

The 3rd Five-Year Program for Facilities of National Universities

(FY2011–FY2015)

August 26, 2011, Decision by the Minister of Education, Culture, Sports, Science and Technology

MEXT
MINISTRY OF EDUCATION, CULTURE, SPORTS, SCIENCE AND TECHNOLOGY-JAPAN

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Facilities of National University Corporations (NUCs; including Inter-University Research Institute Corporations and Institutes of National Colleges of Technology) form the essential foundation for the development of increasingly sophisticated and diversified education and research activities, cultivation of creative human resources, promotion of unique and diverse academic research, and provision of highly-advanced medical services.

The Five-Year Program for Emergent Renovation and Building of Facilities of National Universities, etc. (FY2001–FY2005) and The 2nd Five-Year Program for Emergent Renovation and Building of Facilities of National Universities, etc. (FY2006–FY2010) were formulated for NUC facilities in response to the 2nd and 3rd Science and Technology Basic Plans respectively, and certain progress has been made in earthquake resistance as well as in the improvement of overcrowding, through facility development based on the programs.

However, NUC facilities still face problems related to safety, functionality and progressive dilapidation. NUC facilities need to accommodate increasingly sophisticated and diversified educational and research activities, the strengthening of international competitiveness, and the promotion of industry-academia-government collaboration.

In addition, the Great East Japan Earthquake, which occurred on March 11, 2011, caused extensive and serious damage to NUCs in the Tohoku and Kanto regions, including the influence on educational and research activities due to damaged facilities and equipment, the interruption of lifeline services, and the diminished capacity for power supply, which made us re-acknowledge the importance of comprehensive enhancement of disaster prevention functions.

In order to adequately address these challenges in the tight fiscal environment, it is essential to implement systematic and prioritized facility development based on a long-term perspective so that functions expected from NUC facilities are ensured effectively and efficiently.

In this context, the 4th Science and Technology Basic Plan (Cabinet Decision in August 2011) established that the government would formulate a plan for aggressively developing facilities at all national university corporations, strengthening support and ensuring stable and consistent development in order to ensure and further sophisticate a fully-featured, high-quality and safe education and research environment.

To this purpose, MEXT formulated The 3rd Five-Year Program for Facilities of National Universities to promote systematic and prioritized NUC facility development as stated below:

1. Planning Period

The planning period of the Program will be the planning period of the 4th Science and Technology Basic Plan (FY2011–FY2015.)

2. Basic Concept

(1) For NUCs to fulfill their roles, including the cultivation of human resources, the passing on and development of scholarship and culture, and contributing in local communities and industries toward the country's growth and development, it is necessary to promote systematic and prioritized facility development based on a full understanding of the current status and problems of their facilities.

To this purpose, the formation of the education and research foundation that creates the future of the country will be further promoted through integrated implementation of facility development based on perspectives 1) to 3) below:

1) Strategy–Strategic Development for Qualitative Improvement

In order to revitalize increasingly sophisticated and diversified educational/research activities, and to maximize the unique characteristics and attractive points of individual corporations, it is essential that the underlying educational and research environment has sufficient functions.

In this context, strategic facility improvement will be promoted from the following perspectives so that NUCs can display more originality and unique characteristics through specialization according to function.

i) Forming outstanding education and research centers

Form centers that attract excellent human resources from home and abroad, cultivate world leaders and researchers, and generate world-class educational and research results with the aim of strengthening the international competitiveness of Japan.

ii) Creating an environment to nurture unique characteristics and stimulate education and research

Enhance facility functions to stimulate education and research activities, including the cultivation of creative human resources, promotion of unique and diverse academic research and social contribution activities (ex. regional contribution, industry-academia-government collaboration, international exchange) so that individual NUCs can fully develop their unique characteristics.

iii) Systematic development of university hospitals providing state-of-the-art/regional medical services

University hospitals have the educational function to train medical professionals, the research function to develop highly-advanced medical care, and the medical-service function to play the central role in regional medical service and critical care at the time of disaster. Therefore, the following functions will be enhanced: being the center of attractive education programs integrating undergraduate and postgraduate education, cutting-edge medical services responding to the specialization and sophistication of medical care, and functions necessary for promoting collaboration with local communities.

