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Policy Futures in Education

Creating World-Class Universities in Japan: policy and initiatives

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ABSTRACT For a very long time the Japanese government concentrated its higher education investment on a handful of national institutions, until the policy came to be called into question in the late 1980s in the face of globalisation and other factors. Higher education reform was significantly accelerated in the 1990s: the government has continuously deregulated the higher education system including the incorporation of national universities, and has brought more and more competition through diverse competitive funding schemes. Some policies – not only higher education policies but also science and technology ones – were explicitly designed to develop 'world-class' education and research centres, such as the 21st COE programme. This article suggests that although a funding policy based on competition, with a strict evaluation, seems to be a move in the right direction, a right balance of budget allocation between competitive funds and basic education-research funds should be sought. Furthermore, the programmes of the government have to be offered in a more consistent manner, and more concerted and integrated efforts will be required, to address the critical problem of building world-class universities.

Protected by geographical distance from other developed countries, and by cultural barriers – the language one in particular, Japanese universities have long been spared worldwide competition in higher education. Moreover, inside the country, due to the government's control of establishment of universities as well as of the number of students enrolled, competition has been limited and essentially intra-national. However, in the face of globalisation since the 1990s, Japanese universities have been increasingly challenged by competition with foreign universities. From the 2000s, the government began supporting the creation of world-class universities by competitive grant programmes, such as the 21st Century COE (Centre of Excellence) Programme. However, these new funding schemes still leave much room for improvement, and inconsistencies in the relevant policies are observed.

Globalisation and Japanese Universities

Establishment of the Imperial Universities – a 'catch-up' model

Japanese universities, of which the first one – the University of Tokyo – was created in 1877, have long contributed to economic and social development of the country. In the Meiji era (1868-1912), the government concentrated its higher education investment on a handful of national institutions. They were all founded on the German model, which was then the dominant model in the world, and given a special status – that of the imperial universities[1] – as compared with other higher education institutions (HEIs). One of the paramount missions of the imperial universities was to import advanced knowledge from Europe and the USA, and to develop human resources and found a research base for the purpose of modernising the country as rapidly as possible. The

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Japanese higher education model, initiated by the government and concentrating on a certain higher education sector, was a 'catch-up' model (Shinbori, 2003).[2]

After World War II, the Japanese education system was entirely revised under the occupation. The varying types of HEIs were consolidated into a single four-year university system, except for some smaller institutions that were gathered into a junior college system. Concerning the national institutions, which had formed the core of the higher education system before the reform, the imperial universities and other governmental institutions were integrated into the newly created university system without distinction in terms of legal status. However, in contrast to the former imperial universities and some other former governmental universities, the post-war national universities – not so much as private HEIs though – would remain weak for a long time in terms of prestige, staffing, facilities, budget allocation and management ability.

Although important research activities – some of them were honoured by Nobel Prizes, such as H. Yukawa's theory of elementary particles (1949) – have been carried out in Japanese universities, the 'catch-up' model has fundamentally remained unchanged until relatively recently. The special status of the imperial universities was lost when that system was integrated into the general university system. However, despite the loss of the special status, the government continued to accord preferential treatment to the former imperial universities in terms of academic organisation (chair system) and of doctoral programmes, by which budgets were preferentially allocated to those institutions (Yonezawa, 2003). Moreover, the government has maintained control of the establishment and function of universities including their internal structure, enrolment number of students and education contents; competition has been much limited and essentially remained intra-national.

University Reforms – increasing autonomy and enhanced evaluation

This conventional situation for the former imperial universities – not so much disturbed by the student movements towards the end of the 1960s [3] – began to be challenged by numerous factors in the 1980s, including massification of higher education, 'free rider' criticism, the austere budget situation of the government and the consequent administrative reforms, and globalisation.

In the late 1980s, the national university system was called into question by the National Council on Educational Reform under the auspices of Prime Minister Nakasone.[4] The third recommendation of the council (1987), by pointing to the ineffectiveness of national universities, urged the government to considerably deregulate their governance and management as well as university education in general. In the 1990s, pushed by the administrative reforms drawn mainly from new public management approaches, the ministry in charge of education (then Monbusho, now MEXT) accelerated deregulation, beginning with revising the Standards for the Establishment of Universities governing both establishment of universities and their study programmes. Since then, there has been a succession of reforms, including development of graduate schools, reinforcement of evaluation, and enhancement of management capabilities.

The 1998 University Council's recommendation, 'A Vision of Universities in the 21st Century and Reform Measures: to be distinctive universities in a competitive environment', recognised the need for diversifying universities and encouraging them to improve the quality of education and research on their own initiative in the face of international competition. In 2004, the national universities, in the framework of university and administrative reform, were given corporate status. As a result, their autonomy was considerably increased, and the new national universities have been expected to individually develop their strategies and implement them on their own initiatives (Oba, 2005).

