

JP experience of earthquake, tsunami, and nuclear plant accident

ccNSO Members Meeting

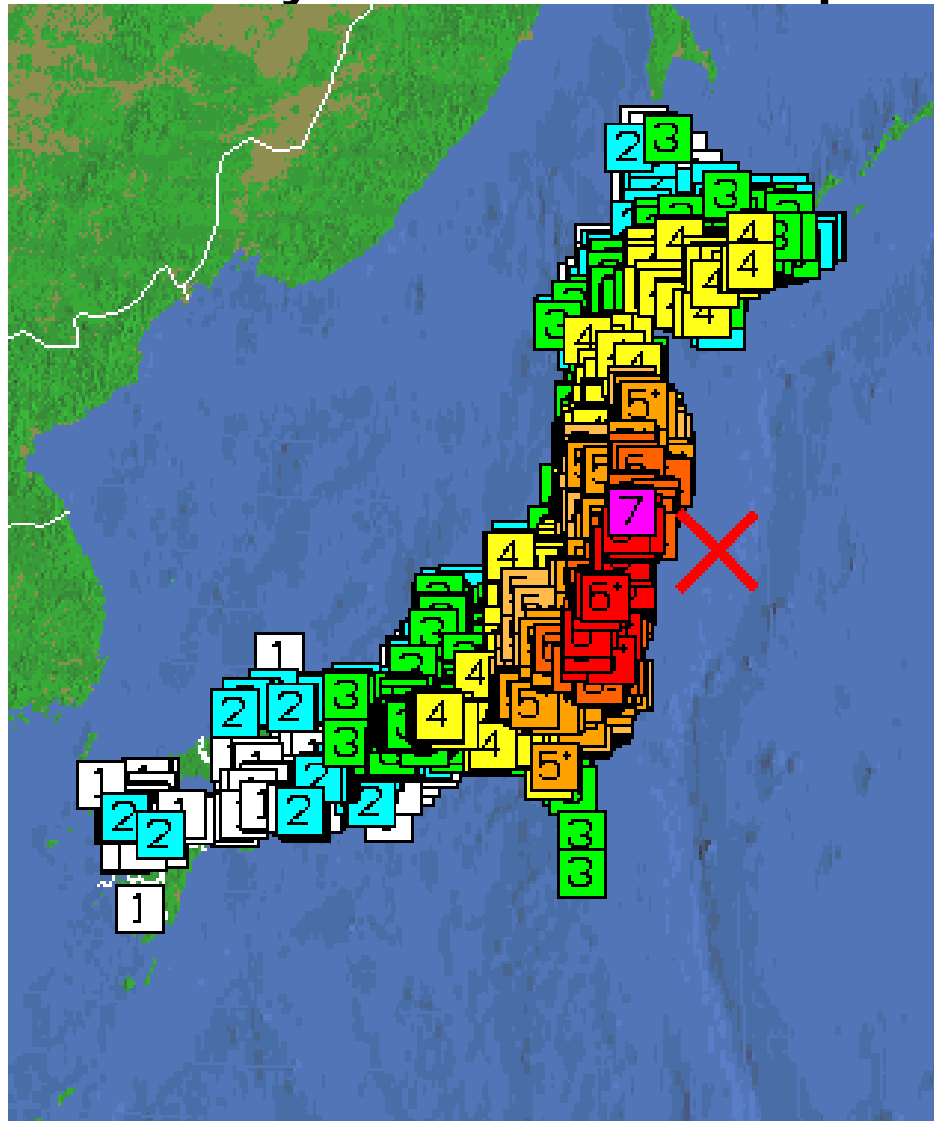
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What happened (1)

- Earthquake
 - Friday, March 11, 2011 14:46 JST
 - Earthquake center 38.322N, 142.369E (in the Pacific Ocean)
 - 130Km east south-east of Ojika Peninsula
 - 500Km north-east of Tokyo
 - intensity=7 (based on the Japanese scale 0-7)
 - 5+ in central area of Tokyo
 - magnitude 9.0
 - buildings collapsed by quakes, buildings slanted by land liquefaction, roads/railroads severed, lifelines severed, ...
 - Tsunami
 - came 30-90 minutes (depending on the places) after the earthquake
 - height ~9 meters on the sea
 - ran up land slopes to 30-40 meters high
- more than 20,000 dead or missing

