

Evaluation of FY2018 Operating Results for
National Research Institute for
Earth Science and Disaster Resilience

August 2019

Minister of Education, Culture, Sports, Science and Technology

1. Items related to the evaluation		
Agency	National Research Institute for Earth Science and Disaster Resilience	
FY for evaluation	FY evaluation	FY2018
	Mid to long-term objective period	FY2016- FY2022 (4th term)

2. Items related to the assessor			
The Competent Minister	Minister of Education, Culture, Sports, Science and Technology		
Incorporated jurisdiction dept.	Research and Development Bureau	Dept. and person in charge	Earthquake and Disaster-Reduction Research Division, Toshiyuki Kudo
Evaluation and inspection dept.	Science and Technology Policy Bureau	Dept. and person in charge	Planning and Evaluation Division, Masao Yokoi
The Competent Minister			
Incorporated jurisdiction dept.		Dept. and person in charge	
Evaluation and inspection dept.		Dept. and person in charge	

3. Items regarding implementation of evaluation
<p>On June 25, 2019, the National Research Institute for Earth Science and Disaster Resilience Sub-committee (18th), the National Research and Development Agency Council under MEXT (hereafter referred to as the “Sub-Committee”) conducted the first hearing, including opinions and explanations from the director about the results of the Agency’s self-evaluation, and MEXT received advice with scientific knowledge from the committee about his evaluation.</p> <p>On July 10, 2019, the sub-committee (19th) conducted the second hearing on the results of the Agency’s self-evaluation, and MEXT received advice with the scientific knowledge from the committee about his evaluation.</p> <p>On July 23, 2019, the sub-committee (20th) discussed the results of the evaluation, and MEXT received advice with the scientific knowledge from the committee about his evaluation.</p> <p>On August 6, 2019, the National Research and Development Agency Council of the Ministry of Education, Culture, Sports, Science and Technology (15th) discussed the results of the evaluation, and MEXT received advice in line with scientific knowledge from the Council about his evaluation.</p>

4. Important items and others items relating to the evaluation
<p>Based on the guidelines on evaluation of incorporated administrative agencies and on other policies, after revisions were made in fiscal 2018 to clarify “Group of Selected Businesses” in “I. Section on Maximization of R&D Achievements and Improvements in the Quality of Other Businesses” for the mid to long-term objectives, evaluations were performed by “Group of Selected Businesses”.</p> <p>March 1, 2019 4th Term: Revisions to mid to long-term objectives</p>

1. Overall rating									
Rating*1 (S, A, B, C, D)	A	(Reference) Overall rating in the past fiscal years in this mid to long-term objective period*2							
			FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
		Improvement of business quality	B	A					
		Improvement of efficiency in business operations	B						
Improvement of financial conditions	B								
Reasons for rating	As shown in the overall evaluation of the agency as a whole, the creation of considerable achievements and anticipated creation of achievements in the future and so on were recognized as a result of comprehensive consideration based on circumstances surrounding the agency's business achievements, efforts and so on through its activities and with the national research and development agency's mid to long-term objectives taken into account.								

