.

4. Electricity supply/demand up to this summer

- With reinforcement of the power supply, Tokyo Electric Power Company decided, in principle, to not carry out “Rolling Blackouts.”
After March 29th, “Rolling Blackouts” have been discontinued.
- TEPCO forecasts that it will be able to supply electricity of up to 52,000 MW this summer.
- With TEPCO’s action to reinforce further power supply, “Rolling Blackouts” will be discontinued all the way up to summer.



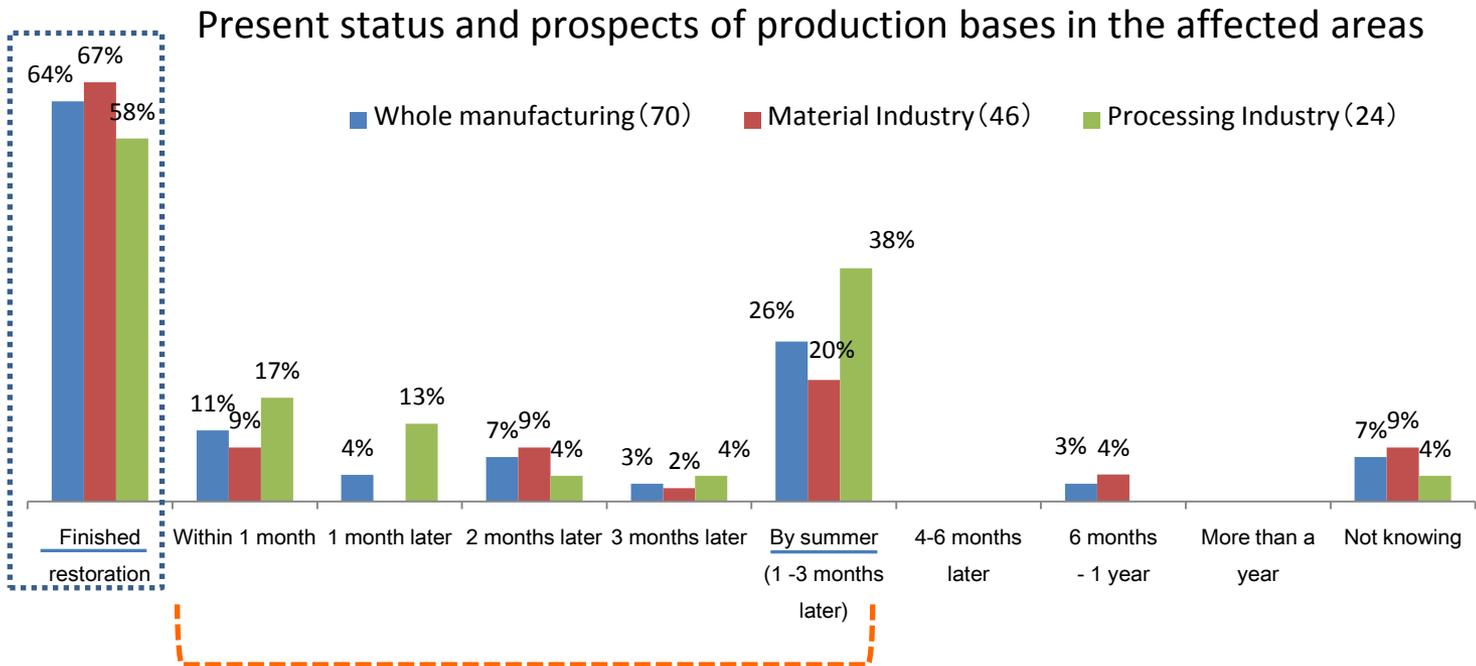
Expected peak demand this summer : 55,000MW

- As of April 15, TEPCO is able to supply electricity to 52,000MW of this summer.
- TEPCO plans to further increase power supply.

