

Briefing report for ASCE/TCLEE at JSCE
June 13, 2011

Lifeline Restoration Overview

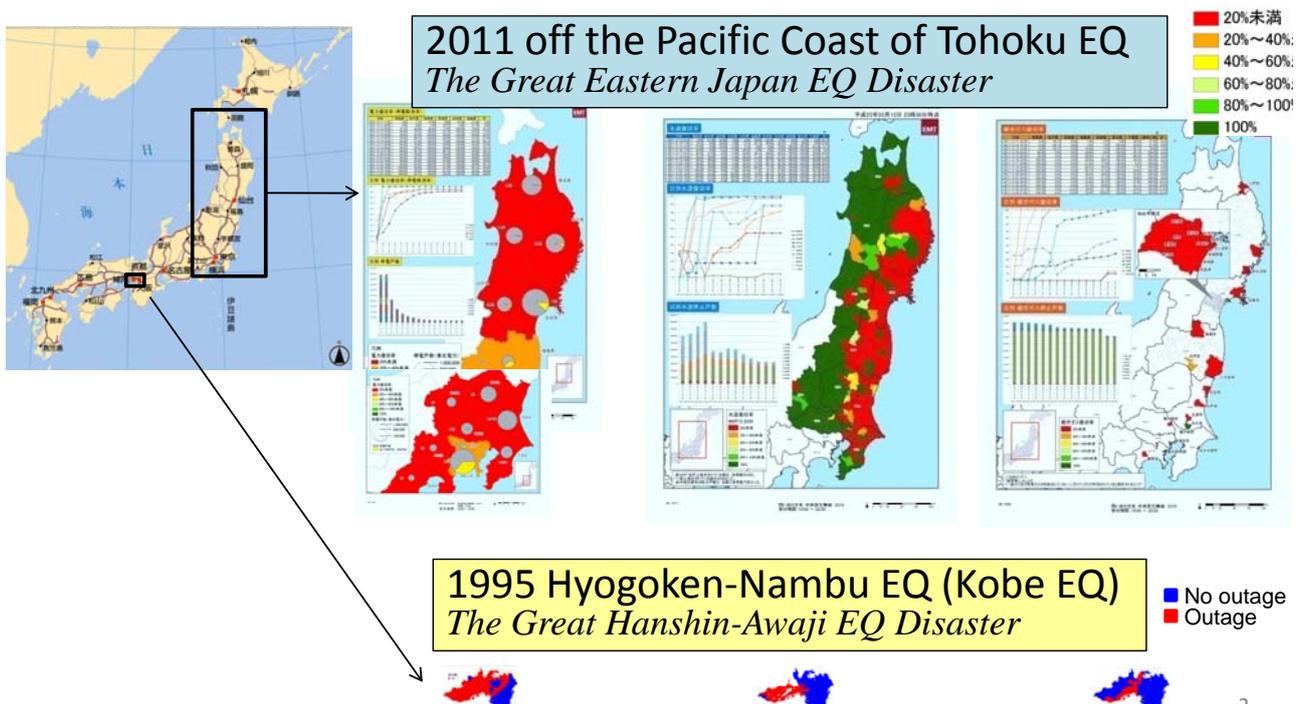
Nobuoto Nojima, Gifu University

Note: Data are subject to change due to further investigation and/or review.

