June 16, 2011

Results of the 2nd Airborne Monitoring by the Ministry of Education, Culture, Sports, Science and Technology and the U.S. Department of Energy

1. Objective of this Monitoring

In order to investigate the effects over a wide area due to radioactive substances, and for the assessment of future doses and of deposition of radioactive substances in evacuation zones, etc., the Ministry of Education, Culture, Sports, Science and Technology and the U.S. Department of Energy (hereinafter referred to as "U.S. DOE") jointly performed airborne monitoring,* and measured the air dose rate 1 m above the ground surface and the deposition of radioactive substances in the ground surface, in areas within 80 km to 100 km of Fukushima Dai-ichi NPP (with regard to the south of Fukushima Dai-ichi NPP, as far as to around 120 km).

* Airborne monitoring is a technique in which highly sensitive, large radiation detectors are installed in aircraft, and gamma rays from radioactive substances accumulated in the ground are quickly measured over a large area, in order to check the surface deposition.

2. Details of this Monitoring

○ Measurement dates: May 18 to 26

○ Aircraft: MEXT (Nuclear Safety Technology Center)

- Private helicopter (BELL 412)

○ Items covered:

Air dose rate 1 m above the ground surface and deposition of radioactive substances in the ground surface (cesium 134, cesium 137), in areas within an 80-100 km range of Fukushima Dai-ichi NPP (with regard to the south of Fukushima Dai-ichi NPP, as far as to around 120 km)

* As U.S. DOE could not fly their aircraft this time, they only participated in the analysis of the monitoring results.

3. Results of this Monitoring

Attachments 1 to 3 have the "Dose Measurement Map" which shows the air dose rate 1 m from the ground surface, and the "Soil Concentration Map" which shows the deposition of radioactive substances in the soil surface, both prepared through this monitoring.

The maps were prepared based on the following conditions:

● Created based on results of airborne monitoring by MEXT.