2. Evaluation of the whole agency
<p>As indicated below, we confirm, among others, expectations for the creation of results for our future and creation of sound results towards “maximization of R&D achievements” under a proper, effective, and efficient management of businesses.</p> <ul style="list-style-type: none"> ○ With regards to the advancement of partnerships among industry, academia, and government that serve as a central agency, we can give high marks to the establishment of an environment, by building an innovation hub, and by setting up all centers to build a platform to move research and development forwards among industry, academia, and government as a single unit, that can conduct everything from research and development to implementation of those works into society; and, for one of our topics for the 2nd Term under “the Strategic Innovation Creation Program (SIP)”, which is “Reinforcement of Disaster Resilience (disaster prevention, disaster reduction)” set forth and started by the Cabinet Office in fiscal 2018, to the establishment of an advancement scheme that allows joint works with involved research and development institutions such as universities and corporations in the private sector by setting up a “Research Center for National Disaster Resilience” to promote all of these activities at NIED by becoming a research and development agency and joint research and development agency to address these 5 research and development items. ○ With regard to the operation and joint promotion of the basic observation network and advanced research facilities, we can give high marks to the result which produced a number that was much higher than the target of 95% as the utilization rate of our observation network. This was accomplished by maintenance, management, and upgrades as needed for the operations of our Monitoring Of Waves on Land And Seafloor (MOWLAS) system. With regard to the observation data of “Seafloor Observation Network for Earthquakes and Tsunamis along the Japan Trench (S-net)”, we can give good marks to the expansion of their usage at East Japan Railway Company and to their utilization starting in Chiba prefecture as well, and to the advancement of implementations in society including the starting of pilot programs to transmit observation data of Dense Oceanfloor Network Systems for Earthquakes and Tsunamis (DONET) to Central Japan Railway Company and West Japan Railway Company. ○ With regard to reinforcements in the archiving function for disasters information, we can give good marks on sustainability as we now can set up NIED Crisis Response sites efficiently. Furthermore, we can give very high marks to the decision to continuously operate the Sharing Information Platform for Disaster management System (SIP4D), which started as a temporary research project. ○ With regard to international activities in research and development, we can give high marks to the building of a framework for international research as its leader to partake not only in international activities to raise revenue numbers but to maximize output which is the pride of a research and development entity, through actions including proposals on “Realizing a Nation’s Synthesis to reduce disaster risks” which utilize disaster prevention and reduction coordinating research hubs, SATREPS business in Thailand, and cooperation with University of Texas. ○ With regard to contributions towards disaster preventing administrative bodies, we can give very high marks to the activities to share information and collect and compact information on site when there were events including the earthquake in northern Osaka, the torrential rain in western Japan, and the earthquake in Iburi, which is eastern Hokkaido, by applying SIP4D, so that the state of affairs during a large-scale disaster can be shared by members of “Information Support Team (ISUT)” as these activities were lauded by the public. ○ With regard to research on earthquake and tsunami prediction technologies, we give high marks to the advancement in the utilization and application of MOWLAS data, and the many awards for the results of research which include The Commendation for Science and Technology by the Ministry of Education, Culture, Sports, Science and Technology; and, furthermore, to their taking the lead in the study and promotion of building a Dense Oceanfloor Network system for Earthquakes and Tsunamis (N-net) to realize “Faster Evacuation”. With regard to very large-scale earthquake mechanism research, the creation of a basic scenario for earthquakes in the Nankai

trough is progressing on schedule. Furthermore, we can give high marks to the award for 2018 Japan Seismology Paper as a result of the 3-dimensional dynamic fractures and propagations simulation that was conducted for the Kumamoto earthquake in 2016 and published in a journal.

- With regard to research that use 3-D Full-Scale Earthquake Testing Facility (E-Defense), we can give high marks to their proposal of designing technology to control damages to column-to-beam sections, which can continuously be used after a large earthquake, and this technology was validated for a 10-layer concrete test-construction, and this is now scheduled for publication in the guidelines that are published by Architectural Institute of Japan for the next fiscal year; and to their application of historical empirical data from NIED in the use case standard creation activity, which has a purpose to rationalize and upgrade anti-seismic evaluation methodology for pipelines used at power facilities, the creation of a use case draft standard, completing a public feedback period, and setting a publication date from The Japan Society of Mechanical Engineers.
- With regard to research into reduction in meteorological disasters, we can give high marks to their contributions to society by the organization and installation of observation systems to respond to the many localized torrential rain disasters, landslide disasters, snow and ice disasters in recent years, and analysis of these data has contributed to disaster prevention and disaster reduction in Japan; and by the implementation into society of technologies including floods prediction model and snowstorm prediction model. With regard to research on utilization and application of natural disasters and hazards risk evaluation and information, we can give high marks to their achievement of reaching operations level by accelerating the progress in real time damages prediction and their setting the bar high in their works, and to their realization of higher efficiency and upgrades to their operations through development and application of new technologies, which include dynamic posting of real time information products and automated opening of NIED Crisis Response sites.
- Under leadership of the Director, we worked on reinforcements to our research and development capacity and business management capacity, towards “maximization of research and development output”. Furthermore, we operate an organization with clear definitions of responsibilities and authorities, as well as promoting continuous improvements to the business. With regard to what kind of roles should NIED take and so forth to overcome national incidents, we can give high marks to their holding discussions organization-wide through branding activities, their creating an “identity”, and their creating a “long-term” vision for an ideal future self for the organization, which are all outstanding results.

