



**Initiatives to Strengthen Kyoto
University's Facilities Against
Earthquakes Following the
2011 Great East Japan
Earthquake**

March 2012

Outline

In 2006, a "Study Group on Earthquake Disaster Mitigation Focused on Seismic Reinforcement" at Kyoto University considered measures to reduce the damage caused by earthquakes to buildings on campus, establishing the "Kyoto University Seismic Retrofitting Promotion Policy." Based on this policy, work is underway to sequentially reinforce each university facility against earthquakes.

National university corporations and other higher education institutions in the Tohoku and Kanto regions suffered widespread and significant damage as a result of the Great East Japan Earthquake and Tsunami in March 2011, including damage to facilities and equipment, disruption to essential infrastructure, and negative impacts on research and educational activities due to the reduced electricity supply and disruptions to other services. This disaster reaffirmed the importance for Kyoto University to comprehensively strengthen its disaster prevention capabilities.

In August 2011, the Japanese government established the Third Five-Year Program for Emergent Renovation and Building of Facilities of National Universities, etc. This program promotes the systematic and strategic improvement of facilities at national university corporations and other higher education institutions based on the basic idea of securing a safe environment for education and research.

To further strengthen Kyoto University's facilities against earthquakes after the Great East Japan Earthquake and Tsunami and the introduction of the government's five-year program, the university set about checking the progress of its initiatives to date based on the 2006 "Kyoto University Seismic Retrofitting Promotion Policy" as well as compiling a list of measures to be implemented from 2012.

Events to Date

March 2011: Great East Japan Earthquake and Tsunami

June 2011: Budget request for facility subsidies to implement the seismic retrofitting of buildings totaling 44,000 m² and strengthen essential infrastructure against earthquakes

July 2011: Each university department requested to conduct emergency damage inspections and repairs to ensure the safety of non-structural elements

August 2011: Establishment of the Third Five-Year Program for Emergent Renovation and Building of Facilities of National Universities, etc. (By decision of the Minister of Education, Culture, Sports, Science and Technology)

December 2011: Approval of three seismic retrofitting projects (totaling 6600 m²) and the installation of on-site power generators at university hospitals as part of efforts to reinforce essential infrastructure against earthquakes in the supplementary budget of the Japanese government

January 2012: Approval of projects to reinforce undamaged buildings, small-scale buildings, etc., against earthquakes as "Seismic Retrofitting Projects to Save Lives During Earthquakes" under the "Second Implementation Plan for Priority Projects at Kyoto University (third edition)."

Main Points of Initiatives

Promote the strengthening of small-scale buildings, etc., against earthquakes

Kyoto University will complete the seismic retrofitting of small-scale buildings and undamaged buildings for which it is difficult to set up projects for the implementation of facilities subsidies under the Second Implementation Plan for Priority Projects by the end of 2015.

Promote measures against earthquakes in relation to non-structural elements

A considerable amount of damage was caused by non-structural elements, even after building structures had been reinforced against earthquakes. To protect people on campus, the seismic retrofitting of structures and measures against earthquakes for non-structural elements will continue to be promoted.

Promote the improvement of essential infrastructure

Kyoto University will promote the restoration and maintenance of essential infrastructure, including strengthening the earthquake resistance of aging utility infrastructure, in order to support research, educational, and medical activities in the event of a disaster.

Follow-up to Action Plan

The “Kyoto University Seismic Retrofitting Promotion Policy,” formulated in May 2006, included the following five action plan items. The status of these items at the end of 2011 is as follows.

