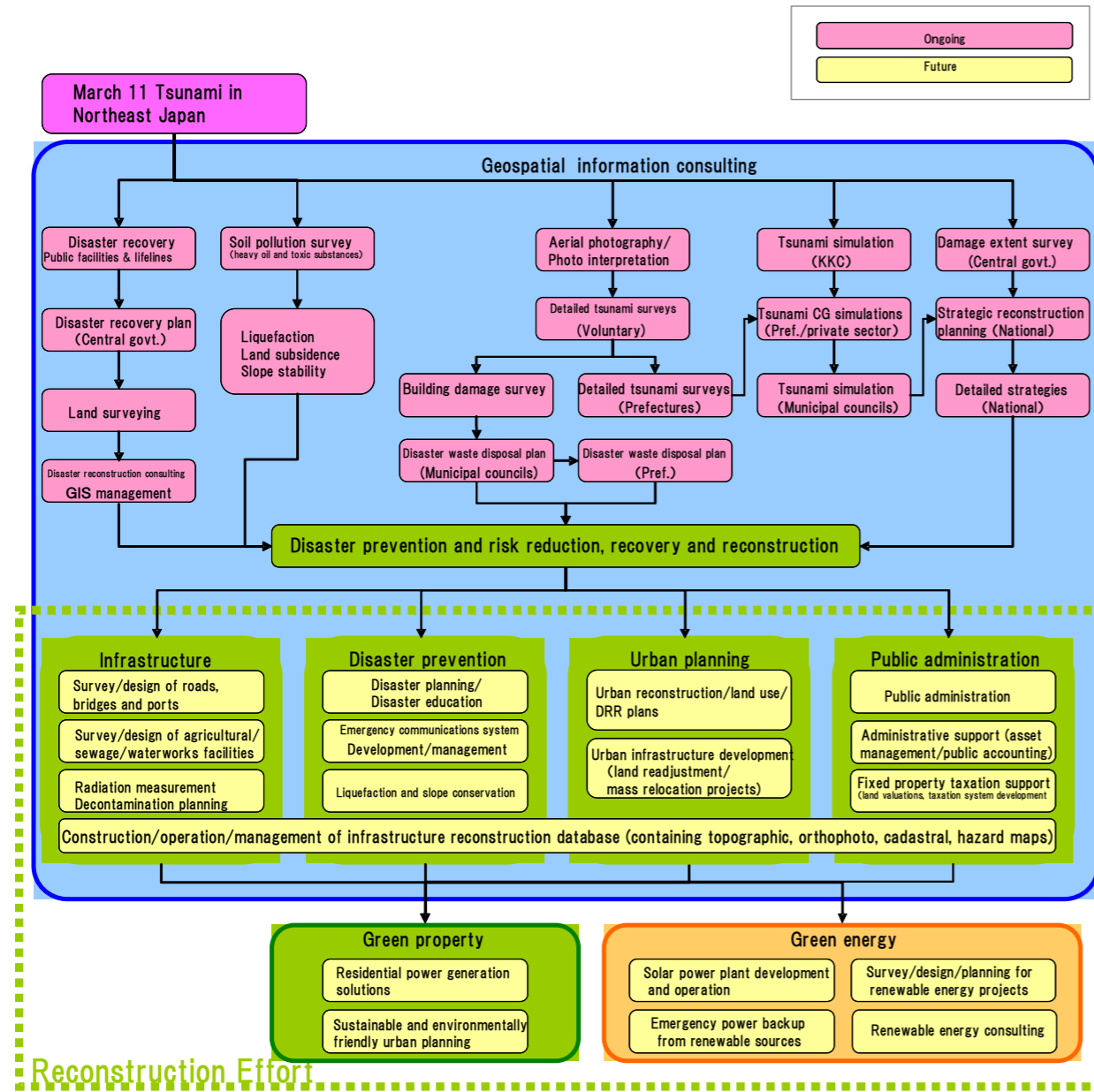


Actions taken by Kokusai Kogyo towards recovery/reconstruction

Kokusai Kogyo was active in each phase of the post-disaster relief, recovery and reconstruction efforts in the 2011 Great East Japan Earthquake and Tsunami – within hours of the quake it had committed to the largest share of emergency aerial photography to ascertain damage, and later worked to assist all levels of government, local to national, in a multitude of ways.