5. Present status and prospects for restoration of production bases in the affected areas

- More than 60% of affected bases of respondents have already finished restoration.
- Meanwhile, other production bases are on the way to resumption, and about less than 30% are expected to be restored by summer.

(Reference) The ratio of the number of establishments located in the municipalities in 7 prefectures (Aomori, Iwate, Miyagi, Fukushima, Tochigi, and Chiba) covered by the Disaster Relief Act in the total number of the manufacturing establishments all over the country, is about 7%. (The figure was calculated based on Census of Manufactures 2008, as of March 27th)

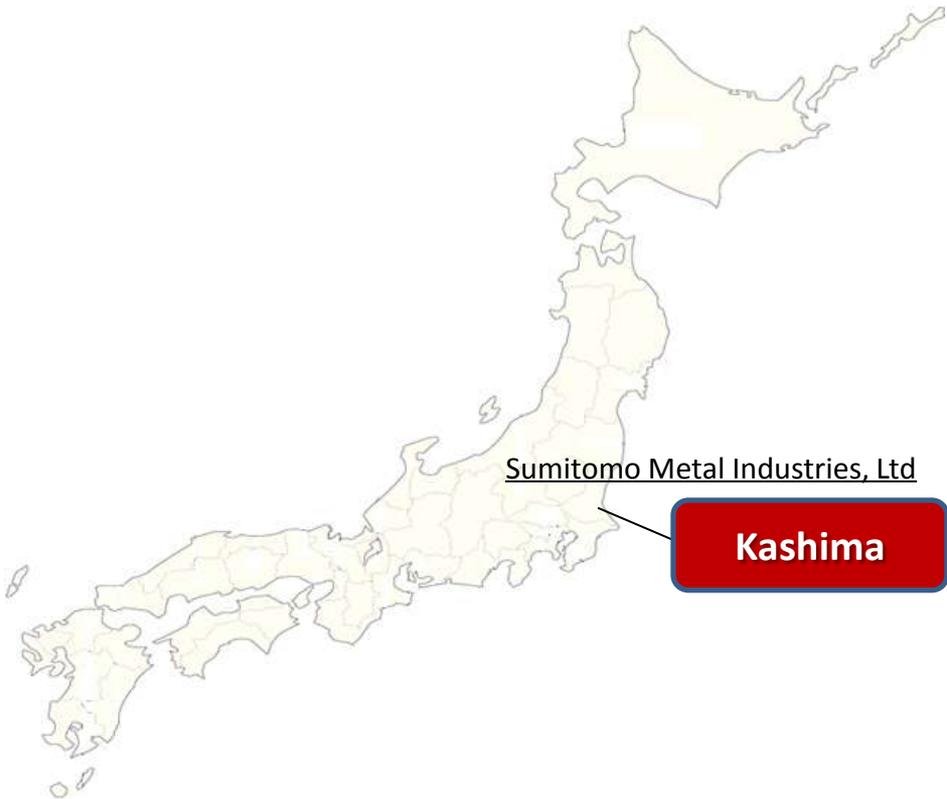


※Affected areas : Aomori, Iwate, Miyagi, Fukushima, Ibaraki, Tochigi, Chiba

