Appendix 2：List of Technologies concerning Disaster Prevention and Mitigation

Number	Summary of Technologies(with URL)	Company Name
1	➢BCP Template	Aioi Nissay Dowa Insurance
2	➢Flood Risk Consulting	Aioi Nissay Dowa Insurance
3	➢Logosease is a pocket-sized two-way ultrasound wave communicator device which enables underwater conversation as well as under-and-above water communication. http://logosease.yamagata-casio.co.jp/en/	CASIO COMPUTER
4	➢Construction method using DuPont™ Kevlar® fiber reinfoced plastics to improve aseismatic durability and extend life of the structure. http://www.fibex.co.jp/ (HP of Fibex, only in Japanese) http://www.dupont.com/products-and-services/fabrics-fibers-nonwovens/fibers/brands/kevlar.html (HP of DuPont™)	DU PONT-TORAY
5	➢Construction method using DuPont™ Kevlar® fabric sheet to prevent flaking of concrete from tunnel walls and bridges, etc. http://www.fibex.co.jp/ (HP of Fibex, only in Japanese) http://www.dupont.com/products-and-services/fabrics-fibers-nonwovens/fibers/brands/kevlar.html (HP of DuPont™)	DU PONT-TORAY
6	➢Various protective clothing with both excellent heat-resistance and cut-resistance using DuPont™ Kevlar® fiber. http://www.dupont.com/products-and-services/fabrics-fibers-nonwovens/fibers/brands/kevlar.html (HP of DuPont™)	DU PONT-TORAY

7	➢DuPont™ Sustainable Solutions (Offer consulting services for BCP/BCM such as developing managing process, building safety culture and change management based on our 200+ years of experience as an owner of operator) http://www.dupont.com/products-and-services/consulting-services-process-technologies/brands/sustainable-solutions.html (HP of DuPont™)	DUPONT Kabushikikaisha
8	➢Firefighter jackets and other protective apparels, using DuPont™ Nomex® meta-armid fibers http://www.dupont.com/products-and-services/personal-protective-equipment/nomex.html (HP of DuPont™) http://www.teisen.co.jp/english/product/index.html (HP of Teikoku Sen-i, in English)	DUPONT Kabushikikaisha
9	➢DuPont Protective Garments - DuPont™ Tyvek® (for dry particles), DuPont™ Tychem® (for Chemical materials), DuPont™Tychem®TK - Level A garment for HazMat) http://safespec.dupont.com/safespec/productHome (HP of DuPont™)	DuPont-Asahi Flash Spun Products
10	➢Strong Wind Warning System Using only the time series of the wind velocity data observed on the anemometer installed along the railway tracks, this system predicts the wind velocity about 30 minutes ahead according to the time series analysis technique and issues operating restriction orders. https://www.jreast.co.jp/e/development/tech/pdf_2/61-65.pdf	East Japan Railway Company
11	➢Fuel-cell package The fuel-cell package is normally operated as an energy saved co-generation facility. In case of failure of city gas supply after disaster, it can continue the power generation by switching to LP gas of back up fuel. http://www.fujielectric.com/company/promotion/fuel-cell.html	Fuji Electric

12	➢Radiation monitoring system http://www.fujielectric.com/products/radiation/	Fuji Electric
13	➢Flame-retardant/non-halogen/low-smoke cables. Such cables make evacuation guidance easier since the cables don't generate toxic gas or smoke when the cables are burned in fire accidents.	Fujikura
14	➢Wireless communication systems by leaky coaxial cables. Two kinds of systems are provided by purpose. One is used as auxiliary equipment for fire management radio communication systems at underground malls or buildings in case of fire accidents and the other is used as wireless lan network systems for blind zones in case of other disasters. For fire accidents） http://www.fujikura.co.jp/eng/products/cable/coaxial/cd1219.html For disasters） http://www.fujikura.co.jp/eng/products/cable/coaxial/cd1220.html	Fujikura
15	➢Vibration Sensors. Disaster sensing systems used these sensors can be used under many kinds of disasters such as rockfall detection systems, landslide detection systems and others.	Fujikura
16	➢Disaster information management system (information system that collects, accumulates, processes, and provides data related to disasters such as observations, shelters, damages, and emergency activities.) http://www.fujitsu.com/id/about/resources/news/press-releases/2014/20140502.html	FUJITSU
17	➢Participatory Disaster Prevention System through ICT tools (Smartphone etc.) http://www.fujitsu.com/global/about/resources/news/press-releases/2015/0310-01.html http://www.fujitsu.com/global/about/resources/news/press-releases/2015/0323-01.html	FUJITSU