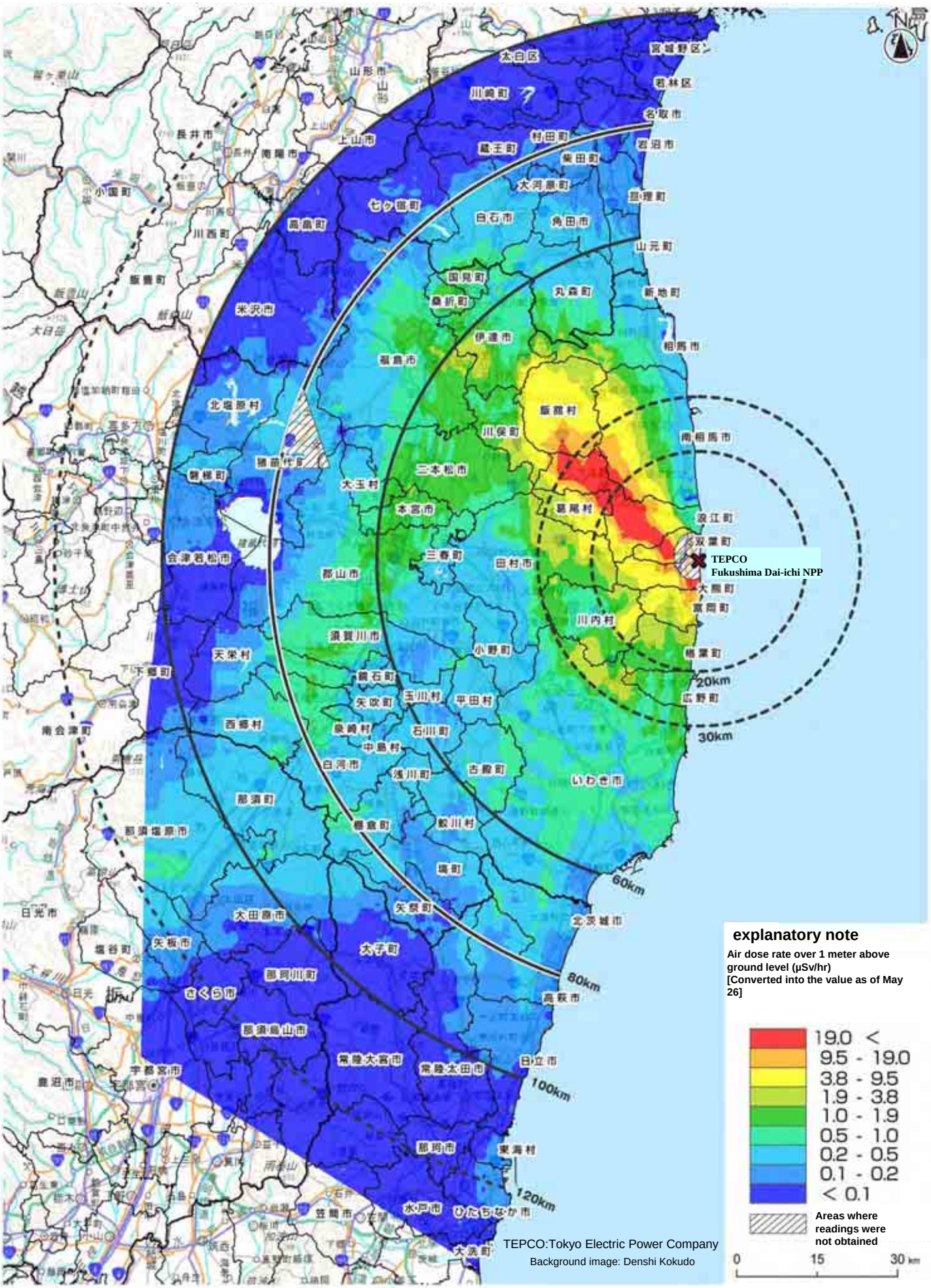
- This published data was prepared based on results obtained from May 18 to 26 by a helicopter, in a total 13 flights. Their flight altitudes were from 150 to 300 m above ground (Absolute altitude).
- The air dose rate at the ground surface is the averaged value of air dose rates in a roughly 300 m to 600 m diameter circle (varies by flight altitude) below the aircraft.
- The width of the aircraft trajectory was 3 to 5 km.
- In the map showing the readings of air dose monitoring inside the 80 km zone of Fukushima Dai-ichi NPP, the airborne monitoring results obtained up to April 29 were converted into values as of May 26, considering the decay of radioactive substances.
- For the air dose rate and deposition of radioactive substances in the ground surface, actual readings were converted into values as of May 26, when this monitoring was last done.
- The deposition of cesium 134 in the ground surface was calculated based on the results of airborne monitoring and of measurements which the U.S. DOE took on the ground using a gamma ray energy analysis device.
- Based on the ratios of cesium 134 and cesium 137 obtained by U.S. DOE measurementson the ground using a gamma ray energy analysis device, , the deposition of cesium 137 in the ground surface was calculated.
- The measured area range is basically set to be 80-100 km of Fukushima Dai-ichi NPP, to check the spread status of radioactive substances. However, based on the monitoring results, the area was expanded up to around 120 km in the southern direction from the NPP.

4. Future Plans

At present, airborne monitoring is being performed within 80 km of Fukushima Dai-ichi NPP, and the monitoring in this area shall be performed regularly in each season. Based on the study on the current monitoring results, the expansion of target areas shall be discussed, and airborne monitoring shall be performed as necessary.