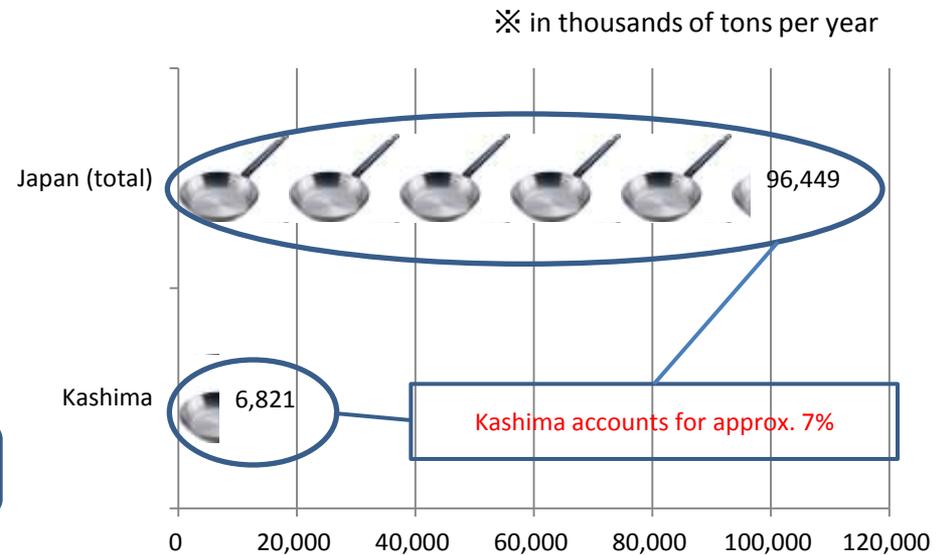
6. Effects on specific industries : (1) Steel

- Although Sumitomo Metal's Kashima plant has stopped production, other Japanese iron works can still produce plenty of crude steel.

Geographical locations of damaged iron works



Production capacity for crude steel
(As of March, 2010)



6. Effects on specific industries: (2) Petrochemicals

- Mitsubishi Chemical's Kashima Plant, which has suffered some damage from the Great East Japan Quake, is responsible for about 10% of Japan's ethylene production. Even if it cannot be repaired soon, Japan has many other complexes which can produce more than the necessary volume of petrochemicals.

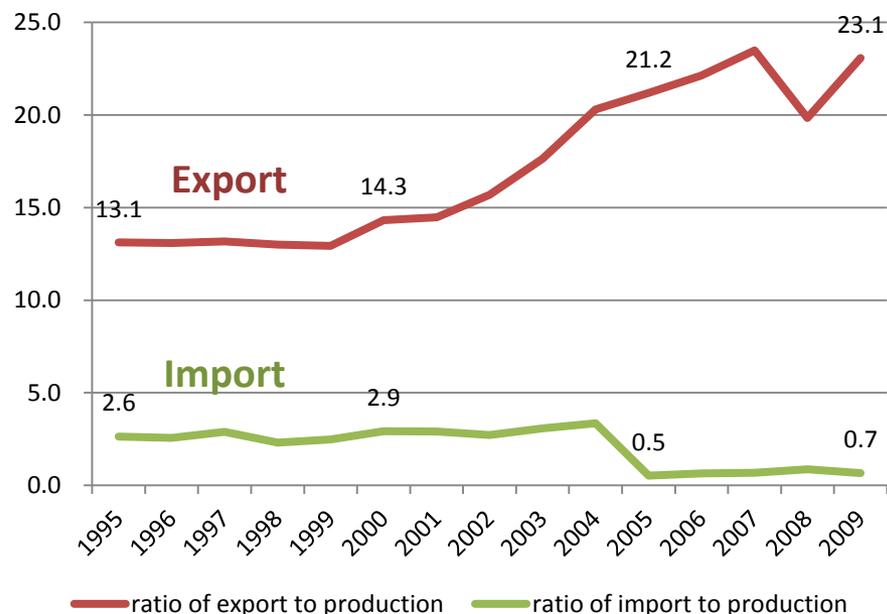
Production capacity for ethylene
(As of December, 2009)