18	➢Renovation of Tsunami-damaged Farmland http://www.hitachizosen.co.jp/english/news/2012/12/000808.html	Hitachi Zosen Corporation &Sumitomo Chemical Company, Limited
19	➢Street sweepers are specially designed vehicles that clean dirt, garbage and other small debris from expressways, general roads, factory sites and quarries. We offer brush type, dry-vacuum/brush type and vacuum recirculating type street sweepers. http://www.howa.co.jp/en/products/vehicle/	Howa Machinery
20	➢Disaster information management system: It integrates various information such as damage information, shelter information, safety confirmation information, etc. to help decision making of disaster response. And issue the infomarion through various channels such as radio, e-mail, web site, etc. simultaniously.	IBM Japan
21	➢Portable modular data center: This solutions is most smaller data centers, and providing the installation flexibility and quick deployment. The PMDC have the complete installation flexibility, fully functional data center just outside their existing building or half way around the world in any remote locaton and can achieve this quickly. http://www-935.ibm.com/services/us/en/it-services/data-center/modular-data-center/index.html	IBM Japan
22	➢Cloud Disaster Recovery: It saves clients' IT system or core data at remote site by using cloud computing services. Clients' can prevent the business interruption when disaster occurrence by using remotely saved system or core data. http://www-935.ibm.com/services/us/en/it-services/business-continuity/cloud-disaster-recovery/index.html	IBM Japan

23	➢ Integrated Flood Model - Simulation Program for River Network: It simulates the entire river network with high density by integrating the various data related to river basin such as rainfall, geography, hydro, absorption of water, etc. http://www-03.ibm.com/press/us/en/pressrelease/35263.wss	IBM Japan
24	➢Ozone deodorization and sterile filtration apparatus.(The apparatus widely used for counter measurement of influenza, food poisoning and chemical/biological terrorism.) http://www.ihi.co.jp/it/service/eco/detail.html#anc_02	IHI Trading
25	➢Life Recovery Support System using Survivors Ledger Effective management system for handling transactions in all process from beginning to successful conclusion of disaster survivors' life reconstruction. http://mms.gs.niigata-u.ac.jp/drj/	InterRisk Research Institute & Consulting, Inc.
26	➢Solar Power Generating Systems	KYOCERA
27	➢Compact weather station POTEKA. (It observes meteorological data on the ground.) http://www.meisei.co.jp/english/products/meteo/advanced_observation_system_po.html	Meisei Electric
28	➢QCAST Series of Japan Meteorological Agency for "Earthquake Early Warning".(The system receives "Earthquake Early Warning" on the map display terminal and automatically controls plant equipment etc. by transmitting control signals.) http://www.meisei.co.jp/english/products/disaster/qcast_series_responding_to_ear.html	Meisei Electric

29	➢"Toughness-Coat"is the Polyurea resin coating systems for a concrete structure. This technology improves the resistance to the impact and the durability of the concrete structure. http://www.shimz.co.jp/english/news_release/2012/2012027.html	Mitsui Chemicals (Mitsui Chemicals Industrial Products), Shimizu Corporation
30	➢New Congestion Estimation System Based On the "Crowd behavior Analysis Technology" http://www.nec.com/en/global/techrep/journal/g14/n01/pdf/140117.pdf	NEC Corporation
31	➢Harbor Monitoring Network System for Detecting Suspicious Objects Approaching Critical Facilities in Coastal Areas http://www.nec.com/en/global/techrep/journal/g14/n01/pdf/140125.pdf	NEC Corporation
32	➢High Quality Smart Radio Solution "PASOLINK" http://www.nec.com/en/global/prod/nw/pasolink/index.html	NEC Corporation
33	➢Emergency Mobile Radio Network based on Software-Defined Radio http://jpn.nec.com/techrep/journal/g14/n01/pdf/140121.pdf	NEC Corporation
34	➢Imaging Solutions for Search & Rescue Operations http://www.nec.com/en/global/techrep/journal/g14/n01/pdf/140120.pdf	NEC Corporation
35	➢Information Sharing System at Earthquake/Pandemic http://www.nec.com/en/global/solutions/outsourcing/bcinfo/index.html	NEC Corporation