2) Sustainability–Efforts to Create an Environment-Friendly Educational and Research Environment

Global warming is a pressing issue that requires NUCs to advance efforts to reduce greenhouse gas emissions in order to enable sustainable development with a less-adverse impact on the global environment.

Moreover, because of the accident at Tokyo Electric Power Company's Fukushima No.1 nuclear power plant and other factors forcing a tight power supply, it is necessary to further advance efforts for energy and resource conservation. For this purpose, necessary environmental measures, such as eco-improvement of dilapidated facilities and introduction of renewable energy will be taken when developing facilities.

3) Safety–A Safe Educational and Research Environment

The improvement of facilities and infrastructure (lifelines) that pose significant safety concerns, including the earthquake resistance problem, continues to be a challenge demanding immediate attention not only to ensure the safety of students and other people but also to enable serving as an emergency evacuation center in the event of a disaster and as a core hospital of the local community.
For this purpose, measures necessary to ensure safety will be taken promptly, including earthquake retrofitting of buildings, earthquake protection for nonstructural members, and improvement of infrastructure (lifelines).

(2) In order to implement more effective and efficient facility development in light of the objective of this Program based on a long-term perspective, NUCs will create and improve their campus master plan as well as implement systematic facility development based on the plan in accordance with their basic principles and future visions as expressed in their academic plan and management strategy.
Efforts for system reform will be further promoted, including the promotion of strategic facility management such as effective utilization and adequate maintenance management of existing facilities, the cultivation of human resources necessary for this purpose, and facility development that uses diverse sources of finance

3. Content of Development

NUC facility development needs as of the end of FY2010 are: approx. 10 million m^2 for dilapidated facilities requiring improvement and approx. 2 million m^2 for space indispensable for increasingly sophisticated and diversified education and research activities.
In order to address the needs based on the basic concept described in 2., effective and efficient facility development will be promoted with priority placed on the following facilities:

(1) Improvement of outdated facilities

Strengthen disaster-prevention functions and ensure quality suitable for the foundation of educational and research activities by improving dilapidated facilities and infrastructure (lifelines) from the following perspectives:

1) Improvement of outdated facilities (Approx. 4 million m^2)

The improvement of facilities with safety-related problems, including earthquake resistance, and those with functional problems to accommodate educational and research activities will be promoted considering the following requirements holistically:

i) Facilities that have safety problems

ii) Functional improvement that promises significant effects on education and research

Earthquake-resistance retrofitting of buildings will be completed within the planning time, and earthquake-resistance retrofitting of buildings with an Is (Seismic Index of Structure) value of 0.4 or under will be completed in the first two years, in principle.

2) Infrastructure (lifeline) improvement

Infrastructure with safety problems will be promptly improved at the same time as infrastructure with functional problems for educational and research activities

(2) Improvement of cramped facilities (Approx. 800,000 m^2)

It is assumed that the spaces necessary to accommodate revitalized, sophisticated and diversified educational and research activities, the formation of outstanding educational and research hubs, and the increase of young researchers and accepting of foreign students, will be ensured through facility management efforts, including the effective utilization of existing facilities. However, if it is difficult to ensure space through such efforts and the space is absolutely necessary for education and research activities, the space will be ensured through new construction or enlargement.

Through the process above, a safe education and research environment will be ensured to enable adequate layout of laboratory equipment and appropriate evacuation routes in preparation against disaster.

(3) Improvement of university hospitals (Approx. 700,000 m^2)

University hospitals have fulfilled education, research and medical service functions and steadily promoted systematic improvement and development of their facilities. Systematic and steady development will be continued while facility development necessary to ensure safety and accommodate cutting-edge medical care is being implemented and critical care center functions for times of disaster are being developed so that a safe and high-quality educational, research and medical service environment can be ensured.

(4) Without identifying specific development subjects, the necessary cost of the development above is estimated to be up to approx. 1.100 trillion yen at present based on data on previous projects.