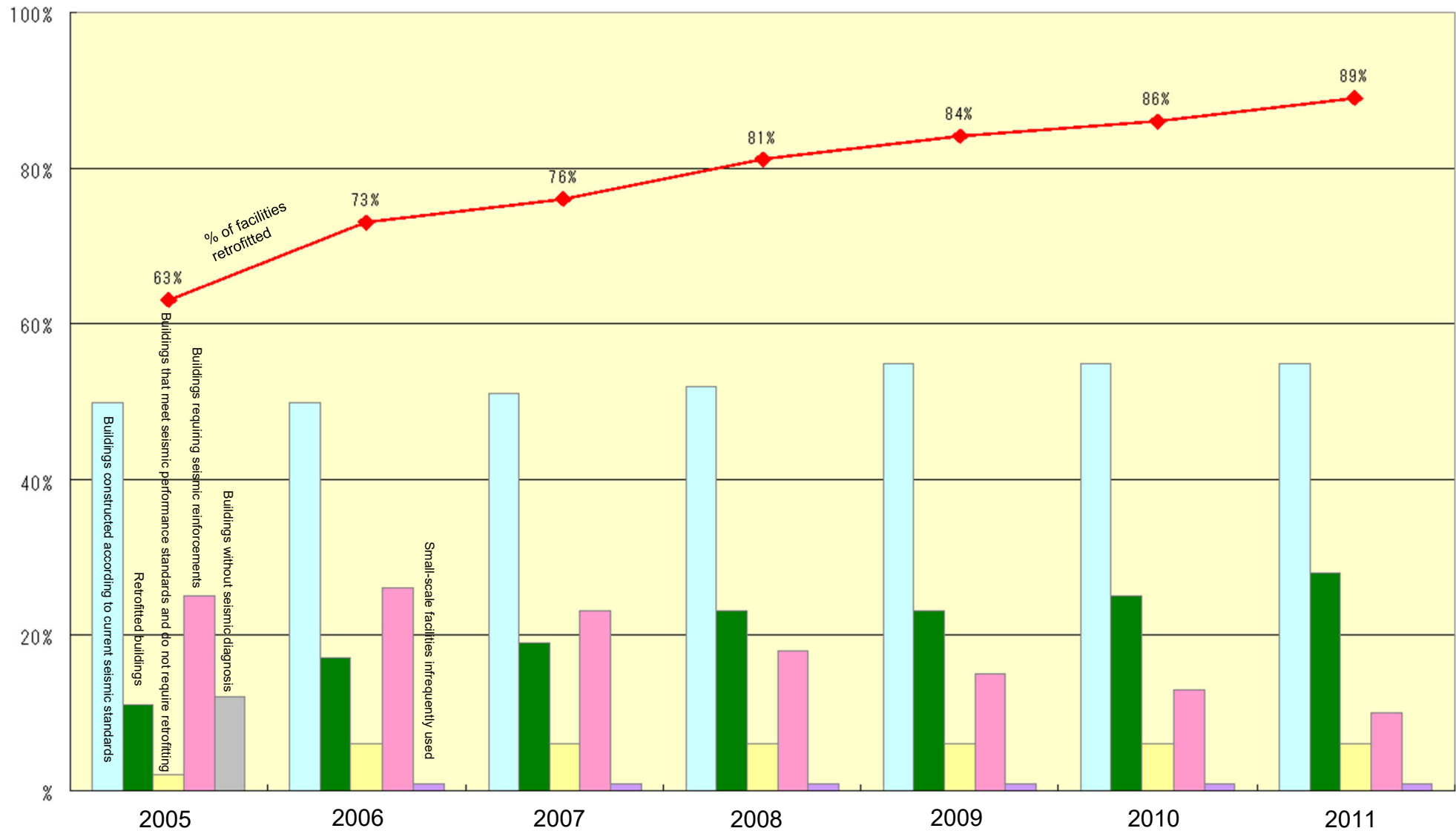
- ① **By the end of 2006, we will complete seismic diagnosis of any remaining buildings (excluding warehouses, etc., not used on a daily basis).**
→ **Completed in 2006**
- ② **In light of the unique characteristics of university facilities, we will undertake maintenance that prioritizes the safety of lives as outlined in the Second Five-Year Program for Emergent Renovation and Building of Facilities of National Universities, etc. (2006–2010).**
→ **89% of facilities retrofitted by the end of 2011**
Seismic retrofitting was performed on approximately 20,000 m² of university facilities over the five-year period from 2006 to 2010 (increase in the percentage of facilities retrofitted: 63%→86%)
- ③ **By FY2015, we will aim to complete a seismic retrofit that ensures business continuity.**
→ **Aim to complete the seismic retrofitting of facilities, including small-scale facilities, by 2015**
- ④ **In the long term, we will continue to improve the seismic performance of all facilities at Kyoto University to avoid sustaining damage in the Tonankai and Nankai earthquakes, which are all but certain to occur in the first half of the 21st century.**
→ **Aim to reinforce non-structural elements requiring urgent attention by the end of 2012**
- ⑤ **We will rank facilities based on the results of a comprehensive seismic diagnosis and recommend the retrofitting of facilities in order of urgency.**
→ **Facilities were reinforced against earthquakes through the submission of budget requests based on the urgency rankings**