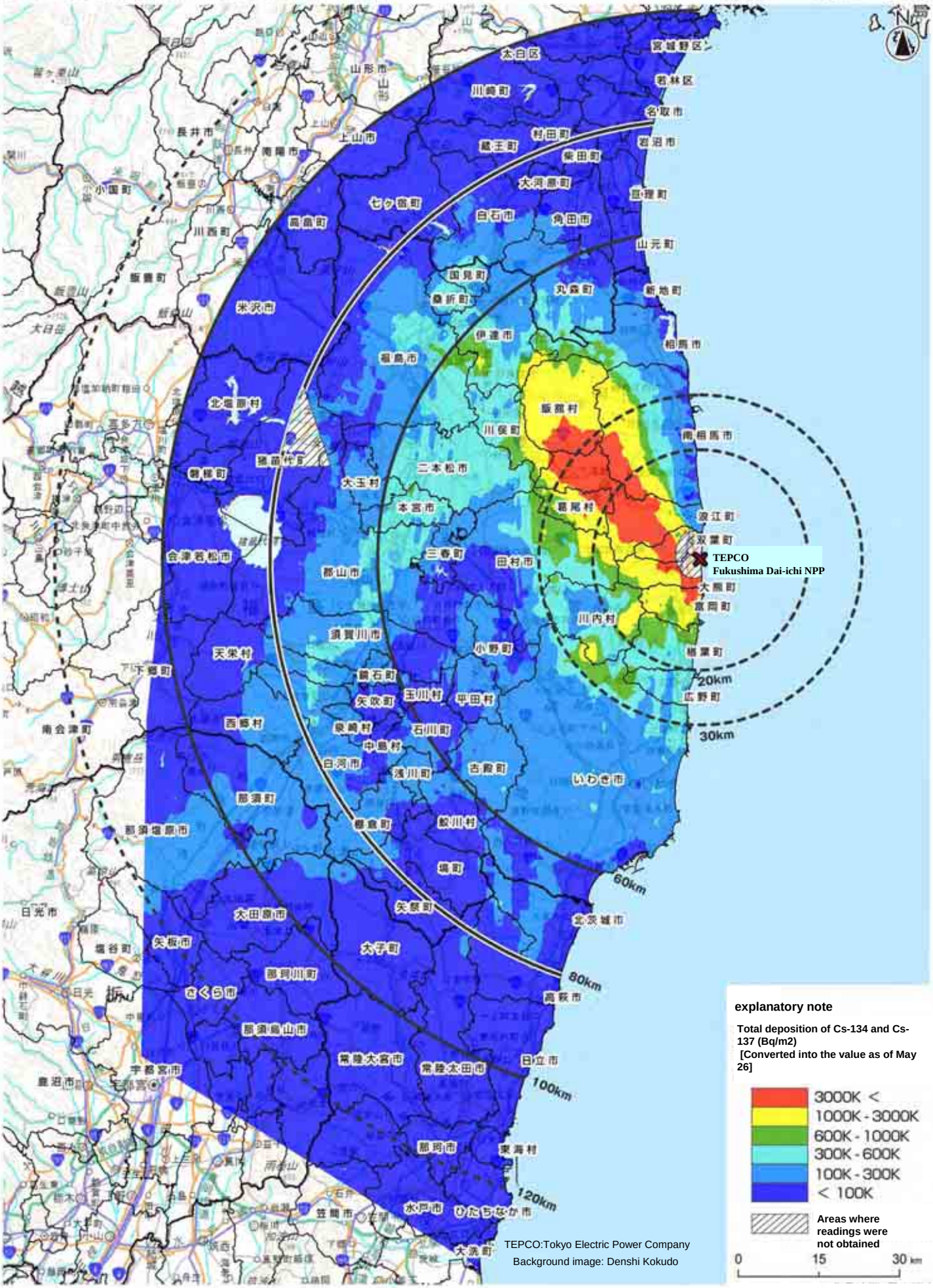
Results of airborne monitoring by MEXT and DOE
(Readings of air dose monitoring inside 100km zone of TEPCO Fukushima Dai-ichi NPP)