Meanwhile, the 2000 University Council's recommendation, 'Higher Education Required in the Age of Globalisation', stressed the necessity for COEs (centres of excellence) that could rank with world-class centres, and asked for preferential budget allocations to the best performing universities as identified by means of evaluation. In 2001, in response to the policy of drastically implementing reforms of public administration adopted by the Koizumi Cabinet, the MEXT announced the Policies for the Structural Reform of Universities (National Universities), and set a goal to rank the best 30 Japanese institutions among the top universities in the world, by encouraging competition, particularly by means of third-party evaluation. Accordingly, it was decided that after incorporation

the national universities would be periodically evaluated by the Evaluation Committee for National University Corporations in the MEXT. Furthermore, from 2004, all universities would have to undergo an accreditation review every seven years by an evaluation agency recognised by the MEXT.

The 2005 recommendation of the Central Council for Education, 'The Future of Higher Education in Japan', referred to a functional specialisation of universities, suggesting that universities had several functions, including provision of (1) world-class education-research centres, (2) development of highly professionalised human resources, (3) development of diverse professionals, (4) liberal arts education, (5) education and research of specific specialised areas (art, sport, etc.), (6) local lifelong learning centres, and (7) service to society; and that each university should be functionally specialised according to its strategy. The council recommended that the government should encourage each university to clarify its originality and characteristics according to its own judgement.[5]

Science Policy and Universities

In the 1980s, with the development of the Japanese economy, a criticism concerning research activity emerged as the 'Japan Problem' in science and technology. Diverse reports issued by the US Department of Commerce described Japan's scientific activities as 'sneaking a free ride' on the outcome of the basic research of other countries (Matsumoto, 1999), and this view expanded rapidly in the world. Although the view was based on a simplistic linear model connecting scientific, technological and economic performances (Matsumoto, 1999) and politically abused by the US government requiring financial contribution to its mega-science projects (Science Council of Japan, 2000), the Japanese side also took advantage of it to promote science and technology policy and to boost the relevant budget. The Grants-in-Aid for Scientific Research (Kakenhi) of the Monbusho/MEXT, for example, which represent now around 40% of competitive research funds of the government, increased rapidly in the late 1980s and 1990s (Figure 1).

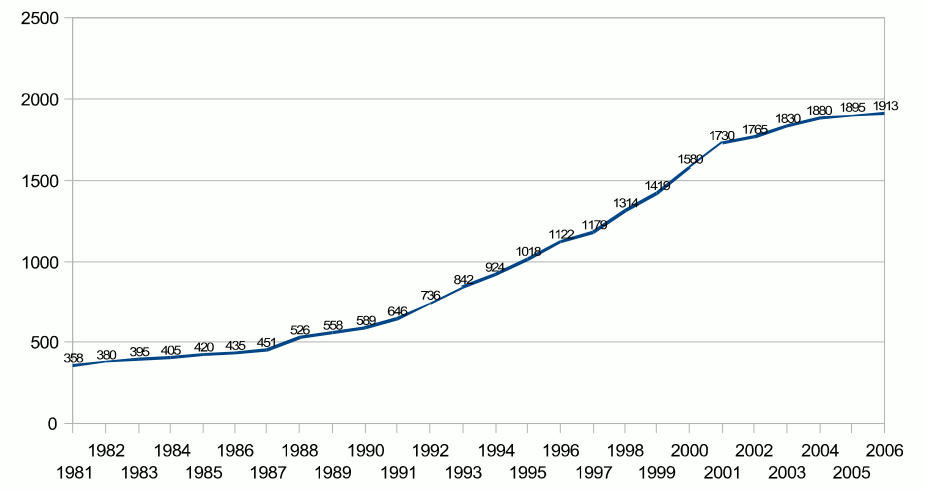

Figure 1. Evolution of the amount of the Grants-in-Aid for Scientific Research (100 million yen).
Source: MEXT.

In 1995, the Science and Technology Basic Law was promulgated, and declared that Japan would challenge, by exercising its creativity, unexplored science and technology areas and open the way to the future as a front-runner.[6] Since 1996, the government has defined a Science and Technology Basic Plan every five years. The first plan (1996-2000) defined, among others, objectives of an increase in competitive funds as well as their allocation to priority areas, and the development of R&D centres to promote world-class activities. After the second plan (2001-2005),

which reinforced the policy adopted by the first plan, the current third plan (2006-2010) urged development of universities that would lead science and technology in the world, by means of competition among institutions, and set a target of developing around 30 research centres ranked as world-class. The plan included creation of world-class education-research centres among the 12 priority enforcement measures that needed to be tackled without delay.