3. Issues to be solved and /or improved for each subject

- We expect the dissemination of information from a better standpoint of our users, with regard to the various information that NIED provides, which includes dissemination of information on S-net works on both the Japanese and English language website pages to both Japan and abroad, establishment of an open data policy for MOWLAS, and improvements to the methodology of communication to various level users of the crisis response site. (See p19)

4. Other items	
Main opinions of the council on research and development	No special matters to note.
Auditor’s special comments	No special matters to note.

* Evaluation categories are as follows:

- S: Based on the National Research and Development Agency’s aims, businesses with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency’s business achievements, and efforts through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward “maximization of R&D achievements” under the conditions of appropriate, effective and efficient operations are recognized.
- A: Based on the National Research and Development Agency’s aims, businesses with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency’s business achievements, and efforts through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward “maximization of R&D achievements” under the conditions of appropriate, effective and efficient operations are recognized.
- B: Based on the National Research and Development Agency’s aims, business with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency’s business achievement, and efforts through its activities, a, certain degree of expectation for the creation of achievement and creation of achievement in the future toward “maximization of R&D achievements” were recognized, and steady business operations have been also recognized.
- C: Based on the National Research and Development Agency’s aims, businesses with mid to long-term objectives due to comprehensive consideration based on some circumstances regarding the agency’s business achievements, and efforts through its activities, the creation of achievements, further drastic efforts and improvements toward “maximization of R&D achievements” or “appropriate, effective and efficient operations” are anticipated.

D: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts and so on, through its activities, special efforts and improvements including a fundamental drastic review, toward "maximization of R&D achievements" or "the appropriate, effective and efficient operations" are required.

Mid to long-term objectives (Mid to long-term plan)	FY evaluation							Itemized evaluation document No.	Remarks
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022		
I. Maximization of R&D achievements and quality improvement of the other operations									
1. Formation of a core organization for innovation in research on disaster resilience technologies			A					□-1	
(1) Promotion of collaboration among industry, academia and government as a core institution	B	A	(A)						
(2) Promotion of utilization and sharing of fundamental observation network and cutting-edge research facilities	A	S	(A)						
(3) Spread of R&D achievements and promotion of utilization of intellectual property	B	A	(A)						
(4) The international expansion of research and development	B	B	(A)						
(5) Nurturing human resources	B	B	(B)						
(6) Contribution to disaster resilience policy	S	S	(S)						
2. Promotion of basic research and fundamental research and development concerning disaster resilience science and technology			A					□-2	

Mid to long-term objectives (Mid to long-term plan)	FY evaluation							Itemized evaluation document No.	Remarks
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022		
II. Items concerning the efficiency of the administration of the operations									
1. Establishment of flexible and efficient management system								□-1	
(1) Review of research organization and business	B	B	A						
(2) Internal control	B	B	B						
(3) Implementation of evaluation concerning research and development, etc.	B	B	B						
2. Efficient operations								□-2	
(1) Streamlining and efficiency of operational expenses	B	B	B						
(2) Streamlining and efficiency of personnel expenses	B	B	B						
(3) Review and check of the current contracts' status	B	B	B						