Annex 1



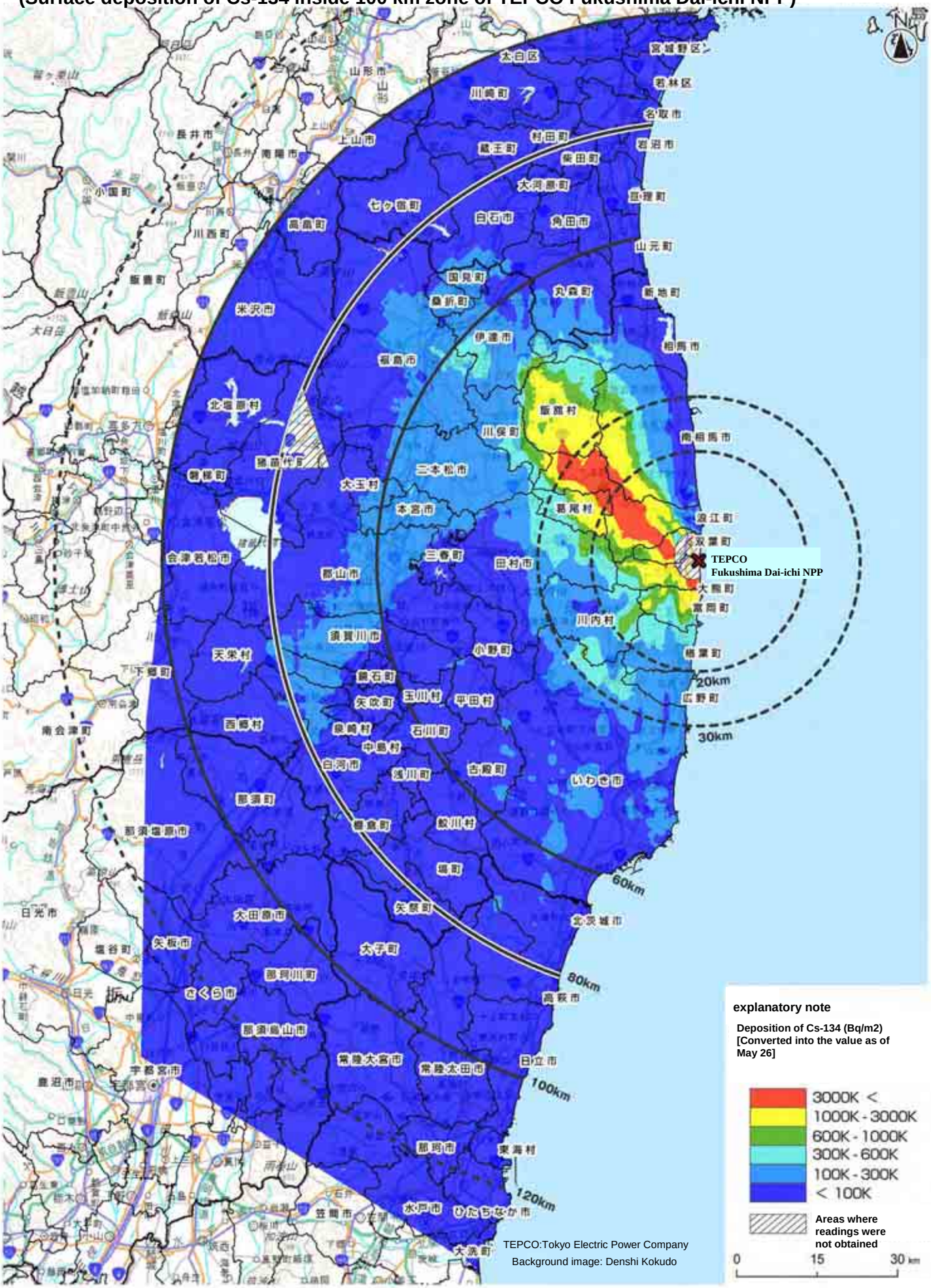
Results of airborne monitoring by MEXT and DOE
(Total surface deposition of Cs-134 and Cs-137 inside 80 km zone of TEPCO Fukushima Dai-ichi NPP)

Annex 2



Results of airborne monitoring by MEXT and DOE
(Surface deposition of Cs-134 inside 100 km zone of TEPCO Fukushima Dai-ichi NPP)

Annex 3



Results of airborne monitoring by MEXT and DOE
(Surface deposition of Cs-137 inside 100 km zone of TEPCO Fukushima Dai-ichi NPP)

Annex4