The 21st Century COE Programme and Other Competitive Grant Programmes[7]

The 21st Century COE Programme. In 2002, the MEXT launched a new funding scheme called 'The 21st Century COE Programme' [8] in response to numerous policy papers calling for much more competitiveness in resource allocation as well as falling in line with similar policies in Asian countries, such as the BK21 of Korea. It subsidises projects proposed by universities for a period of five years, with a view to founding world-class education-research centres, for which the proposals are to be screened by a committee (21st COE Programme Committee –referred to as the 'Committee' in this section) chaired by Leo Esaki, a 1973 Nobel laureate in Physics, and composed of specialists from various disciplines. The JSPS (Japan Society for the Promotion of Science) [9] has been commissioned to administer the programme.

The programme was offered for three years between 2002 and 2004, in each of which several science areas were identified for application.[10] Proposals were first given a documentary review by about 1000 referees, each a specialist or leading authority in the subject field. Under the Committee, category-specific subcommittees were established to evaluate the proposals through hearings and panel reviews. Selection of proposals was made by a screening committee, and its selection results were transmitted to the Committee for adoption. Principal selection criteria were as follows:

1. research excellence and possibility of future growth in the field, as well as expectation of forming an education-research centre capable of developing human resources with a high research competency;
2. expectation of founding a world-class education-research centre, backed by an original future plan and strong executive power, under the leadership of the president of the university supported by a management assistance system;
3. expectation of original and revolutionary results through exploitation of new scientific areas;
4. expectation of continuing to serve as a world-class education-research centre after the grant period.

In total, 274 projects were selected from among 1395 proposals. As shown in Figure 2, far more projects were adopted among those proposed by national universities, though the number of institutions in this sector was much smaller than in the private sector (87 universities against 542 in 2006).[11] Furthermore, over half of the successful applications (146 out of 274, 53%) came from the best 10 universities, including the seven former imperial universities [12], which accounted for 113 (41%) of the successful applications.

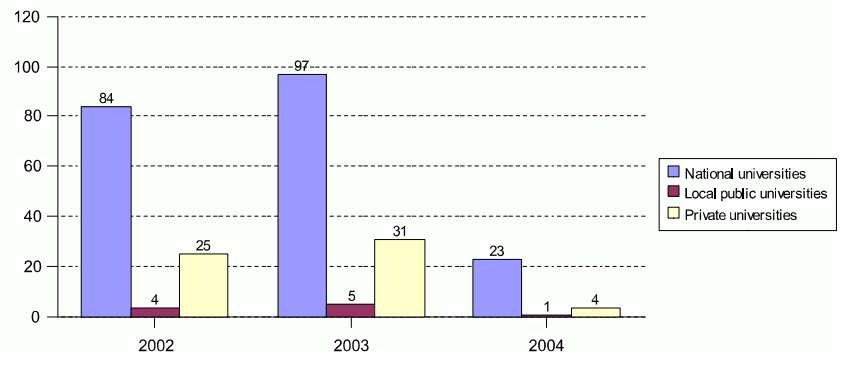

Figure 2. Number of COE projects by university sector.
Source: MEXT.

The projects adopted by the programme were assessed at the two-year point to verify their interim performance and progress and to determine whether they were to be continued. Through the interim assessment process, category-specific subcommittees conducted document reviews, hearings and panel reviews, and when necessary, on-site inspections were held. The Committee reported the results determined by the assessment committee to the JSPS/MEXT, which then used the information to optimise the distribution of grants in the next programme period. The results of interim assessments also were fed back to operators. As a result, no projects were terminated, but two FY2002 [fiscal year] projects and one FY2003 project were required to drastically revise their implementation plans.

The first cycle of the 21st Century COE Programme came to an end in March 2007. From April 2007, posterior assessments of the FY2002 projects were carried out, and their results were announced on 28 November 2007. According to the report, 99 COEs out of 113 were evaluated to have achieved their objectives, and 31 of them proved to have achieved more than expected. No projects were evaluated to have failed to achieve their objectives.

The Global COE Programme. Based on assessments of the 21st Century COE Programme and evaluation of its results to date, a new competitive grant scheme, the 'Global COE Programme', was devised and has been implemented from FY2007. The new programme is in line with the third Science and Technology Basic Plan, laying out an enhancement of the 21st Century COE Programme. The Plan asks for a further concentration of resource allocation, but stipulates that, as with the previous programme, the new programme should not aim at limited research areas but target a wide range of disciplines so that it may value diversity and pioneer new frontiers.