※ in thousands of tons per year

Location	Company	Capacity	Share
Kashima	<u>MITSUBISHI CHEMICAL CORP.</u>	<u>828</u>	<u>11.4%</u>
Goi	MARUZEN PETROCHEMICAL CO., LTD.	480	6.6%
Ichihara	KEYYO ETHYLENE CO., LTD	690	9.5%
	MITSUI CHEMICALS, INC.	553	7.6%
Chiba	IDEMITSU KOSAN CO., LTD.	374	5.1%
Anegasaki Sodegaura	SUMITOMO CHEMICAL CO., LTD.	380	5.2%
	JX NIPPON OIL & ENERGY CORP.	404	5.6%
Kawasaki	TONEN CHEMICAL CORP.	491	6.7%
Yokkaichi	TOSOH CORP.	493	6.8%
Osaka	MITSUI CHEMICALS, INC.	455	6.3%
Mizushima	MITSUBISHI CHEMICAL CORP.	450	6.2%
Fukuyama	ASAHI KASEI CHEMICALS CORP.	443	6.1%
Shunan	IDEMITSU KOSAN CO., LTD.	623	8.6%
Ohita	SHOWA DENKO K. K.	615	8.4%
Total Capacity		7279	100.0%

※ Underlined plants shut their naphtha crackers after the quake.

Ratio of export & import to production of petrochemicals



6. Effects on specific Industries : (3) Auto / Electronics Industries

- Several weeks after the earthquake, certain major factories producing core parts and materials temporarily ceased operation, but gradually resumed. For factories that need more time to recover, companies are seeking substitute production from other factories.
- Most of the motor production companies have restarted production, depending on the supply level of core parts and materials.

Toyota Motor	All factories resumed production on April 18 th .
Nissan	All factories, including a seismic-damaged engine factory in Iwaki-city, resumed production on April 18 th .
Honda	After production resumed of finished automobiles at the Saitama factory and Suzuka factory, all factories resumed production on April 11 th .
Hitachi Automotive Systems	Sawa and Fukushima Auto-parts manufacturing factories damaged in the earthquake partially resumed production on March 25 th . Manufacturing facilities have been almost completely repaired.
Hitachi Vehicle Energy	Headquarter factory damaged in the earthquake at Hitachinaka-city resumed production of Lithium-ion batteries from March 28 th .
Hitachi Ltd.	Factory damaged in the earthquake partially resumed manufacturing of turbines for electricity power plants on March 29 th . 90% production level has recovered.
Renesas Electronics	6 of 7 factories damaged in the earthquake have already resumed production. All the stakeholders concerned are making every effort to restart the operation of the NAKA Factory as soon as possible. Originally they announced “before July, now try to accelerate the schedule.
Shinetsu Chemicals	Shirakawa Factory damaged in the earthquake resumed production by the end of April. Right now, substituting production with other group factories.
IHI	Soma Factory damaged in the earthquake which produces engines and gas turbines, resumed operation on March 29 th .

7. Effects of radioactivity from Fukushima Dai-ichi NPS

➤ Distance between Tokyo and Fukushima Dai-ichi NPA is 230km (about 144 miles) .

Tokyo - Fukushima Dai-ichi NPS : 230 km (about 144 miles)

Amsterdam - Brussels : 170 km (about 106 miles)

Paris - Brussels : 266 km (about 166 miles)

NY - Philadelphia : 137 km (about 86 miles)

Los Angeles – San Diego : 180 km (about 113 miles)

Washington DC - Philadelphia : 200 km (about 125 miles)



7. Effects of radioactivity from Fukushima Dai-ichi NPS

- The recent environmental radioactivity level in Tokyo is lower than the level in New York and Hong Kong.
- Several UN agencies, including the WHO, have announced that radioactive materials have been of low concentrations and do not present health or transportation safety risks.

<International organizations press release>

○ International Civil Aviation Organization
(April 11, 2011)

“Continuous monitoring around these airports confirms that radiation levels are well within safe limits from a health perspective.”

○ World Health Organization
(April 5, 2011, FAQs)

“WHO is not advising general restrictions on travel to Japan.”

< Environmental radioactivity levels around the world >



Hong Kong: 0.14 $\mu\text{Sv}/\text{hour}$

New York: 0.095 $\mu\text{Sv}/\text{hour}$

Tokyo: 0.078 $\mu\text{Sv}/\text{hour}$

【Source】

Ministry of Education, Culture, Sports, Science and Technology (MEXT), Hong Kong Observatory, Live radioactivity monitoring online USA
Hong Kong (as of 13 April, 2011), New York (7 days average to April 13, 2011)
Tokyo (as of 12 April, 2011)

< Environmental radioactivity level in Tokyo >

○ The environmental radioactivity level in Tokyo, if the current level continues for three months, will be 168.5 μSv^* .