(1) Promotion of research and development for observing and predicting disasters in real time	B	A	(A)						
(2) Promotion of research and development aimed at improving the resiliency of social infrastructure	B	B	(A)						
(3) Promotion of fundamental research and development for disaster risk mitigation and reduction	B	A	(A)						

(4) Promotion of computerization	B	B	B						
III. Items regarding improvements in financial related matters									
	B	B	B						□
IV. Other items									
	B	B	B						□

- *1 For items that are set to “high” level of importance, a “circle” shall be marked next to each comment.
- *2 For items that are set to “high” level of difficulty, each comment shall be underlined.
- *3 For items that were selected for reinforcement shall be marked with “Target” next to each criterion.
- *4 In the “Itemized Evaluation Document No” column, the itemized document no in the itemized evaluation document for fiscal 2018 shall be entered.
- *5 Evaluation categories are as follows:

[Administrative and projects related to research and development (I)]

S: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievements, efforts and so on through its activities, especially the creation of considerable achievements, anticipated creation of special achievements in the future and so on toward “maximization of R&D achievements” under the conditions of appropriate, effective, and efficient operations are recognized.

A: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievements, efforts and so on through its activities, the creation of considerable achievements, anticipated creation of achievements in the future and so on toward “maximization of R&D achievements” under the conditions of appropriate , effective, and efficient operations are recognized.

B: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievement, efforts and so on through its activities, a certain degree of expectation for the creation of achievement and creation of achievement in the future toward “maximizing the achievements of R&D achievements” were recognized, and steady business operations have been also recognized.

C: Based on the National Research and Development Agency’s aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency’s business achievements, efforts and so on through its activities, the creation of achievements, further drastic efforts and improvements toward “maximization of R&D achievements” or the “appropriate, effective, and efficient operations” are anticipated.

D: Based on the National Research and Development Agency's aims, businesses, mid to long-term objectives and so on, and as a result of comprehensive consideration based on some circumstances regarding the agency's business achievements, efforts through its activities, special efforts and improvements including a fundamental drastic review, toward “maximization of R&D achievements” or the “appropriate, effective, and efficient operations” are required.

[Other than administrative work and projects regarding research and development (After II)]

S: Based on the activities of a corporation, remarkable performance exceeding the intended objectives is recognized quantitatively and qualitatively in the mid- to long- objective plan (in terms of quantitative indicators, 120% or more vis-à-vis planned mid to long-term objective value (or planned FY value), and remarkable performance is also recognized qualitatively)

A: Based on the activities of a corporation, remarkable performance exceeding the intended objectives is recognized in the mid to long- term objective plan (in terms of quantitative indicators, 120% or more vis-à-vis planned mid to long-term objective value (or planned FY value).

B: Performance exceeding the intended objectives is recognized in the mid to long- term objective plan (in terms of quantitative indicators, 100% or more but less than 120% vis-à-vis planned mid to long- term objective value (or planned FY value).

C: Performance falls below the intended objectives in the mid to long- term objective plan, requiring improved performance (in terms of quantitative indicators, 80% or more but less than 100% vis-à-vis planned mid to long- term objective value (or planned FY value).

D: Performance falls below the intended objectives in the mid to long-term objectives, requiring drastic improvement of business including its abolishment (in terms of quantitative indicators, less than 80% vis-à-vis the planned mid

to long-term values (or values on prior fiscal year), or it is recognized that the competent Minister is required to make an order for improving business operation or taking other necessary measures).

The following grades are to be assigned when one is forced to raise an evaluation based on qualitative indicators such as evaluation of internal controls, and when operations performance is difficult to measure such as when meeting certain conditions is set as the target.

S:—

A: The agency reached the target level, for targets whose difficulty grade were set high.

B: The agency reached the target level (This excludes items that correspond to “A”).

C: The agency couldn't reach the target level (This excludes items that corresponding to “D”).

D: A fundamental review of operations is needed because the agency couldn't reach the target level, and this includes when the Minister in charge finds that the Minister needs to order improvements in operations management and order other necessary actions.