The programme provides funding support for establishing education and research centres that may settle into the ranks of world-class centres. A Global COE Programme Committee (referred to as the 'Committee' in this section) was established in the JSPS to oversee the grant selection process and COE performance assessments under the programme. The policy of the review is as follows (items 4 and 5 apply only to proposals coming from former operators of the 21st Century COE Programme or proposals involving other institutions):

1. The proposal should embody a future concept for developing the university that reflects its unique institutional character and be given powerful instruments for creating an internationally excellent education and research centre under the university president's management.
2. After the five years of funding ends, the COE should be able to continue operation as an internationally excellent education-research centre.
3. The programme should build an education-research centre that functions to foster highly creative young researchers. The purpose of the programme is not to compile research projects. The centre must conduct highly creative and vanguard research at the highest world level. It should also have the potential for future expansion.
4. In the case of COEs established under the 21st Century COE Programme, they should have already achieved their expected results under that programme.
5. If a core university wishes to implement its project in cooperation with other institutions (including domestic/foreign institutions), it must formulate a clear concept of its own future development and of the proposed education-research centre and show why cooperation with other institutions is necessary for realising the concept.

For the FY2007 grant, the programme was offered in the fields of life sciences, chemistry and material sciences, information sciences, electrical and electronic sciences, and humanities. For FY2008, medical sciences, mathematics, physics and earth sciences, mechanical and civil engineering, architectural and other fields of engineering, and social sciences are eligible, and from 2009 to 2011, the programme will be open to interdisciplinary, combined fields and new disciplines. For the FY2007 grant, 281 proposals were presented to the JSPS, and then reviewed by category-specific subcommittees established in each of the five fields (life sciences; chemistry, material sciences; information sciences, electrical and electronic sciences; humanities; and interdisciplinary, combined fields, new disciplines) under the Committee. Hearings and panel reviews were conducted using comments not only of Japanese scholars but also from foreign ad hoc reviewers (about two per application; a total of 139 researchers). The final decision on grant selections was

made by the Committee, and 63 proposals were adopted (life sciences, 13; chemistry, material sciences, 13; information sciences, electrical and electronic sciences, 13; humanities, 12; interdisciplinary, combined fields, new disciplines, 12).

In comparison with the 21st Century COE Programme (21COE), the Global COE Programme is more selective: for the first year, only 63 projects were adopted against 113 for the 21COE. As a result, the proportion of the best 10 universities is higher than that for the 21COE (53% against 70%). Similarly, the share of the former imperial universities rose from 41% to 59%.

The World Premier International Research Centre (WPI) Initiative. In 2007, in addition to the Global COE Programme, the MEXT launched another competitive funding programme entitled 'World Premier International Research Centre (WPI) Initiative'. The programme aims to expedite the development of globally visible research centres with an excellent research level and an outstanding research environment that are able to attract top-level researchers from around the world, by providing concentrated support to a limited number of proposals (around five) for a period of 10 years, with a possible five-year extension for projects achieving outstanding results. Universities, inter-university research institutes (IURIs) [13], independent administrative institutions (IAIs) [14] and public interest corporations are eligible for the programme.

A WPI Programme Committee (referred to as the 'Committee' in this section), made up of experts, including overseas specialists, has been established within the MEXT. The Committee proceeds with selection of proposals through document reviews and interviews. Multiple requirements for selection have been defined by the Committee as regards such items as research field, research objectives, project management, researchers and other staff, research environment, indicators for evaluating a centre's standing, and securing research funding.

For the FY2007 grant, the five projects shown in Table I were selected from among 33 applications presented by 13 universities (11 national and 2 private universities), 3 IURIs and 6 IAIs. All the projects but one (that of NIMS) came from former imperial universities (Tohoku, Tokyo, Kyoto and Osaka). Each centre will receive a sum of between ¥500 and ¥1000 million per year for a period of 10 years.

Institution	WPI centre
Tohoku University	The WPI Research Centre for Atom-Molecule-Materials
The University of Tokyo	Institute for the Physics and Mathematics of the Universe
Kyoto University	Institute for Integrated Cell-Material Sciences
Osaka University	Immunology Frontier Research Centre
National Institute of Materials Science (NIMS)	International Centre for Materials Nanoarchitectonics

Table I. WPI centres (FY2007).

By contrast with the 21st Century/Global COE Programmes (referred to as 'COE programmes'), the WPI programme is much more highly selective (5 against 63 [Global COE]), and the grant allocation is much more concentrated (¥500-1000 million against ¥50-500 million [Global COE]). The grant period of the WPI programme is twice as long (10 years against 5), or triple in case of extension of the grant. The targeted areas are narrower and limited to natural science and technology [15], with emphasis placed on applied research and interdisciplinarity, whereas the COE programmes aim at all disciplines and are more oriented towards basic research.

Issues and Challenges

Definition of the World-Class University

Before going into a discussion of the world-class universities relating to Japanese universities, it would be desirable to define what a world-class university is, or how it is perceived by Japanese academics, decision makers, mass media and others.