* $0.078 \mu\text{Sv}/\text{hr}$ (as April 12th, 2011) \times 24hour \times 90days = 168.5 μSv

[Radiation in daily life]

- An air trip between Tokyo and New York (RT): 200 μSv
- A gastrointestinal X-ray examination: 600 μSv

Article by Bloomberg

April 1st, 2011(Bloomberg) -- Hong Kong, Cornwall Radiation Beats Tokyo even after Japan Nuclear Crisis

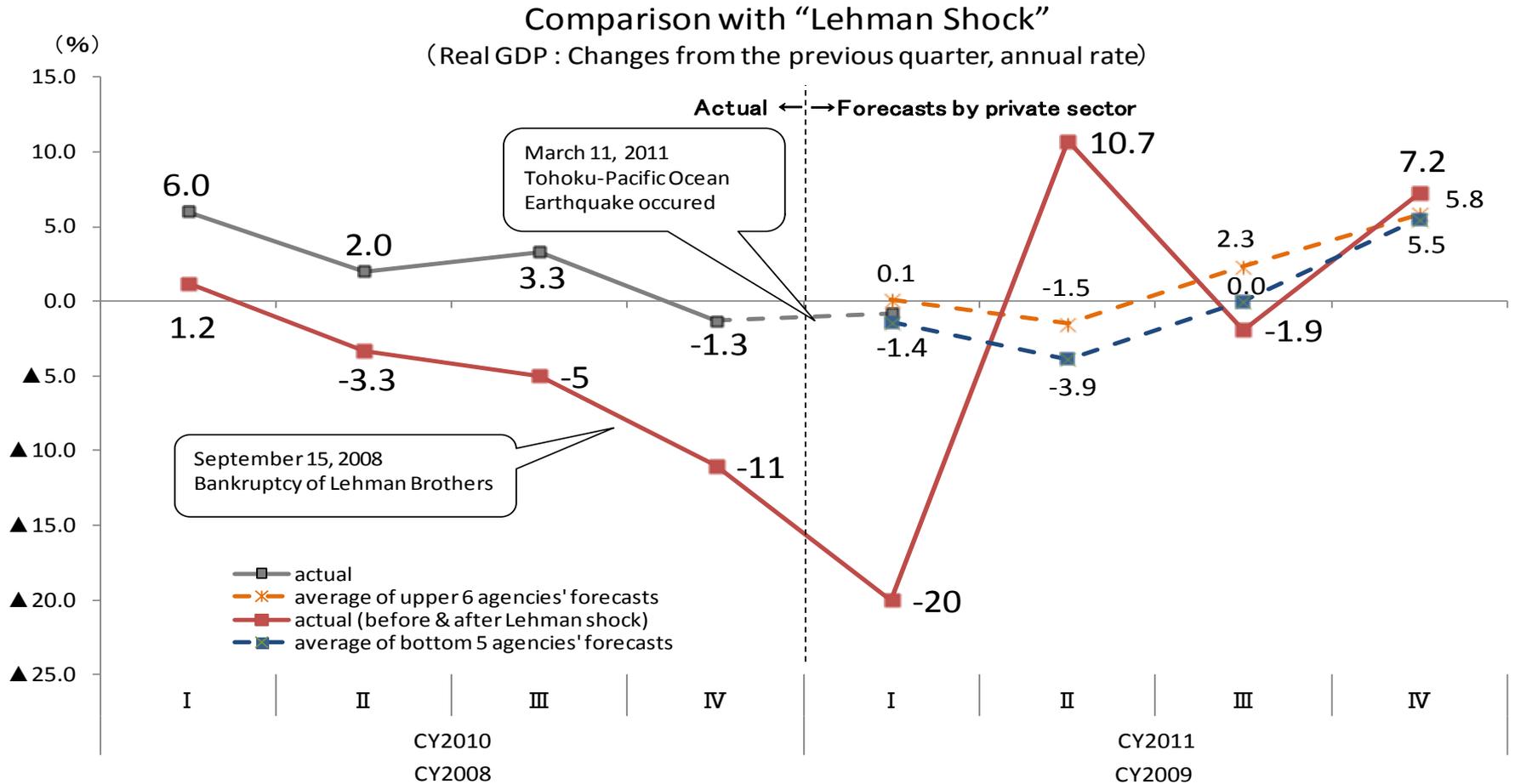
Typical amounts of radiation in Hong Kong exceed those in Tokyo even as workers struggle to contain a crippled nuclear plant in northern Japan, indicating concerns about spreading contamination may be overblown.