1

Extent of Initial Outage

Electric power supply Water supply City gas supply



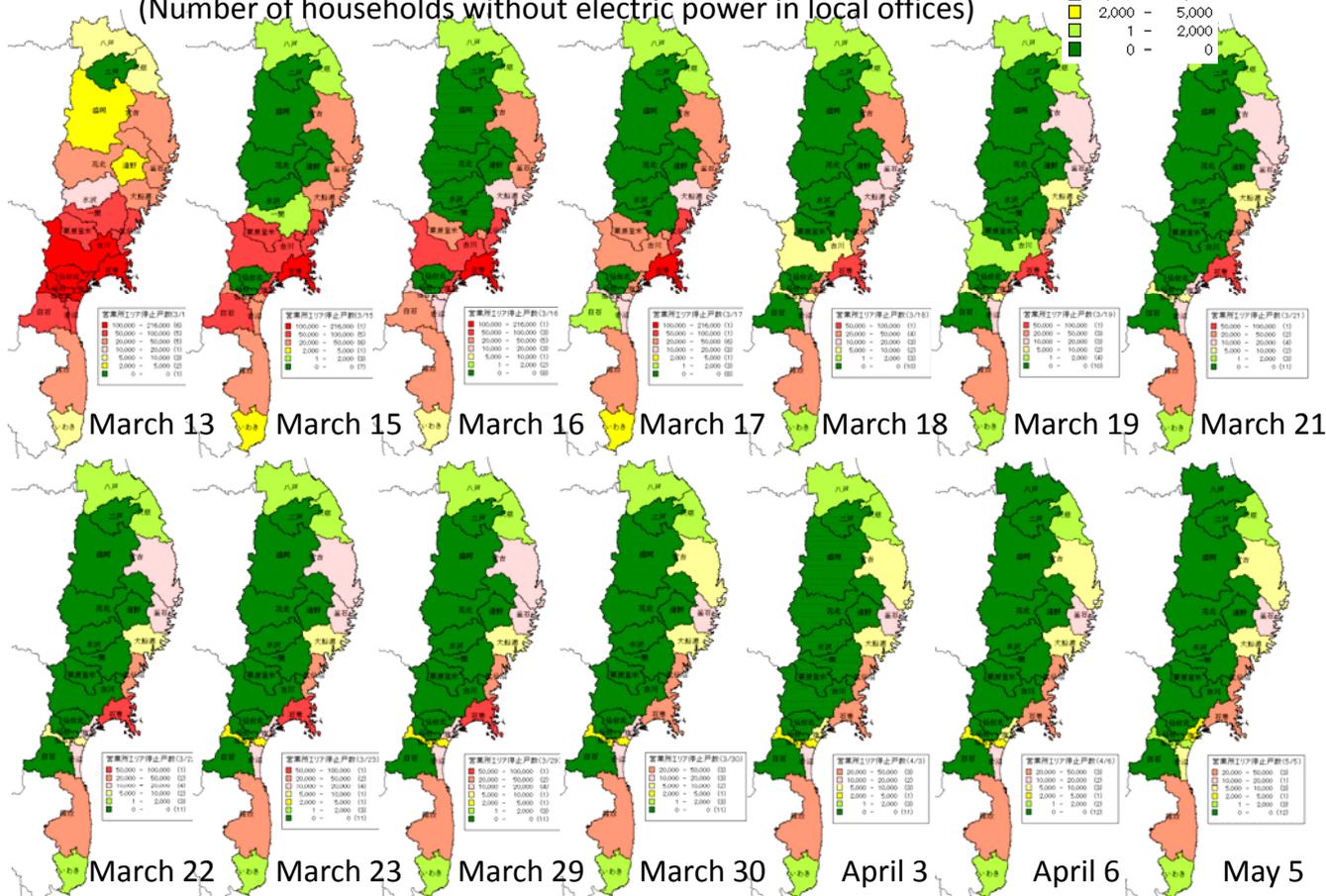
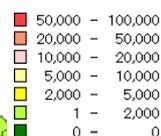
2

Initial Outage of Utility Lifeline Services

Lifeline	2011 off the Pacific Coast of Tohoku EQ <i>The Great Eastern Japan EQ Disaster</i>	1995 Hyogoken-Nambu EQ (Kobe EQ) <i>The Great Hanshin-Awaji EQ Disaster</i>	2011/1995
Electric power supply	8.91 million (4.86 million in Tohoku)	2.6 million	342% (187%)
Water supply	Over 2 million	1.26 million (in Hyogo Prefecture only)	Over 160%
City gas supply	0.46 million	0.86 million	53%

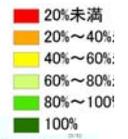
Restoration of Electric Power Supply

(Number of households without electric power in local offices)



Restoration of Water Supply

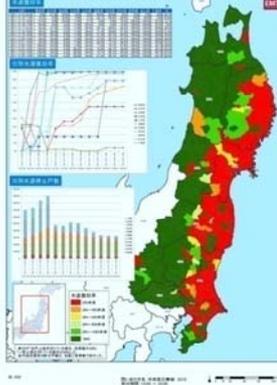
(Restoration ratio in municipalities)