To define the world-class university is not an easy task. Altbach (2003) asserts:

> no one knows what a world-class university is, and no one has figured out how to get one ... Those seeking to certify 'world classness' generally do not know what they are talking about ... we have neither national rankings that make sense nor a widely accepted definition of what a world-class university is.

Nevertheless, the terms 'world-class universities' or 'top universities in the world' are omnipresent in different literatures – government policy papers, institutions' mission statements, academic works, mass media, and so on. Altbach also uses the term without clear definition in the above-mentioned article, and enumerates the essential characteristics, including excellence in research, academic freedom and atmosphere of intellectual excitement, internal self-governance and control over the central elements of academic life, adequate facilities for academic work, and adequate funding.

The above-mentioned 21st Century COE Programme was initially presented by the MEXT as a 'Top 30' Programme, designed to develop world top-class universities. At that time, in an explanatory text prepared by the MEXT [16], although it denied the existence of an established definition of a world-class university, the Ministry enumerated characteristics of universities ranked as world class, that included the following items:

1. a place where internationally renowned researchers gather;
2. possession of the world's most advanced education-research environment;
3. generation of world-class research results;
4. development of human resources that will play an active role in the international community;
5. international reputation from academic society, industry, etc.

University rankings are often consulted to measure or demonstrate the world-class status of a university, although many users are aware of their limits, partiality and irrationality. Kaneko (2007) states, for example, that world university rankings, including the Times Higher Education Supplement QS World University Rankings, have structural problems such as an emphasis on the internationality of institutions that proves to be a handicap to Japanese universities. Even though Japanese universities lag far behind the USA in terms of citations, this does not always stem from lack of quality in Japanese academic works but from the fact that researchers in the USA have formed large networks and quote each others' works (thus inflating their citation numbers).

This article is not primarily concerned with the definition of a world-class university, but is loosely based on such a definition as: a world-class university is a university ranked 'among the most prestigious and renowned academic institutions internationally' (Altbach & Balán, 2007). Although there is no consensus on the definition of a world-class university in Japan, judgement about the world-class status of universities seems to be made based on criteria widely used, such as those enumerated in the above-mentioned ministerial document, also taking different university rankings into consideration.

How Effective have the Policies Been?

To date, only the two first cycles (FY2000 and FY2001) of the 21st Century COE Programme (referred to as '21COE' in this section) has terminated among projects financed by the grant programmes described in the previous sections. The Global COE and WPI programmes have just begun, and no assessment has yet been carried out. However, all the projects of the 21COE have received an interim assessment, and in March 2006, an assessment report (21st Century COE Programme Committee, 2006) was compiled by the 21st Century COE Programme Committee (referred to as the 'Committee' in this section). The report formed the basis for the budget request for the Global COE Programme.

In December 2005, the Committee carried out a survey of the programme operators (project leaders) and the committee members (including those of subcommittees) [17], and carried out an overall evaluation of the programme. Findings show that the activities of COEs have been significantly revitalised. In terms of scientific activities, there were 27,148 papers published by teachers in COEs in scientific journals (refereed) in 2005 against 24,505 in the application years (2002-2004) [18] (10.8% increase). The growth rate was notably high in humanities (45.8%) and social sciences (44.0%). The number of papers per teacher rose from 5.03 to 5.31 (2.8% increase). In

addition, the number of cooperative research projects had increased from 9,694 to 14,707 (51.7% increase). The growth rate was extremely high for humanities, reaching 134.4%.

In terms of graduate students and other young researchers, there were 16,921 students against 15,557 (8.8% increase). Many of them were being employed as research assistants (8,178 in 2005 against 5,021 at the time of application : 159% increase). The number of the presentations by graduate students at conferences rose from 31,523 to 40,444 (28.3% increase). In particular, presentations outside Japan increased by 52.3%. The number of papers published by graduate students rose from 12,069 to 15,904 (31.8% increase). In addition, COEs employed many post-doctoral fellows, the number of whom reached 4,029 against 1,803 (123.5% increase).

As such, respondents to the questionnaire rate highly the effectiveness of the 21COE; 96% agree that the programme has been helpful for revitalising the education-research environment of COEs, and 52% (of the total respondents) rate the effect as 'very helpful'. For the development of world-class centres, 87% of respondents consider that much progress (24%) or progress (60%) has been made. Based on the survey responses, the Committee concludes that the objective, to revitalise the entire education-research environment in Japan, has been met to a considerable extent and, regarding the development of world-class centres, presents the following observations.

1. Encouraged by competition with world-class universities, the education-research environment has been revitalised. In particular, exchanges beyond disciplinary boundaries have been promoted.
2. In a competitive environment, with a revision of traditional academic concepts, structures to promote education and research at the world-class level have been developed.
3. With a clarification of future visions of the universities, development of education-research structures with a capacity to advance their standards and develop creative human resources has been initiated.
4. Graduate education has been enriched by education-research activities and programmes implemented on the initiative of the COEs, and solid progress has been observed.
5. The programme has enabled funding for excellent young researchers.
6. New structures of industry–academy cooperation have been initiated.