4. Implementation Policy

The program will be implemented based on the principle that MEXT supports systematic and prioritized development and will follow the policy below:

(1) In light of the content of development stated in 3. MEXT will conduct adequate investigation and evaluation of the efforts for global environment and efforts in system reform in addition to the current status of NUC facilities and education and research, and will select projects to be implemented based on the results. Furthermore, MEXT will check the progress of the plan on a timely basis, based on an accurate understanding of the effects as well as of the extent of completed facility development.

(2) In order to promote “Strategy–Strategic development for qualitative improvement,” MEXT will establish categories based on the unique characteristics of NUCs and adopt projects for each category, prioritizing those with a greater effect on education and research in the evaluation described (1). In this process, special consideration will be given to facilities necessary for response to national policy concerns and social needs.

(3) NUCs will further promote active efforts for system reform and work on cost reduction and fair implementation of projects.

(4) MEXT will make efforts to clarify what projects will be preferentially supported and provide necessary information in order to encourage NUCs’ efforts in facility development that utilizes diverse sources of finance as well as their efforts in system reform.

(5) Assuming to maximize the effect of the investment in facility development, MEXT will make efforts to secure the necessary budget

Basic Concept of The Third Five-Year Program for Facilities of National Universities

● MEXT promotes systematic and prioritized facility development

1 Strategy–Strategic development for qualitative improvement

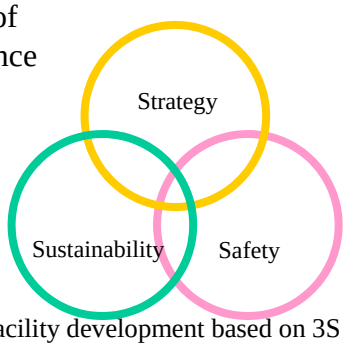
Strategically promote facility development to ensure sufficient functions for the education and research environment

2 Sustainability–Efforts to create an environment-friendly educational and research environment

Promote eco-improvement of dilapidated facilities and the introduction of renewable energy in order to reduce greenhouse gas emissions and advance energy/resource saving efforts

3 Safety–A safe educational and research environment

Promptly improve facilities and infrastructure (lifelines) that have safety-related problems, including earthquake resistance



Facility development based on 3S

● NUCs will implement facility development more effectively and efficiently based an a long-term perspective.
Promote facility development based on a development plan for the entire campus (campus master plan)

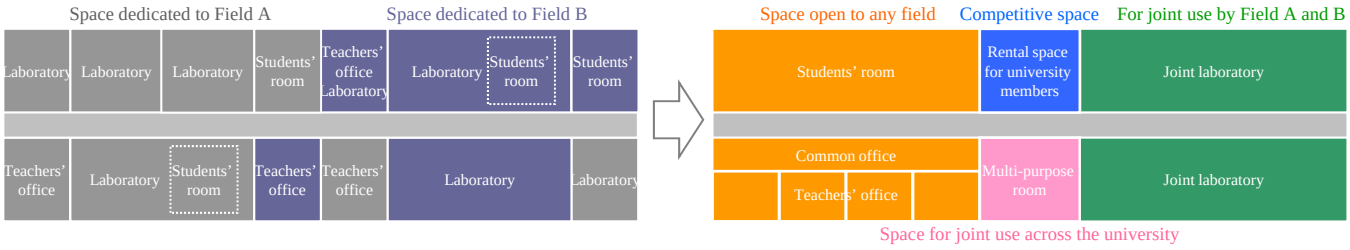
Promoting system reform efforts

Promote efforts including adequate maintenance management and effective utilization of facilities, and facility development utilizing diverse sources of finance

○Efforts in facility management

Further promote efforts to maximize the existing facilities, including adequate maintenance management, effective utilization of space and energy management.

＜Example of flexible utilization of space (Obihiro University of Agriculture and Veterinary Medicine)＞



○Efforts of facility development utilizing diverse sources of finance

Individual corporations are improving and ensuring facilities by using development techniques that utilize diverse sources of finance, including long-term borrowing, donations, and cooperation with local governments, private companies, etc. and other independent resources. These efforts will be further promoted.