Intensity of the Earthquake



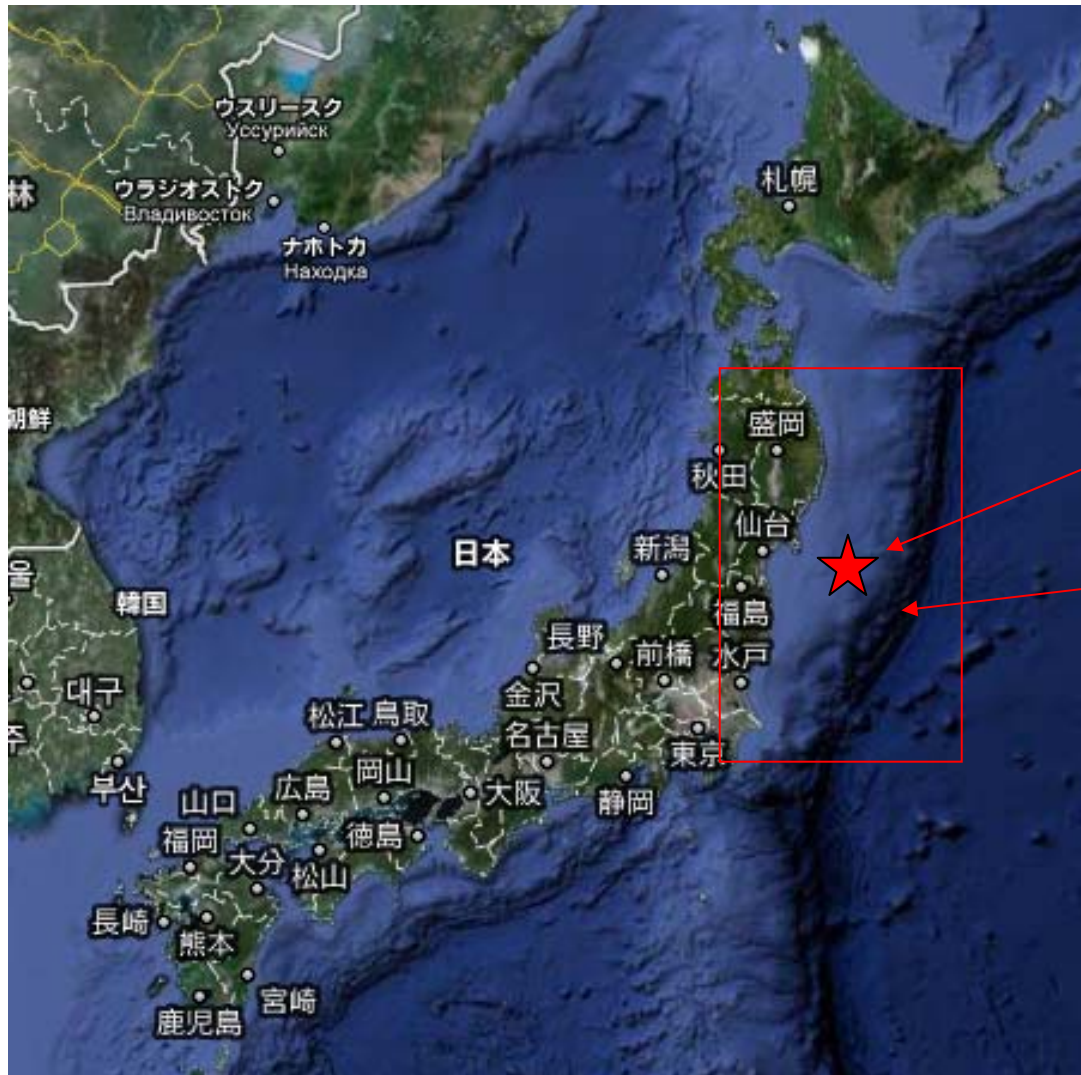
✕ earthquake center

1 -sensitive people
feel the quake

5+ -dishes fall from racks
-wodden walls/columns
get damages

7 -cracks in the ground
-buildings collapse

How tsunami was caused



earthquake center
- 30 meters land slide

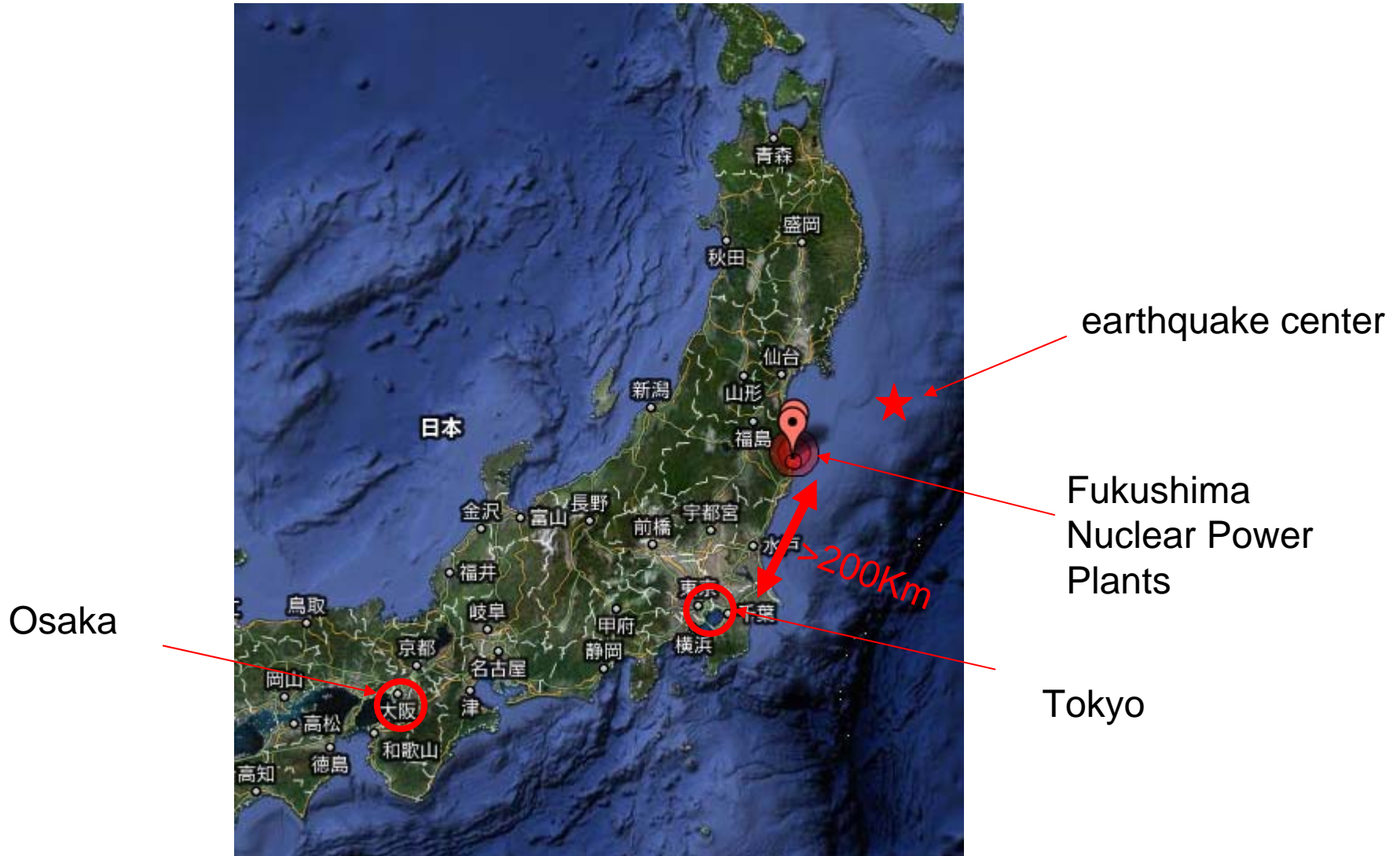
Japan Trench
- more than 40 meters
land slide in the trench

http://iisee.kenken.go.jp/staff/fujii/OffTohokuPacific2011/tsunami_prop_ja.html

What happened (2)

- Nuclear power plants disaster
 - Nuclear power plants on the coast of Fukushima prefecture were hit intensely by earthquake and tsunami
 - government, power company, academicians, ... call it "unexpected circumstances"
 - emergency situation occurred
 - broken by earthquake
 - broken by tsunami
 - explosion of power plant buildings
 - operation disabled for control system or cooling system
 - radiation leak
 - immediate power shortage predicted
 - fear for power shortage due to outage of Fukushima plant in combination with failure of other power-related facilities
 - flash lights, candles, batteries, ... went sold-out

Where are Fukushima nuclear plants



Difficulties JPRS experienced (1)

- on the day of earthquake
 - some facilities/goods were broken or fell down by the earthquake
 - not easy to spot all employees while checking their safety
 - even it was business hour
 - some were outside the office to attend meetings / to visit customers / ...
 - some took days off (due to holidays / sickness / ...)
 - communication was difficult
 - phones (fixed line, mobile) were heavily congested and people couldn't grab lines / waves
 - even staff-safety-check service prepared for this kind of emergency didn't work (because of communication congestion!)