On the whole, the Committee evaluates highly the effectiveness of the 21COE in the report. However, a closer look at the report reveals a different picture than has been portrayed by the Committee. In revitalisation of the COEs, although almost all respondents recognise the usefulness of the programme, only 30% of committee members consider the programme as 'very useful' as against 69% of project leaders supporting it (Figure 3). Similarly, development of world-class centres is rated much lower by committee members than by project leaders: 40% of project leaders consider that much progress has been made, but committee members are not so optimistic about the results with only 4% favouring it. Concurrently, no project leaders give negative responses and only one leader chooses 'Yes and No', whereas 18% of committee members consider the progress as insufficient ('Not so much progress' or 'No progress') and 12% of them choose 'Yes and No' or 'No answer' (Figure 4). Generally speaking, project leaders rate the performance of COEs much more favourably than committee members.

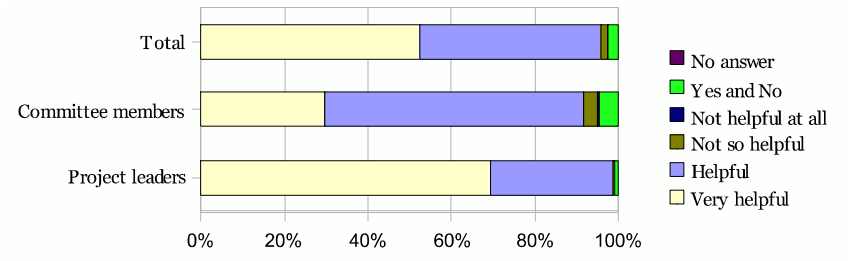

Figure 3. Role of the programme for revitalising the entire education-research environment in Japan.
Source: 21st COE Century Programme Committee (2006).

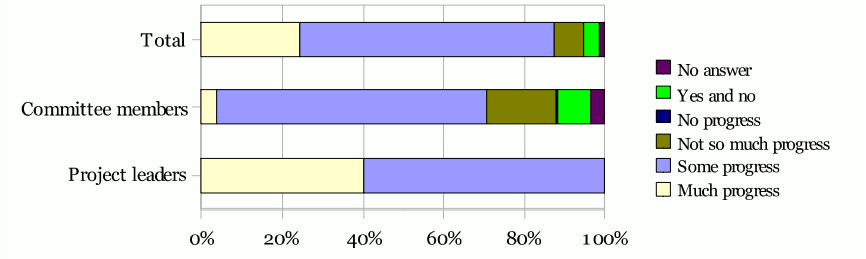

Figure 4. Progress made by COEs to develop world-class centres.
Source: 21st COE Century Programme Committee (2006).

Okinawa Institute of Science and Technology (OIST) Project

Policies for building world-class universities are not limited to competitive grant programmes. Among other things, since 2001, a plan to establish a new graduate school in Okinawa [19] has been conceptualised and gradually implemented. Objectives of the new school, 'Okinawa Institute of Science and Technology (OIST)', have been defined as: to contribute to the worldwide advancement of science and technology and to create a leading intellectual hub for the Asian-Pacific region, with such key concepts as 'best in the world', 'flexible', 'international', 'global networking' and 'collaboration with industry'. In 2005, the Okinawa Institute of Science and Technology Promotion Corporation (OIST P.C.) was set up as an IAI, and Sydney Brenner (2002 Nobel laureate in Physiology or Medicine) was appointed president. Half of the researchers are planed to be recruited from outside Japan.

Initially, it was intended that the institute would open in 2007, but for various reasons, the schedule has been delayed and as of November 2007, the expected year of opening has not been announced on the website of the government as of November 2008 (Cabinet Office).[20] The project has been reported to face multiple difficulties, including budget allocation, recruitment of researchers and infrastructure development. As Altbach (2002) cautions, a research university requires community infrastructures, and other academic and intellectual stimulation, which attract top scientists. In this regard, Okinawa has multiple disadvantages of location.

Furthermore, the fact that the project has been administered by the Cabinet Office, not by the MEXT, complicates the situation. The OIST project was initiated by Koji Omi, the Minister of State for Okinawa and Northern Territories Affairs and the Minister of State for Science and Technology Policy at that time; the MEXT, which aimed at reinforcing existing universities, was reluctant to cooperate with the project. Future prospects of the project are not very certain today.