Kokusai Kogyo is making the most of technology synergy between its geospatial information consulting, green energy, green property and financial services segments to deliver concrete reconstruction solutions in: rebuilding infrastructure, disaster risk reduction/management (DRR/DRM), public sector administrative support and renewable energy projects.

In addition, it is leading a public-private-academic partnership to develop a new sustainable city model, its vision of a *green community*.



Post-tsunami actions – recovery & reconstruction to build a better future



Kokusai Kogyo's post-tsunami actions – towards a better future

Geospatial Information + Renewable Energy = Resilient Cities

National/Regional Level
Local Level

Disaster risk reduction/prevention

- 3D data measurement (DMC, LP)
- Port/coastal/groundwater management
- Extending life of existing infrastructure
- Various simulations, ocean short-wave radar

3D data capture (in tunnel) Aerial laser measurement

- Emergency communication system
- Slope/dam monitoring/management
- Road testing/survey, disaster education
- Env. assessment, waterways analysis
- Resistance strength testing (Radar, infra-red)

Road surface testing Slope movement monitoring by GPS

- Property tax/cadastral surveys
- GIS to manage waterworks, sewage, road register
- Hazard maps, DRR planning
- Renewable energy survey and business planning
- Renewable energy consulting
- Eco-town and smart city development

Geographic information system (GIS) Eco-town

- Spatial information measurement data archive sales
- Solar radiation analysis
- Issuing of Green Power Certificates

Solar radiation analysis Green power cert

Immediate aftermath

- Aerial photography (nadir, oblique)
- Photo interpretation/analysis

From March 11 – satellite image, aerial photography started next morning at request of govt. (Iwate to Fukushima)

Satellite image Aerial photo, Kisenuma City Oblique photo, Rikuzentakata City

- Detailed tsunami field survey
- Computer modeled tsunami simulation

From Mar 11 – Rapidly released CG tsunami simulations, combined with photo interpretation to judge extent of damage and to make maps of estimated inundation

Inundation map, Rikuzentakata Tsunami height map, Iwate Pref. Tsunami CG simulation on YouTube

- Field surveys, research
- Local govt. administrative support

From Mar 20 – Tsunami/port surveys in Fukushima, Miyagi pref.
From Mar 14 – KKC staff manned local council service counters issuing building damage certification

Tsunami/port survey KKC staff manning help desk

- Public release of aerial photo archive
- Public release of tsunami simulation analysis

Mar 13 – started releasing aerial photos, inundation maps, tsunami height maps, tsunami CG simulations etc. pro bono on Internet and to various public and civic organizations involved in relief effort

Kokusai Kogyo Group's website

Recovery/Reconstruction

- Detailed disaster surveys, reconstruction planning
- Making maps for reconstruction planning

June – contracted by transport ministry for detailed disaster surveys, formulation of strategic reconstruction plans

Damage survey of public buildings Land use/reconstruction plan

- Road, bridge, port etc. survey/design
- Liquefaction/slope stabilization countermeasures
- Radiation surveys/decontamination planning
- Surveys, design, construction of renewable energy

Renewable energy feasibility study Bridge survey/design

- Disaster waste surveys/management/volume estimates, developing waste disposal plans
- Detailed tsunami simulations

Apr 14 – Disaster waste volume estimations/disposal plans (for prefectures/cities)

Waste disposal plan Emergency recover of collapsed road

- Survey of collapsed/washed away houses
- Supporting integration/use/evaluation of administrative data
- Developing/managing geographic information systems (GIS)
- Assisting community consensus building for reconstruction utilizing 3D simulations

Building damage survey GIS to assist reconstruction

- Urban reconstruction plans (DRR/land use/urban plans)
- Development of basic urban infrastructure (land readjustment/victim relocation projects)
- Administrative support
- Local govt. services support (asset management, public accounting)
- Land taxes (land evaluations, development of taxation systems etc.)
- Development of integrated databases reconstruction
- Renewable energy adoption for emergency power backup
- Disaster resilient eco-towns with independent power supply

Integrated database for reconstruction Tsunami relocation – survey, design, project management for land readjustment

- Logistics management
- Independent power supply/distribution projects
- Development of local energy management systems
- Urban traffic/transportation monitoring
- Energy generation solutions

Response to post-tsunami energy crisis: solar plant developed in only 4 months to remotely supply group's Tokyo offices

Disaster resilient and sustainable society