Characteristics of University Facilities

- Saving lives
 - Lives of students, faculty, and staff members
 - Lives of facility users (hospital, museum, etc.)
- Ensuring business continuity
 - Carry out repairs to basic facilities focused on HR training
 - Carry out repairs to research centers of excellence
 - Improve the hospital's contributions to society through its handling of advancements and specializations in medical care
- Protecting university assets
 - Facilities of cultural importance
 - Cultural properties of national importance



% of seismically retrofitted facilities at Kyoto University

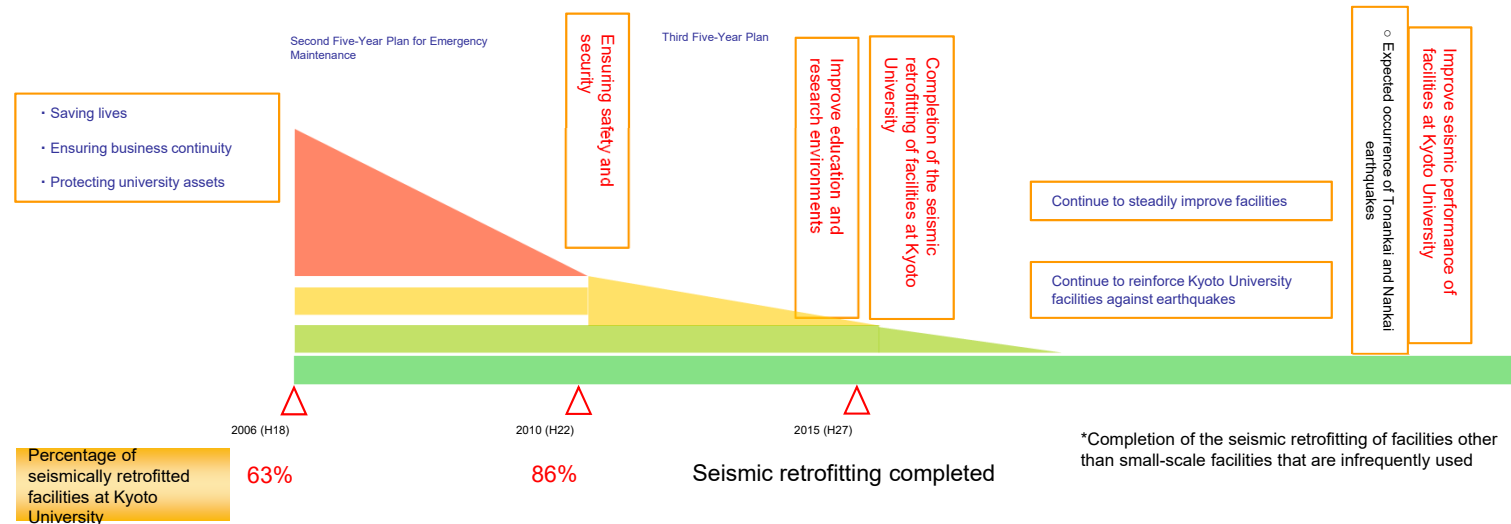


Although the percentage of Kyoto University facilities reinforced against earthquakes continues to rise, progress has fallen behind the goal for the seismic retrofitting of 93% of facilities by 2010 outlined in the "Kyoto University Seismic Retrofitting Promotion Policy" established in May 2006. Kyoto University aims to complete the reinforcement of its facilities against earthquakes by the end of 2015 by also reallocating funds from the university budget.

Measures to be implemented in the future

The following four measures will be implemented from 2012 to promote the further seismic retrofitting of facilities at Kyoto University in response to changing circumstances following events such as the 2011 Great East Japan Earthquake.