Conclusion

After the university reform in the post-war years, for a long time, Japanese universities, and in particular the national universities, enjoyed a considerable stability in the framework of a hierarchy, well established over a long period of history. Although favourable treatment for research universities, particularly for the former imperial universities, has been repeatedly criticised as a reason for disparities under the unchanging system and a kind of egalitarianism has dominated Japanese higher education, the privileges of former imperial universities and other research universities have been protected to a considerable degree (Amano, 2001). This differentiation has enabled them to maintain higher standards of education and research in comparison with other universities in Japan.

However, as Amano (2001) asserts, Japanese research universities have not necessarily caught up with the 'international standards' – only those that have attained them are worth being called 'world-class universities' – mainly because Japanese society as a whole has placed emphasis on practical and applied aspects rather than basic and fundamental research activities, and this emphasis has also affected university education and research. Furthermore, during the period of massification of higher education, Japanese research universities have considerably expanded in

terms of students and academic staff, but insufficiently as regards installations, budgets and support staff. As a result, today, public investment in higher education is very low in comparison with that in other developed countries [21], and impoverishment of the research universities has become more and more manifest.

In the meantime, as in many other countries, after having been prompted by diverse factors, including massification of higher education and globalisation, and –especially in Japan – a decline in the 18-year-old population, Japanese universities face increasingly intense competition within and outside the country. The 1998 University Council recommendation declared that universities should compete with each other and that the funding scheme should be modified accordingly. Moreover, the Science and Technology Basic Law, the Science and Technology Basic Plans and many other policy papers have sought development of world-class research centres. Since the beginning of the twenty-first century, the government has repeatedly launched competitive grant programmes including COE programmes and WPI, and even undertaken the creation of a new institution, explicitly dedicated to that end.

Such new competitive funding programmes have significantly changed the HEIs' ways of thinking and patterns of behaviour, involving reforms of internal management and governance. Although the effectiveness of these programmes has not been firmly proved, the 21st Century COE Programme Committee concludes that they have been helpful to a certain extent for revitalising the entire education-research environment. And they have also contributed, though to a lesser extent, to developing world-class centres, which can then form the base for building world-class universities, even though COEs will not immediately yield a large number of internationally active human resources (Kanemori, 2006). By contrast, the OIST project has faced multiple difficulties, and its future outlook does not appear promising. Creating a new world-class centre may not be a good idea, and as Altbach (2002) recommended, the OIST project might best be discontinued on the basis of a complete lack of academic or scientific amenities in Okinawa.

Even though not all countries can afford world-class universities, in an increasingly globalising world, most must have universities that fully participate in the world of research and development (Altbach & Balán, 2007). All the world-class universities are research universities without exception, whereas not all research universities are at the world-class level. For Japan, it is imperative to raise the level of its research universities – and not just try to create new ones – to compete with the best universities around the world. Up until recently, institutional efforts in that direction, particularly those of the national universities, were most often hindered by rigidity of the higher education system in terms of personnel management, budgetary arrangements, utilisation of installations, etc. These obstacles were largely eliminated by the incorporation of national universities in 2004 and other reforms.

Finally, a funding policy based on competition, with a strict evaluation, seems to be a move in the right direction. For the future, the government has to refine the scheme – evaluation in particular – and, while making efforts to secure public expenditure on higher education, to seek the right balance of budget allocation between competitive funds and basic education-research funds. Realising excellence in education and research requires not only high-quality activities in research universities themselves but also a broad base that sustains them (Mori, 2006). Excessive competition is very likely to bring about perverse effects, including plagiarism, forgery of data, and demoralisation of 'losers'. Furthermore, the programmes of the government have to be offered in a more consistent manner. The OIST project, for example, could cause a considerable disruption of future attempts to raise Japanese research universities to world-class, by redirecting budget to less effective uses. Even in the MEXT, consultation between decision makers of the Global COE Programme and of the WPI Programme is reported to have been ineffective.[22] More concerted and integrated efforts will be required for addressing such a critical problem as building world-class universities.

Notes

[1] In addition to the University of Tokyo, the universities of Kyoto, Tohoku, Kyushu, Hokkaido, Osaka and Nagoya were given the status.

[2] Not only higher education but the entire nation was set a goal of catching up with the West. Matsumoto (1999) argues that, from the Meiji era, Japan has been promoting a catch-up industrialisation based on science and technology conforming to social and economic needs.

[3] As opposed to the student movements in continental European countries, those in Japan did not result in participatory arrangements either at national or institutional levels, which now quite often prevent important decision making in European countries (Boer & Stensaker, 2007).

[4] The system had already been critically analysed by previous policy papers, such as the 1971 recommendation of the Central Council for Education. But many of the proposed reforms were not implemented.

[5] Categorisation and classification by type of HEIs were already referred to by the Central Council for Education in 1971. This proposal was not implemented, but the Monbusho increased the flexibility of the universities' structural framework and encouraged reform activities by means of financial assistance, including establishment of a 'new concept university', exemplified by the University of Tsukuba (1973) (Osaki, 1999).