36	➢River Technologies : Hyraulic Testing Laboratory, River Structure Services, 2D/3D Hydrodynamic modelPrediction of Riverbed Deformation, and Prediction of River Vegetation with NKhydro2D http://www.n-koei.co.jp/english/rd-center/pdf/1-1_river_technologies.pdf	Nippon Koei
37	➢Sewerage Technologies : Sewerage System Services, Float-less Method for Manholes, and Renovation Design Software for Aging Sewers using Non-linear Crack Analysis: SPRana http://www.n-koei.co.jp/english/rd-center/pdf/1-2_sewerage_technologies.pdf	Nippon Koei
38	➢Storm & Tsunami Technologies : Storm Surge and Tsunami Analysis Model (NKSTAM), Storm Surge Risk Analysis, and Tsunami Risk Analysis http://www.n-koei.co.jp/english/rd-center/pdf/1-3_storm_and_tsunami_technologies.pdf	Nippon Koei
39	➢Earthquake Technologies : Earthquake Hazard Mitigation Technology, Active Fault Detection using Aerial Photographs, Simulation of Strong Ground Motion due to Large Earthquakes, Rapid Estimates of Damage due to Significant Earthquake, and Geo-Technical Survey using Micro Tremors http://www.n-koei.co.jp/english/rd-center/pdf/2-1_earthquake_technologies.pdf	Nippon Koei
40	➢Landslide, Debris Flow & Rock Fall Technologies : Geotechnical Centrifuge, Embankment Slope Stability during an Earthquake, Countermeasures against Soft Ground, Debris Flow Hazard Analysis & Prediction, Realtime Debris Flow Hazard Prediction and System, Slope Stability Analysis, Seepage Flow Analysis, Numerical Simulation of Slope Reinforcement Structures, and Analysis of Rock Fall Hazards http://www.n-koei.co.jp/english/rd-center/pdf/2-2_landslide_technologies.pdf	Nippon Koei

41	➢Reinforcement of slopes and revetments for earthquakes : Nippon Koei proposed a method of groundwater drainage to minimize the changes in ground properties by seismic forces. The method utilizes groundwater drainage pipes to reduce excess pore water pressure. We have conducted experiments to measure the behavior of a model fill slope during earthquake load by using the centrifuge facilities available at the Research and Development Center of Nippon Koei. According to the results, the drainage piles are effective for prevention of seismic force damage. http://www.n-koei.co.jp/english/rd-center/pdf/2-1_2403AE_slope_reinforcement.pdf	Nippon Koei
42	➢Coutermeasures against Deep-seated Landslide : Nippon Koei conducted fixed point observations by helicopter to survey overflow, flooding, and severity of landslide situation. We also designed countermeasure works against future debris avalanche by sabo dam, consolidation works, multiple drop structures, mountain stream protection works, hillside works, and revetment works in the five most damaged areas. http://www.n-koei.co.jp/english/international_operations/japan.html	Nippon Koei
43	➢Volcano Hazard Urgent Mitigation in Pinatubo Philippines : The objectives of the Project were : 1) to rehabilitate and improve road, sand pocket, sabo and flood control facilities, 2) to protect life and minimize damages to properties from perennial flooding, 3) to reduce flood level and flooding duration and to improve drainage efficiency, and 4) to formulate an integrated plan for a comprehensive non-structural measures, and to conduct Institutional Capability Building. http://www.n-koei.co.jp/english/international_operations/se-asia.html	Nippon Koei
44	➢BiD Frame Construction Method http://www.nishimatsu.co.jp/eng/solution/tech/kenchiku/taishin.html#contents08	Nishimatsu Construction
45	➢Seismically Engineered Ceiling Clip Method http://www.nishimatsu.co.jp/eng/solution/tech/kenchiku/taishin.html#contents07	Nishimatsu Construction

46	➢PP Net Lining Method http://www.nishimatsu.co.jp/eng/solution/tech/doboku/renewal.html#contents03	Nishimatsu Construction
47	➢The Shear Reinforcing Method for Existing Structures	Nishimatsu Construction
48	➢ESLOHYPER AW　Earthquake-Resistant, High Performance Polyethylene Pipe for Water Supply Use http://www.eslontimes.com/en/	SEKISUI CHEMICAL
49	➢S-LEC　Interlayer film is used for laminated glass to prevent injury from glass fragments in case of glass breakage http://www.s-lecfilm.com/eng/product/architect/index.html	SEKISUI CHEMICAL
50	➢Business Continuity Plan (BCP)/Business Continuity Management (BCM) Consulting http://www.sjnk-rm.co.jp/english/menu_bcm.html	Sompo Japan Nipponkoa Insurance Inc.
51	➢Quantitative Risk Assessment for Natural Hazards http://www.sjnk-rm.co.jp/english/menu_quantitative_risk.html	Sompo Japan Nipponkoa Insurance Inc.
52	➢Tied Barrier http://www.sumika-acryl.co.jp/english/index.html	Sumitomo Chemical Company, Limited

53	➢Prestressed concrete steel wires for various construction structures This product involves the technologies of applying high compressive force to concrete using high-tensile steel and creating high-strength concrete components. Sumitomo Electric offers both PC-related materials and engineering services. Sumitomo Electric's products are used in constructing various structures including large bridges, tanks, buildings, airport pavement, and offshore structures. http://global-sei.com/products/pc-steel-wire/	Sumitomo Electric
54	➢Electric wires and cables of heat resistance and non-flammability http://global-sei.com/products/wire-cable/	Sumitomo Electric
55	➢Concentrator Photovoltaic System http://global-sei.com/technology/tr/bn76/pdf/76-04.pdf	Sumitomo Electric
56	➢Redox Flow Battery for Energy Storage http://global-sei.com/technology/tr/bn73/pdf/73-01.pdf	Sumitomo Electric