Student dormitory
(Oita University)


Multi-purpose ground
(Fukuoka University of Education)


Senju Campus
(Tokyo University of the Arts)


Shionogi Innovation Center for Drug Discovery (Hokkaido University)

Development Content of The 3rd Five-Year Program for Facilities of National Universities

●Promote development identifying 1–3 below (5.50 million m^2 in total) for prioritized development

●Improve deteriorated infrastructure (lifelines)

Facilities requiring earthquake retrofitting
Approx. 2.5 million m^2

Effective utilization and adequate maintenance of existing facilities

1 Improvement of outdated facilities <approx. 4 million m^2>

Area of facilities needing improvement
10.04 million m^2

Area of facilities 25 years after construction or older
15.60 million m^2

Area size of facilities owned by NUCs: 26.49 million m^2

3 Improvement of university hospitals <approx. 700,000 m^2>

2 Improvement of cramped facilities <approx. 800,000 m^2>

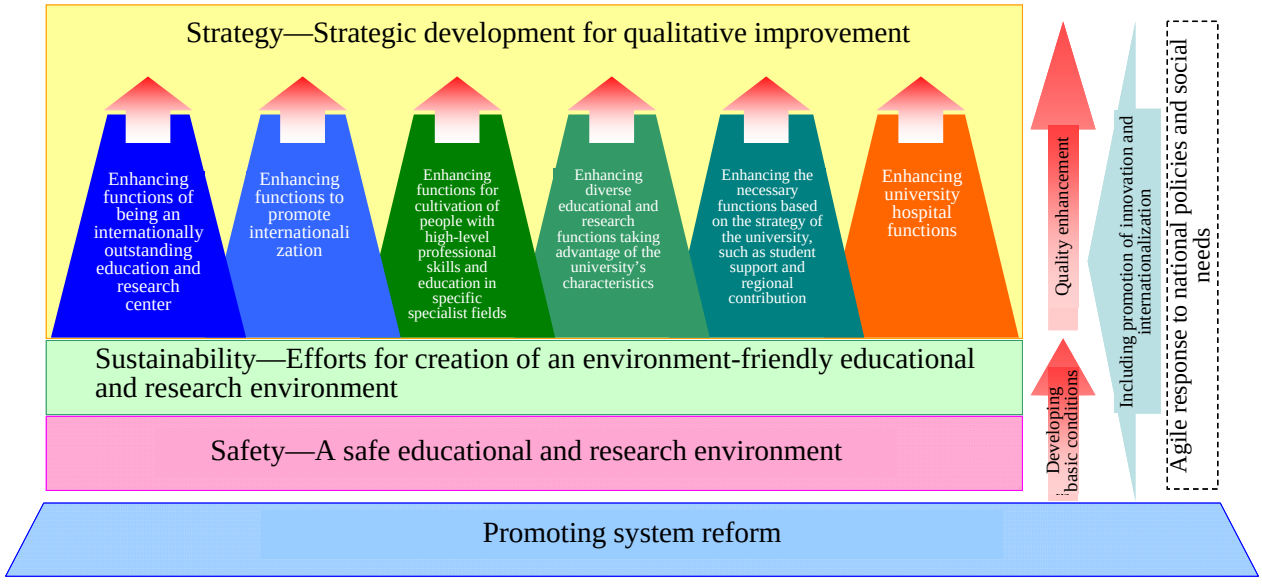
Necessary area: 28.57 million m^2

* As of the end of FY2010

Implementation policy of The 3rd Five-Year Program for Facilities of National Universities, etc.

●Implement systematic and prioritized facility development based on the following implementation policy