The radiation level in central Tokyo reached a high of 0.109 microsieverts per hour in Shinjuku Ward yesterday, data from the Tokyo Metropolitan Institute of Public Health show. That compares with 0.14 microsieverts in the Kowloon district of Hong Kong, the Hong Kong Observatory said on its website. A person is exposed to 50 microsieverts from a typical x-ray.

Tokyo's radiation level is only slightly higher than New York, where an average of 0.095 microsieverts an hour was recorded in the seven days to yesterday, according to a real-time Geiger counter reading set up as part of the Background Radiation Survey, a project where owners of the equipment feed their readings into a central database. The level in Tokyo the day before the accident averaged 0.0338 microsieverts an hour.

8. Macroeconomic impact : (1) Comparison with the “Lehman Shock”

➤ According to private sector forecasts, Japan’s economy will grow in Q3 and Q4 2011 after slowing down in the Q1 and Q2. The degree of the slowdown is expected to be much less than after the “Lehman Shock.”



【Source】“National Accounts” (Cabinet Office)、 “The Nikkei” (April 5, 2011)

8. Macroeconomic impact : (2) Cabinet office estimate

➤ The Cabinet Office forecasts that Japan's growth will be positive following the "Great East Japan Earthquake." It estimates damage to stock due to the disaster to be about 1% of the national stock.

	FY2011(2011,4~2012,3)		FY2012 (2012,4~2013,3)	FY2013 (2013,4~2014,3)
	First half	Second half		
Impact on GDP in the affected areas Decline in production due to damage to private plants & equipment	▲1.25~▲0.5	▲1.25~▲0.5	▲2.25~▲1.25	▲2.25~▲1.25
Impact on GDP in the non-affected areas via supply-chain connections	▲0.25	—	—	—
Impact on recovery of damaged stocks (assuming a scenario where recovery takes 3 years) Increase in production corresponding to the gross fixed capital formation	2~3	3~5	6~9.5	5~7.75
Total impact on GDP	0.5~2.25	2~4.25	3.75~8.25	2.75~6.5
In percent of real GDP (annualized)	0.25~0.75%	0.75~1.5%	0.75~1.5%	0.5~1.25%
Damage to stocks (Social Capital, Housing, private plants & equipment)	16~25 trillion yen (about 1% of all stock)			

【Source】 Cabinet Office

(※1) Prefectures covered : Hokkaido, Aomori, Iwate, Miyagi, Fukushima, Ibaraki, and Chiba. Period covered : FY2011 – FY2013

(※2) This table shows the difference from a baseline which corresponds to real GDP that would have realized if the Tohoku-Pacific Ocean Earthquake had not occurred. When calculating the ratio to real GDP, estimated real GDP for FY2010 as shown in the government economic outlook (Cabinet decision in January 2011) is used.

(※3) Total stock in Japan is 2,054 trillion yen. (by macroeconomic and fiscal model database 2009)

(※4) Expected impact on GDP via constraint on electric power supply.