57	➢Integrated Traffic Control Systems (ITCS) ITCS is a large-scale traffic management system that achieves safe and smooth road traffic. This system realizes optimal traffic management for cities and environment by providing traffic information via various media and controlling signals based on the result of traffic information analysis collected by detectors on roads. Sumitomo Electric provides a wide range of products, from detectors, signal controllers, central devices, to data transmission devices. These products are adopted in many facilities across the country including the Metropolitan Tokyo Traffic Control Center, the Japanese largest traffic control center. http://global-sei.com/its/systems/itcs.html	Sumitomo Electric
58	➢Vibration Control Damper for Building with the high-damping rubber technology of reducing building's shake. Technology for Vibration Control Damper for Building http://hybrid.srigroup.co.jp/en/products/damping/	Sumitomo Rubber Industries
59	➢Underground Pipeline(To be utilized on a section of pipeline to accommodate differential settlement, and also it can absorb displacement of pipeline due to ground subsidence occurring from vibration of earthquake and soft ground) http://www.taiseikiko.com/taisei.com/index.html	Taisei Kiko
60	➢ Seismic isolation system is prospective technology to protect buildings from seismic disasters. Taisei offers earthquake resistance buildings including high-rise ones using the original isolation system "Hybrid Taisei Shake Suspension System (Hybrid TASS) method". http://www.taisei.co.jp/english/technology/technical_brochures.html	Taisei Corporation

61	➢ Demands for liquefaction countermeasure to protect existing structures are on the rise. Taisei offers retrofit methods of in-situ liquefiable soil under/beside structures by chemical injection (Ground Flex Mole) or cement mixing (WinBLADE). http://www.taisei.co.jp/english/technology/technical_brochures.html	Taisei Corporation
62	➢It has become more important to evaluate the seismic safety of buildings and infrastructures more accurately and quickly. Taisei offers new FE modeling system for seismic ground motion which can reduce total computing time. It is especially effective when simulating long-period ground motion induced by large earthquakes. http://www.taisei.co.jp/english/technology/technical_brochures.html	Taisei Corporation
63	➢Taisei utilizes the latest technology of hydraulic model tests and numerical analysis to identify tsunami behavior and tsunami forces, proposing tsunami countermeasure and effective business continuity plans for buildings and infrastructures in costal area. http://www.taisei.co.jp/english/technology/technical_brochures.html	Taisei Corporation
64	➢Balloon Grouting Method http://www.toa-const.co.jp/eng/RandD/soil_improvement/	Toa Corporation
65	➢Spiral Drain Method http://www.toa-const.co.jp/eng/RandD/soil_improvement/	Toa Corporation

66	➢"TUMSY (Total Utility Mapping System) " Municipal information-the arrangement of pipelines, roads, utilities-is intricate, multitudinous, and interrelated. And, when you add customer information on top, it gets even worse. TGE offers GIS that has done much to facilitate and simplify municipal administrative work while assuring the flexibility to accommodate developments for new era. TUMSY(Total Utility Mapping System) makes it possible to manage municipal information in the form of common bases, or maps. That is, it utilizes maps as a reference frame in which to organize the cast amount of information that must be managed by city officials and utility providers. The information contained within TUMSY can be related and utilized in a variety of ways. TUMSY is a highly reliable system with an extensive service record. It is, in fact, the most commonly used GIS in Japan. https://www.tge.co.jp/en/business/index.html#pipeline	Tokyo Gas
67	➢"SUPREME (Super-dense Real-time Earthquake Disaster Mitigation System)" SUPREME is our earthquake disaster management system that uses earthquake sensors installed densely (approximately one sensor per square kilometer). The system quickly collects data from monitoring points, remotely turns off district governors, and measures damage to pipelines. http://www.tokyo-gas.co.jp/csr/report_e/feature/plan.html	Tokyo Gas
68	➢"HURRY" Systems are in place to collect information on districts where gas is stopped so that the best way for restoration can be quickly determined, and to manage restoration work. http://www.tokyo-gas.co.jp/csr/report_e/feature/plan.html	Tokyo Gas
69	➢"Intelligent gas meter" Upon detecting an abnormal gas flow or an earthquake measuring 5 or greater on the Japanese seismic scale, a gas meter automatically shuts off gas supply to the house or building it is installed on. http://www.tokyo-gas.co.jp/csr/report_e/feature/plan.html	Tokyo Gas

70	➢TORAYPEF™ is irradiation-cross-linked, semirigid, closed-cell, and long sheet foam, with lightweight, heat-insulating, shock-absorbing, highly moldable, and nonwater- absorbency properties. http://www.toray.com/products/plastics/pla_007.html	Toray Industries,Inc.