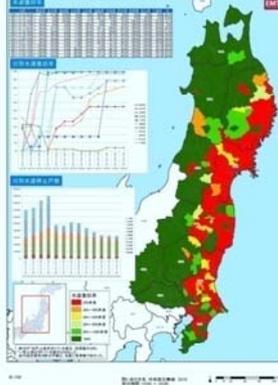
March 13 水道復旧率



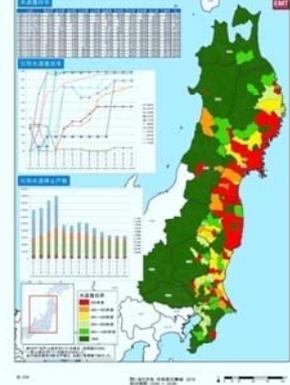
March 14 水道復旧率



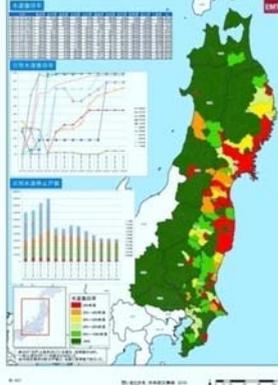
March 15 水道復旧率



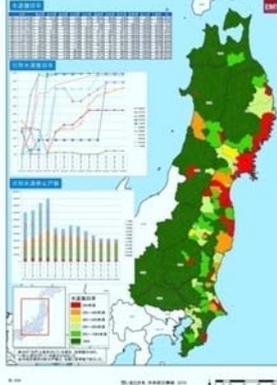
March 17 水道復旧率



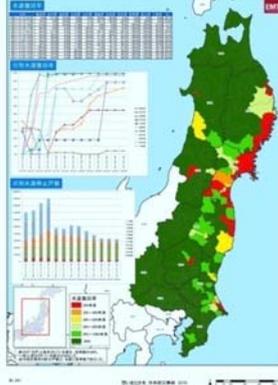
March 19 水道復旧率



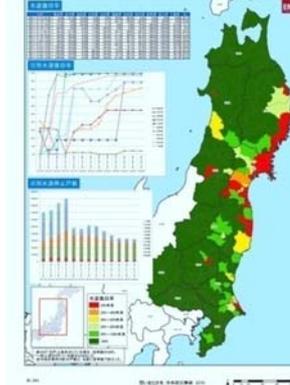
March 21 水道復旧率



March 23 水道復旧率

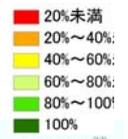


March 25 水道復旧率

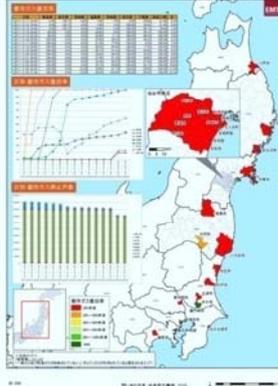


Restoration of City Gas Supply

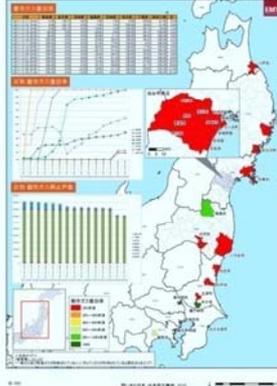
(Restoration ratio in municipalities)