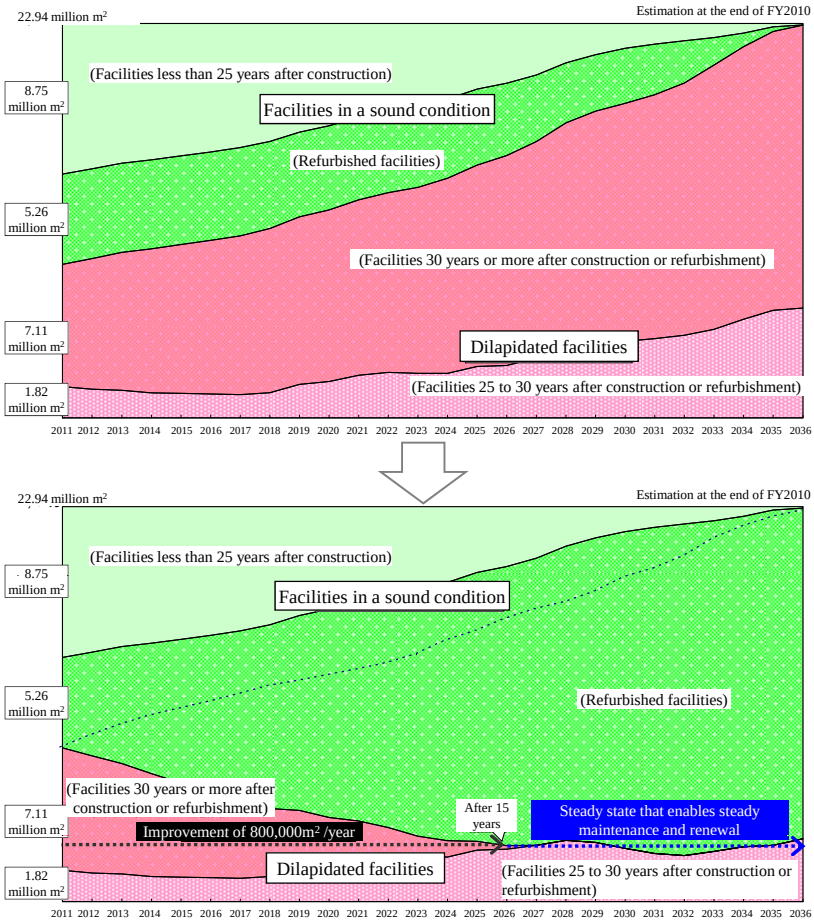
1. MEXT will conduct investigation and evaluation of the effects on education and research as well as efforts for system reform, and will select projects based on the results.
2. MEXT will adopt projects that promise greater education and research results for each category of strategic development in order to make qualitative improvements (strategy).
3. NUCs will make efforts to promote system reform, cost reduction and adequate implementation.
4. MEXT will make efforts to clarify what projects will be preferentially supported and provide necessary information.
5. Assuming to maximize the effect of the investment in facility development, MEXT will make efforts to secure the necessary budget.



Implementation content 1

Improvement of outdated facilities (approx. 4 million m²)
Improvement of infrastructure (lifelines)

● Improve approx.0.8 million m² of dilapidated facilities every year for 15 years
Maintain a consistent rate of dilapidated facilities



[Without improvement of dilapidated facilities]
All facilities will be dilapidated in 25 years

[With improvement of 800,000m² of dilapidated facilities every year]
Badly dilapidated facilities will be improved in approx. 15 years

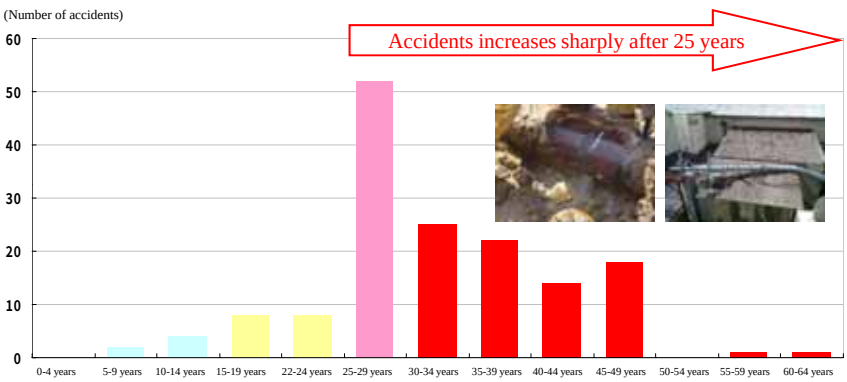
*Excluding university hospitals
*Assuming that the total area will not change after 2010
Assuming that the facilities once improved will need improvement again after 25 years
*Dilapidated facilities include those with partial refurbishment