Difficulties JPRS experienced (2)

- on the day of earthquake *(continued)*
 - just after the big quake, all sorts of problem-finding must be done immediately
 - safety in the office
 - continuity of the service
 - DNS, WHOIS, registry system, office system, ...
 - servers in the office, servers in data centers, NOC function, ...
 - => fortunately, JP service was not disrupted
 - => some office facilities got damages
 - employees couldn't go back home
 - public transportation stopped their operation because they had to do thorough safety checkups after an intense earthquake (5+ in Tokyo)
 - road congestion because many people tried to get home by cars as public transportation systems were not available
 - 30-40 staffs stayed overnight with blankets and sleeping bags
(over 120,000 people couldn't travel home in Tokyo area)

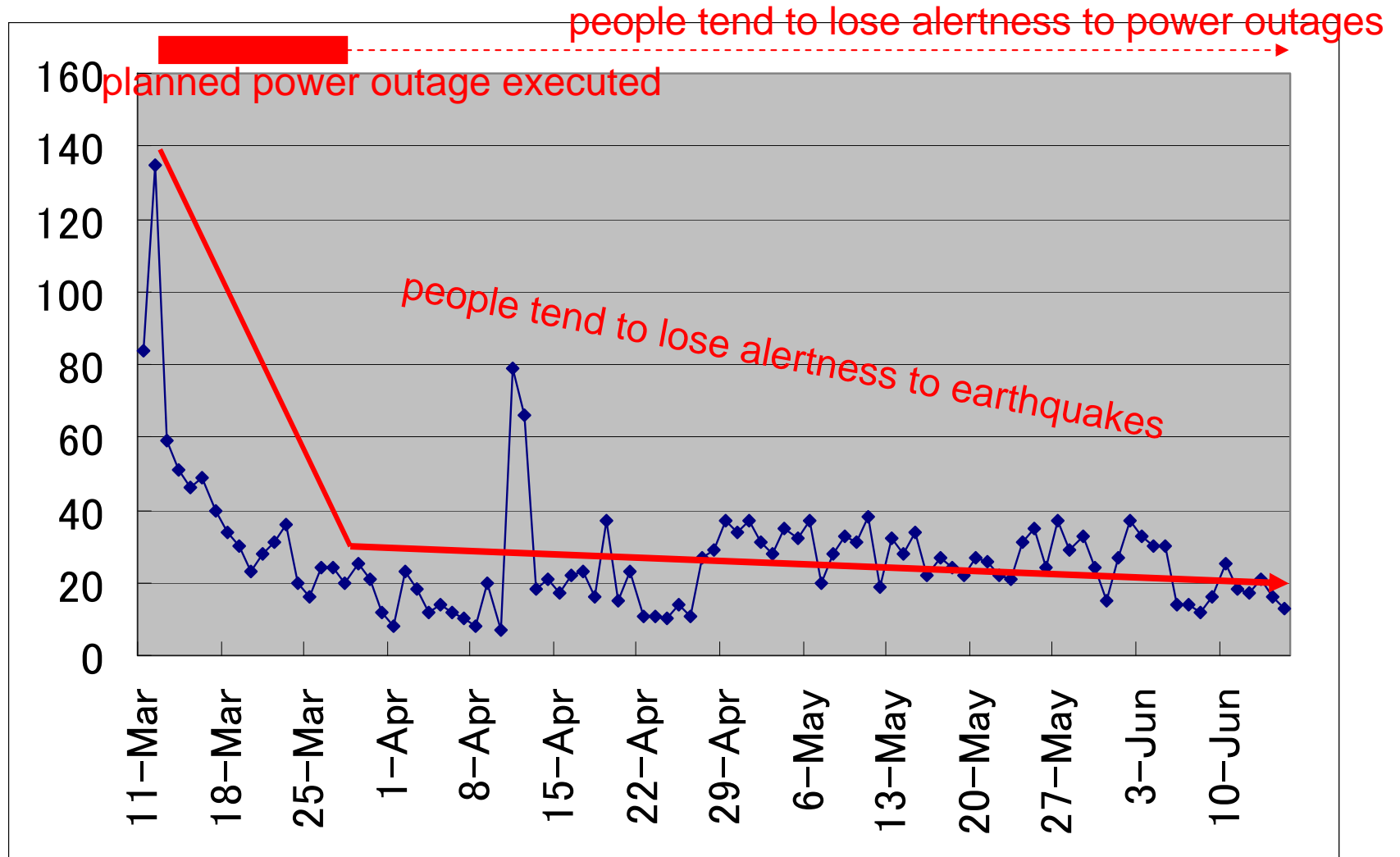
Difficulties JPRS experienced (3)