[6] Explanation of the reason for the proposal of the law provided by the government.

[7] The description of this section is mainly based on MEXT/JSPS (2007), MEXT white papers and the websites of the MEXT and of the JSPS.

[8] At the time of disclosure of the policy, the plan was called 'Top 30'.

[9] It is an independent administrative institution under the jurisdiction of the MEXT, in charge of a wide range of programmes to advance scientific research.

[10] For the fiscal year 2004, however, only one category, 'Innovative scientific areas', was selected.

[11] The number of local public universities was 80 in the same year.

[12] The other three were: Tokyo Institute of Technology (national), Keio University (private) and Waseda University (private).

[13] Research institutes not affiliated with specific universities but considered as a part of the university system, crossing individual university boundaries with a nationwide perspective, that manage large-scale research facilities and equipment, or gather and organise a large amount of scientific information and data, and provide these facilities or information for joint use by researchers chiefly in universities. There are 19 institutes under four inter-university research institute corporations.

[14] Government agencies with corporate status delivering various types of goods and services. Many of the non-university public research institutes have this status.

[15] Areas cited as examples are: biosciences, chemistry, material sciences, electronics engineering and information sciences, precision and mechanical engineering, physics, mathematics.

[16] Explanation of the policy to a committee of the Central Council for Education.

[17] The overall response rate was 84% (463 respondents): 265 project leaders (97%) and 198 committee members (70%) returned responses. In addition to responding to the questionnaire concerning the 21COE for evaluation, project leaders were asked to provide data concerning the performance of each COE.

[18] Because application years of the projects were not always the same, progress made by each project resulted from activities for different lengths of period.

[19] Japan's southernmost prefecture, consisting of hundreds of islands which extends to Taiwan.

[20] http://www8.cao.go.jp/okinawa/4/49.html

[21] Japan's public expenditure on tertiary education as a percentage of GDP was almost half that of the Organisation for Economic Cooperation and Development average (0.7% against 1.3%) in 2004 (OECD, 2007).

[22] *Yomiuri Newspaper*, 14 November 2007.

References

21st Century COE Programme Committee (2006) *Verification and Future Prospects of the State of the '21st Century COE Programme' – verification results report*. Tokyo: JSPS (in Japanese).

Altbach P.G. (2002) A Research University in the Periphery: a Japanese mistake, *International Higher Education*, 28, 15-16.

Altbach P.G. (2003) The Costs and Benefits of World-Class Universities, *International Higher Education*, 33, 5-8.

Altbach P.G. & Balán J. (2007) *World Class Worldwide: transforming research universities in Asia and Latin America*. Baltimore: Johns Hopkins University Press.

Amano I. (2001) *Future of University Reform: from imitation to creation*. Tokyo: Tamagawadaigakushuppanbu.

Boer H. de & Stensaker B. (2007) An Internal Representative System: the democratic vision, in P. Maassen & J.P. Olsen (Eds) *University Dynamics and European Integration*. Dordrecht: Springer.

Kaneko, M. (2007) University Rankings and Universities, *IDE*, 495, 4-8 (in Japanese).

Kanemori, J. (2006) Significance and Outcome of the 21st Century COE Programme, *IDE*, 479, 16-21 (in Japanese).

Matsumoto, M. (1999) The 'Japan Problem' in Science and Technology and Basic Research as a Culture, *AI & Society*, 13, 4-21. http://dx.doi.org/10.1007/BF01205254

MEXT/JSPS (2007) *Outline of the 21st Century COE Programme*. Tokyo: MEXT (in Japanese).

Mori, W. (2006) Competitive Environment, *IDE*, 479, 2-3 (in Japanese).

Oba, J. (2005) The Incorporation of National Universities in Japan: initial reactions of the new National University Corporations, *Higher Education Management and Policy*, 17(2), 105-125.

Organisation for Economic Cooperation and Development (OECD) (2007) *Education at a Glance 2007*. Paris: OECD Publishing.

Okinawa Institute of Science and Technology Promotion Corporation (OIST P.C.) (2007) Okinawa Institute of Science and Technology Promotion Corporation – for the future of Okinawa and the world. Okinawa: OIST P.C.

Osaki, H. (1999) *University Reform 1945-1999*. Tokyo: Yuhikaku (in Japanese).

Science Council of Japan (2000) *The Role of Science in the Society*. Tokyo: Science Council of Japan (in Japanese).

Shinbori, M. (2003) History of the University Reform, in A. Arimoto & S. Yamamoto (Eds) *University Reform Today*. Tokyo: Toshindo (in Japanese).

Yonezawa, A. (2003) Japanese Flagship Universities at a Crossroads, *Higher Education*, 54, 483-499. http://dx.doi.org/10.1007/s10734-006-9028-2

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