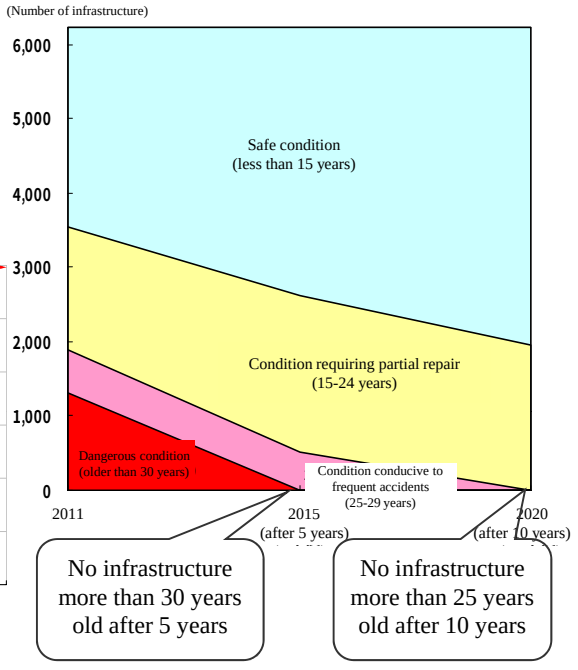
● Aiming to eliminate infrastructure (lifelines) more than 25 years old in 10 years

*Infrastructure (lifelines): the main parts of building utilities necessary to maintain power/gas supply, information communication, water supply and drainage, air conditioning, etc. that are essential for educational and research activities at universities

○The risk of accident due to failure, etc. increases 25 years after the development of infrastructure (lifelines) that support education and research as its functions become insufficient to accommodate increasingly sophisticated education and research

○Systematic renewal of dilapidated infrastructure is necessary to ensure safety and functionality.





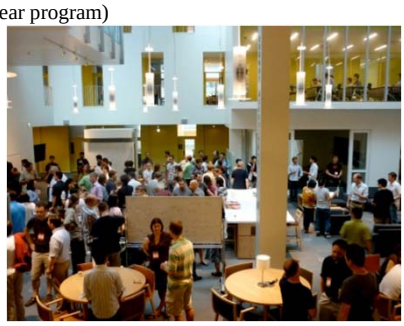
Implementation content 2 — Improvement of cramped facilities <approx. 800,000 m²>

●It is necessary to ensure space to accommodate increasingly sophisticated and diversified education and research

○Forming outstanding education and research centers: Form centers that generate outstanding world-class education and research results

(Photo: examples of centers formed in the previous five-year program)

Center for iPS Cell Research and Application (Kyoto University)

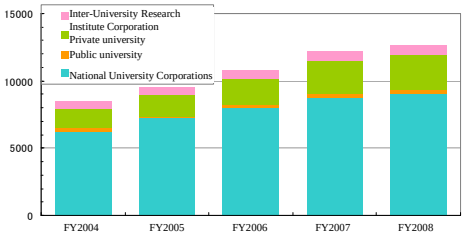


IPMU (Tokyo University)

Research Institute for Radiation Biology and Medicine (Hiroshima University))

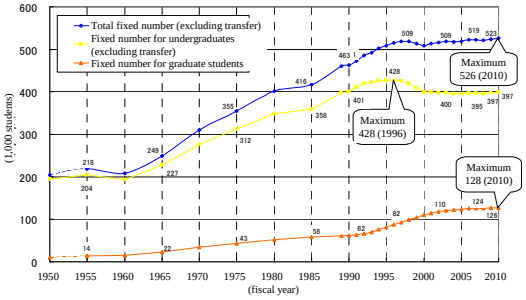
○Response to the increase of young researchers and foreign students:
Create an environment to cultivate excellent human resources who will lead the next generation

-Young researchers at universities are on the increase-



"Survey on Postdoctoral Fellows and Research Assistants" April 2010, MEXT National Institute of Science and Technology Policy

-Foreign students studying at universities are on the increase-



("Changes in the Number of Foreign Students Studying at Higher Education Institutions of Japan," Japan Student Services Organization)

Implementation Content 3 — Improvement of university hospitals <approx. 700,000 m²>

● Promoting systematic development of university hospitals to provide cutting-edge/regional medical care