- during several days after the earthquake
 - not all the public transportation services were back to normal
 - some railway lines were severely damaged
 - partial/reduced operation for the purpose of electric power save
 - still in the same situation as of today
 - planned electric power-down was executed, rotating among designated areas
 - the area JPRS locates in was not among the designated areas
 - employees living in designated areas were
 - directed to work from home (although their PC connection couldn't survive)
 - released from the office early enough to reach home safely even they came to the office to work
 - the ministry directs people to stay home as far as possible in order for them to avoid troubles and save electric power

Difficulties JPRS experienced (4)

- during several days after the earthquake (*continued*)
 - decide how domain names should be handled (=relief)
 - people (registrants / registrars) in the disaster-affected area may not be able to renew their domain names
 - such domain names will be automatically renewed with no charge
 - announce to the public was not done
 - since some registrars could not extend the above relief to their registrants
 - registry revenue decrease should be estimated
 - to what extent the domain name market will shrink
 - how much revenue decrease the above relief will yield?

Number of noticeable earthquakes per day



data from http://www.seisvol.kishou.go.jp/eq/shindo_db/db_map/indexemg.html

Situations JPRS should prepare for (1)

- earthquakes
 - earthquakes at the same/higher level of intensity as we experienced
 - difficulty in commuting
 - when staffs must stay in the office for a while (e.g., 1 week)
 - when staffs must stay at home for a while (e.g., 1 week)
- power outage
 - Government said it would intend
 - not to place any planned power outages this summer
 - to help infrastructure level services to get fuels for their emergency power supply facilities
 - but ... as it doesn't mean 100% guarantee, we have to prepare for
 - planned power outage
 - sudden power outage

Situations JPRS should prepare for (2)

- avoiding power shortage of Japan
 - 15% power-cut by mid-small offices is demanded by the government
 - 20% power-cut by large power consumers (such as big factories) is demanded by the government

Short term preparation (1)

- for staffs' initial immediate movement after disaster
 - set up various kinds of communication channels among staffs and office building managers
 - phones, e-mails, twitter, skype, web-sites, ...
 - walkie-talkies, ...
 - improve manuals
 - evacuation, staff safety check, periodical roll call, damage inspection (physical / service grade), ...
 - purchase and maintain emergency survival kit
 - food/water/gloves/helmet/light/... for individuals
 - sleeping bags/radios/... for office stayers
- for company's initial essential decision
 - set up basic criteria for
 - making staffs to go home
 - making staffs to come to office
 - how to treat visitors

Short term preparation (2)

- for company's emergency organizational structure
 - decision making / field commanding
 - not all decision makers/commanders are expected to be available
 - information acquisition/sharing structure (who/how/why)
- for registry service / company operation
 - set up service levels
 - according to damage
 - according to power outage scale
 - who are to be in the office in each service level
 - who will be informed about our service status
- for company operation with remote staffs
 - establishment of remote connection environment in emergency circumstances
 - how to manage staffs who are in remote (even manager is in remote)
 - how executive meetings are convened in what cases

Short term preparation (3)

- for normal business operation with 15% power-cut
 - dimming lights, office machines with stand-by mode, ...
 - set airconditioner target temperatures to 2 degrees higher (28 degree Celsius = 82.5 degree Fahrenheit) than usual summer target
 - allow staffs to be dressed more casually (= loosely:-)
- for unplanned power failure
 - check how to manually control electric-driven devices
 - to unlock electrically locked doors, to unlock electrically locked safety boxes, ...
 - check what functions are going down in power failure and install UPSs to facilities that shouldn't be interrupted
 - purchase and maintain emergency survival kit
 - food/water/gloves/helmet/light/... for individuals
 - sleeping bags/radios/... for office stayers

Short term preparation (4)

- for organizational initial decision
 - set basic priorities to
 - functions to survive
 - who are going to do what
 - set up basic criteria of
 - making staffs to go home
 - making staffs to come to office
 - how to treat visitors

Summary

- short term preparation
 - to prepare for
 - another big disaster
 - power failure
 - sudden power failure
 - planned power failure
 - designated power save
 - 15-20% power save (directed by government)
 - to complete the preparation before this summer
- long term preparation
 - systems for registry services through remote operation by staffs
 - preparation for more intense disasters
 - disaster recovery plan with systems and human resources for typical cases

Q & A