- ① **Kyoto University will continue to improve the seismic performance of all its facilities in preparation for the Tonankai and Nankai earthquakes that are all but certain to occur in the first half of the 21st century.**
- ② **Kyoto University aims to complete all seismic retrofitting projects by 2015 to save lives in the event of an earthquake.**
- ③ **Kyoto University will enhance measures against earthquakes for non-structural elements and generally rectify any abnormalities that have been identified by the end of 2012.**
- ④ **Kyoto University will promote the restoration and maintenance of essential infrastructure, including improving the earthquake resistance of aging utility infrastructure, in order to support research, educational, and medical activities in the event of a disaster.**



初 版 22. 3. 29 役員会決議
第2版 22. 12. 21 役員会決議
第3版 24. 1. 10 役員会決議

京都大学第二期重点事業実施計画（第3版）

京都大学をはじめとする国立大学法人には、我が国の人材養成の中核を担うとともに、地域の教育・文化・産業の基盤を支え、国立大学法人がこれまで努めてきた役割を引き続き十分に果たしていくとともに、法人を取り巻く状況の変化に適切に対応し、国民の期待に応えていくことが強く求められている。

本学は創設以来、自由の学園のもと自主独立の精神を涵養し、多面的な課題の解決に挑戦し、地球社会の調和ある共存に貢献すべく、質の高い高等教育と先端的学術研究を推進してきた。学問を志す人々を広く国内外から受け入れ、国際社会で活躍できる人材を育成するとともに、多様な研究の発展と、開かれた大学としてその成果を世界に共通された資産として社会に還元する責務は、今後ますます重要になるものと思われる。

しかしながら、平成 16 年度の法人化以後、国からの運営費交付金は効率化係数等により毎年減少してきた。また、今後の在り方についても不透明な状況であり、本学を取り巻く財政状況はより一層厳しいものとなっている。

こうしたなか本学は、経費削減を進めつつも運営費交付金以外の収入の充実を図ることにより、厳しいなかにも、より自立的な大学運営を可能とするよう努力を傾けてきたところである。さらに、短期的・個別的な視点に留まることなく、中・長期的および全学的な視点から大学を運営するため、本学が戦略的・重点的に実施すべき事業について役員間で検討を重ねてきた。第一期においては、そうした検討の結果を「京都大学重点事業アクションプラン 2006～2009」として取りまとめ、平成 18 年度から 21 年度までの 4 年間にわたり全学的な資金を確保・注入して順次実施してきたところである。

第二期において、「伝統を基礎とし、革新と創造の魅力・活力・実力ある大学」の実現に向けて、本学が実施しなければならない事業は山積している。本学が、我が国の人材養成の中核を担うとともに更なる教育研究医療活動の発展と質の向上を図るという責務を全うし、中期目標・中期計画を着実に実現していくため、戦略的・重点的に実施しなければならない事業について、役員間において検討を重ね、「京都大学第二期重点事業実施計画」を策定した。今回、我が国の危機的な財政状況の下、昨年来言われてきた運営費交付金や科学技術予算の大幅な削減に加え、人件費の削減などが今後予測されるが、高等教育を取り巻く国内外の環境の変化への対応や、国際通用力の向上を目指し、本学においても、これらを踏まえた大学改革を着実に進めていく必要があるため、本実施計画の中・長期的な在り方を見据え、既に着手している事業もきめられた見直しを行った結果、「第二期重点事業実施計画（第3版）」として改訂を行った。なお、法人を取り巻く状況の変化に柔軟に対応すべく、本実施計画については、随時、見直しを行うものとする。

◆ 農学研究所附属農場移転等整備事業

農学研究所附属高槻農場において、老朽狭隘解消や現代農業の高度化に見合った機能向上に資するため、木津中央地区に移転することについて了承されており、農場移転の早期実現に向けた支援を行う。（なお、現高槻農場等の土地譲渡収入を得る時期と新農場の整備に係る支出時期により、年度によっては収支不均衡となり、その一時的な財源の補填を必要とするものである。）

◆ 教育研究医療等施設・設備環境改善事業

施設やインフラ設備の使用目的と支障事由を基準に中長期的な優先度を定め、第二期中期目標期間全体を通じた計画的で戦略性の高い施設修繕・設備更新を図る。これにより、最先端の教育・研究・医療活動の場にあふさわしい施設環境づくりを行う。