○Challenges for current university hospitals

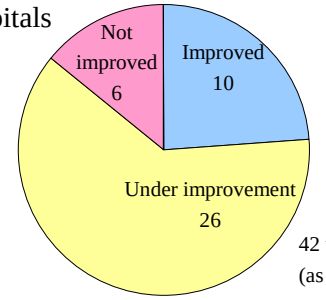
Dilapidation
- Reduced safety and durability
- Inability to accommodate advanced medical care
- Reduced patient services
- Deteriorated working environment
- Deteriorated efficiency of management

Overcrowding
- Difficulty in cultivating medical professionals
- Difficulty in introducing advanced medical equipment
- Difficulty in regional healthcare cooperation
- Difficulty in providing patient-friendly healthcare
- Difficulty in increasing 4-bed rooms and private rooms

Renewal to attractive university hospitals

Education/training	Cultivate medical professionals who will forge the future of healthcare
R&D	Contribute to the development of clinical medicine and improvement of medical skills
Medical service	Provide high-quality medical care as the core hospital of the local community
Management	Sound and efficient hospital management
Critical care	Critical care center in times of disaster

○Progress of the improvement of university hospitals



42 universities in total
(as of the end of FY2010)

○Playing the role of a hub in times of disaster

Transporting a patient by helicopter (Tohoku University)

Treating patients at a critical care center (Tohoku University)

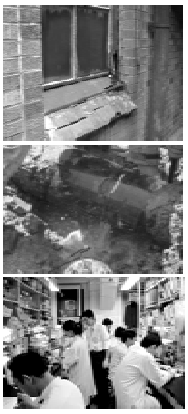
The 3rd Five-Year Program for Facilities of National Universities

(FY2011–FY2015)

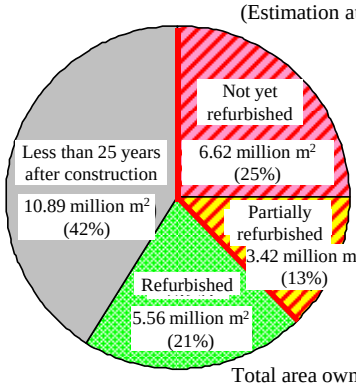
Challenges faced by NUC facilities

○Progressive dilapidation/overcrowding of facilities
○Response to global environmental issues
○Response to national policies and social needs, etc.

<Challenges after the Great East Japan Earthquake>
- Further promotion of earthquake retrofitting
- Earthquake resistance measures for nonstructural members
- Improvement of infrastructure (lifelines)



Area of NUC Facilities by Age Group
(Estimation at the end of FY2010)



Enormous need for improvement
10.04M m²
(38% of all facilities)

Total area owned: 26.49 million m²

Committee of Research Partners Concerning the Future Development and Enhancement of National University Facilities
(Report on August 25, 2011)

The 4th Science and Technology Basic Plan
(Cabinet Decision on August 19, 2011)

The government will formulate a plan for aggressively developing facilities at all national university corporations, strengthening support and ensuring stable and consistent development.

The 3rd Five-Year Program for Facilities of National Universities

(FY2011–FY2015) Decision by the Minister of Education, Culture, Sports, Science and Technology on August 26, 2011

Basic Concept

<Promote 3S>

Strategy–Strategic development for qualitative improvement

Develop unique characteristics of individual corporations

Sustainability–Efforts to create an environment-friendly educational and research environment

Promote energy/resource conservation efforts

Safety–A safe educational and research environment

Earthquake retrofitting of buildings (to be completed by FY2015)

Formation of campus master plan
Promotion of system reform

Prioritized Development

Improvement of outdated facilities (Approx. 4 million m²)
Enhance disaster prevention functions; ensure quality as the foundation of education and research

Improvement of cramped facilities (approx. 800,000 m²)
Ensure space necessary to accommodate sophisticated and diversified education and research

Improvement of university hospitals (Approx. 700,000 m²)
Steadily implement improvements, provide cutting-edge/regional medical services

Necessary cost: approx. 1.1 trillion yen

System Reform

Promotion of facility management
Facility development that utilizes diverse sources of finance

Ensure a fully-featured, high-quality and safe education and research environment

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http://www.mext.go.jp/a_menu/shisetu/kokuritu/index.htm