March 11 都市ガス復旧率



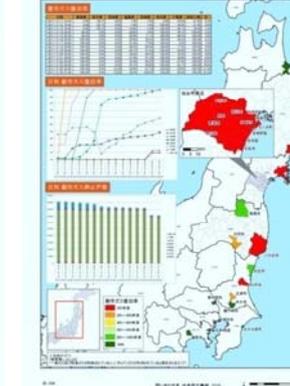
March 13 都市ガス復旧率



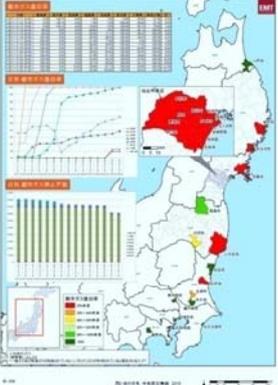
March 15 都市ガス復旧率



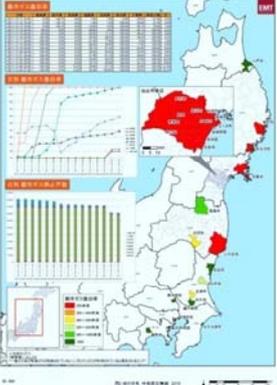
March 17 都市ガス復旧率



March 19 都市ガス復旧率



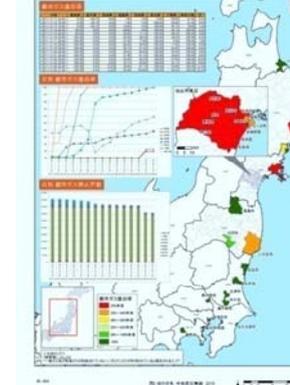
March 21 都市ガス復旧率



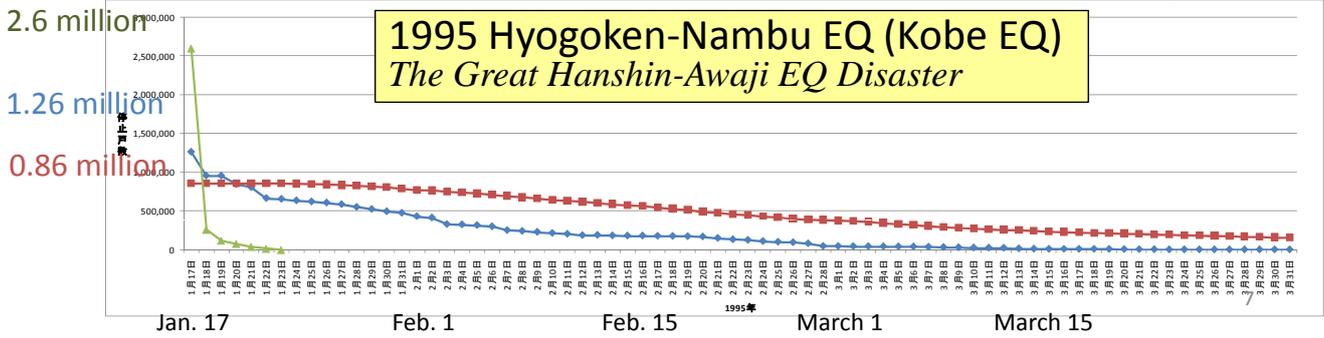
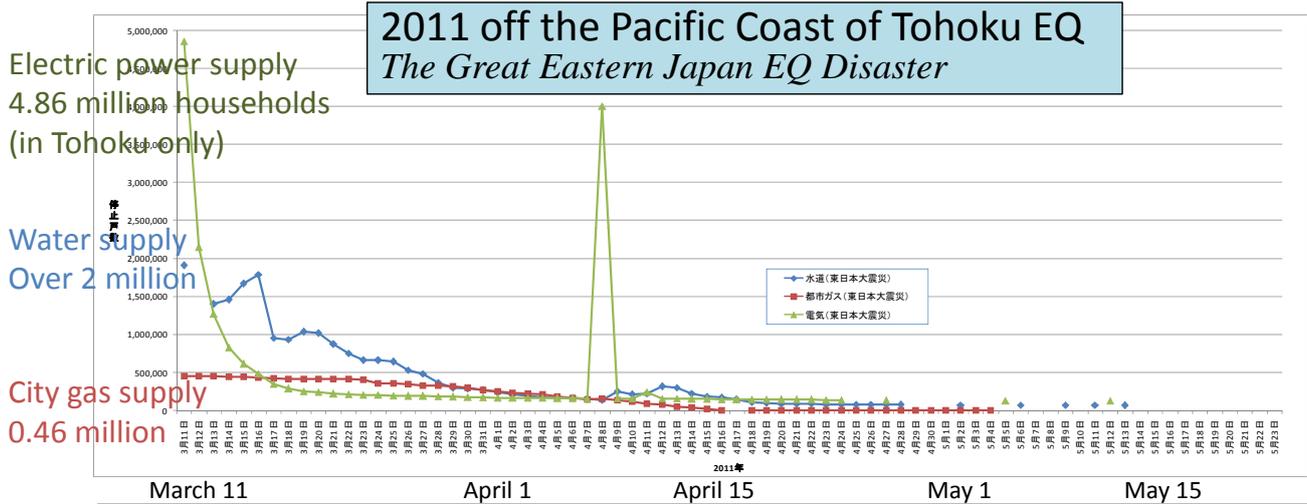
March 23 都市ガス復旧率