主な取り組みとしては、次のとおりである。

〔講義室、学生実験室の改修〕

・教育環境改善事業（教育推進事業より再掲）

〔課外活動施設の改修〕

・北部グラウンド（人工芝化）

〔学生寮、宿泊施設等の改修〕

・新大学院「思修館」施設整備事業 ～博士課程教育リーディングプログラム～

（教育推進事業より再掲）

・学生寄宿舎整備事業（熊野寮）（教育推進事業より再掲）

・国際交流環境整備推進事業（国際化推進事業より再掲）

〔衛生関連施設（トイレなど）、隔地施設の改修〕

〔基幹施設、インフラの整備〕

・電話交換機設備整備事業（宇治地区・熊取地区・犬山地区・病院地区）

（基盤整備事業等より再掲）

◆ 全学共用施設整備事業

今後の京都大学におけるあらゆる研究事業の推進をはじめ、教育にも対応できる全学共用のスペースの確保を推進する。

◆ 全学の計算機資源が集約可能な高性能、高信頼データセンター施設の実現

全学の計算機資源を集約可能とする高信頼性、高性能、災害リスクの低減・回避・省エネルギー化を具現したデータセンター施設を実現し各部署に点在、設置されているスーパーコンピュータ及び各種サーバ等の学内計算機資源を集約・統合を推進する。

◆ 地震による生命の安全確保のための耐震事業

施設の耐震化については、大規模な地震時に人命を守るとともに、教育研究医療活動を継続して行うため、喫緊の課題となっており、東日本大震災において、甚大な被害が発生していることから、概算要求の出来ない施設（未壊建物、小規模建物等）について、教職員、学生等の人命を守るための必要最低限の工事をを行い、これらの施設の耐震化を図る。

During the Great East Japan Earthquake and Tsunami in March 2011, damage was caused by non-structural elements and experimentation equipment such as falling ceiling parts, crumbling exterior walls, and collapsing shelves and test equipment. Even if a building avoids collapsing during an earthquake, serious accidents that put human life at risk can result from the damage caused by non-structural elements. In order to secure the safety of everyone using a facility in the event of an earthquake, seismic measures for non-structural elements are necessary, in addition to ensuring a building is fully earthquake resistant through the reinforcement of its structure against earthquakes.

In response to this situation, all departments at Kyoto University were requested to take action in accordance with the “Implementation of Emergency Damage Inspections and Repairs to Ensure Safety During an Earthquake” in July 2011.

Based on the results of the emergency inspections, it was necessary to advance measures to improve facilities where safety issues had been identified.



Events to Date

July 2011: Request to all departments regarding the “Implementation of Emergency Damage Inspections and Repairs to Ensure Safety During an Earthquake”

July 2011: Request to all departments regarding “Survey of Emergency Damage Inspections and Repairs to Ensure Safety During an Earthquake”

August 2011: Request to all departments regarding “Exterior Walls (Cladding, etc.): Implementation of Emergency Damage Inspections to Ensure Safety During an Earthquake”

December 2011: Report to Deans and Directors Meeting regarding the “Survey Results for the Implementation of Emergency Damage Inspections to Ensure Safety During an Earthquake”

February 2012: Notice to all departments regarding “Considerations for Measures to Secure Bookshelves, Lockers, etc., during an Earthquake”

March 2012: Request to all departments for a follow-up survey of improvements and repairs, etc.

Future Measures

- ① Complete basic improvements and repairs by the end of 2012
- ② Consider the use of facilities subsidies to repair facilities for which large-scale improvements are required but cannot be overseen at a departmental level

Promote restoration and maintenance, including the seismic reinforcement of essential infrastructure facilities over 25 years old.

Urgent need to reinforce essential infrastructure against earthquakes

- The deterioration of essential infrastructure over time threatens to set back important experimental materials and world-leading research.
- It is necessary to reinforce essential infrastructure against earthquakes to secure water, gas, and electricity supplies in the event of a major earthquake.
- It is necessary to implement multiple measures to prevent radioactive contamination at nuclear facilities.

*Concerns have been raised about the risks of roads caving in due to water leakage and gas explosions due to gas leaks and flooding.



Rupture of aging water pipes



Red water due to aging, rusty water pipes

Essential Improvements & Repairs



Aging substation equipment



Aging gas pipes

Promote restoration and maintenance including improving the earthquake resistance of aging utility infrastructure to support research, educational, and medical activities in the event of an earthquake.

Budget requests will be submitted systematically.