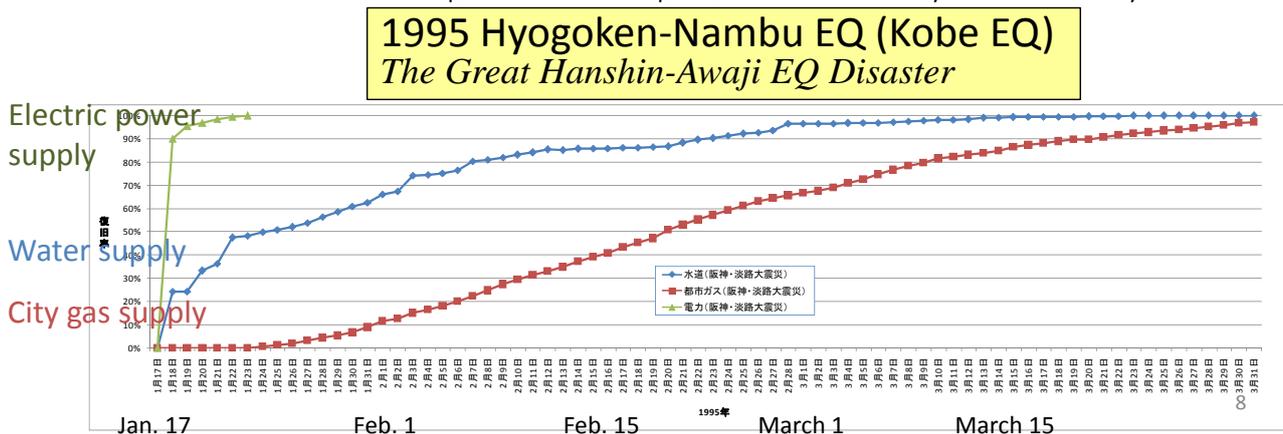
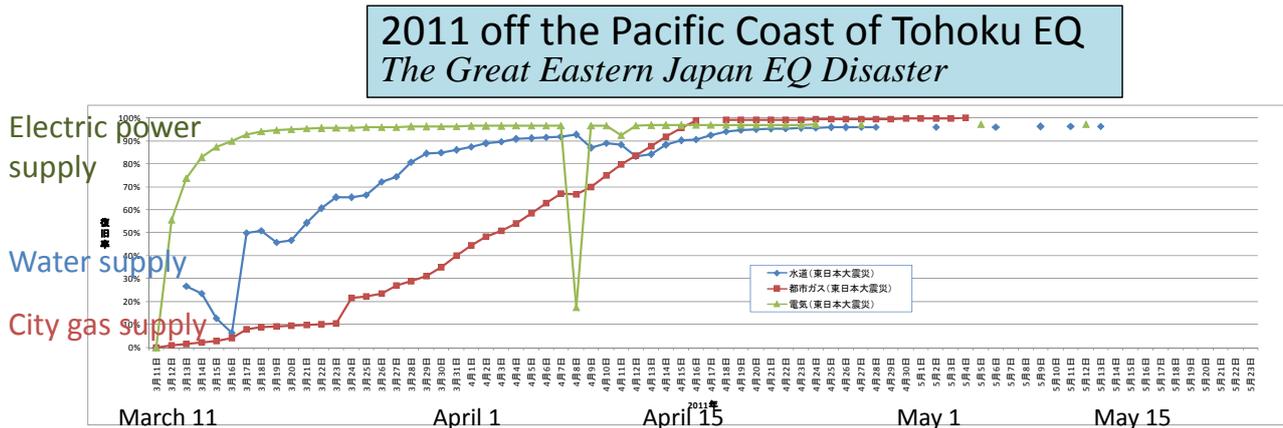
March 25 都市ガス復旧率



Number of Household without Utility Lifeline Services



Restoration Curves of Utility Lifelines



Restoration Time of Utility Lifeline Services

Lifeline	Restoration ratio	2011 off the Pacific Coast of Tohoku EQ <i>The Great Eastern Japan EQ Disaster</i>	1995 Hyogoken-Nambu EQ (Kobe EQ) <i>The Great Hanshin-Awaji EQ Disaster</i>
Electric power supply	90% 95% 100%	4 days (6 days in Tohoku) 7 days (10 days in Tohoku) -	2 days 3 days 7 days
Water supply	90% 95% 100%	36 days 41 days -	38 days 43 days 81 days
City gas supply	90% 95% 100%	35 days 36 days -	64 days 71 days 84 days

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- **Water supply system** by Prof. Kuwata (10min.)
- Wastewater treatment system by Prof. Shoji (10min.)
- **City gas supply system** by Prof. Maruyama (10min.)
- **Electric power supply system** by Dr. Shumuta (10min.)
- Telecommunication system by Mr. Nakajima (10min.)