

Fiscal Year 2008

Public Works Research Institute Evaluation Committee Report

Independent Administrative Agency Public Works Research Institute
Kazunori Wada*
Tatsuya Endo**
Ryo Kamakura***

Gist

This material summarizes the results of research evaluation by the Public Works Research Institute Research Evaluation Committee and Public Works Research Institute Research Evaluation Subcommittee conducted in fiscal year 2008.

Keywords : external evaluation, Public Works Research Institute Research Evaluation Committee, Important Project Research

*Planning Department Research Planning Director
**Planning Department Research Planning Evaluation/ Adjustment Division Head
***Planning Department Research Planning Evaluation/ Adjustment Division Chief Examiner

Forewords

Independent Administrative Agency Public Works Research Institute (hereinafter called “PWRI”), which was established on April 1, 2001, has determined “Plans related to project management that Independent Administrative Agency Public Works Research Institute should achieve” based on “Goals related to project management that Independent Administrative Agency Public Works Research Institute should achieve “ given by the Ministry of Land, Infrastructure, Transport and Tourism as instructions, and, after acquiring approval from the Ministry, has been proceeding with research and development in accordance with the plans.

On April 1, 2006, PWRI was integrated with Independent Administrative Agency Civil Engineering Research Institute of Hokkaido to launch a new public works system. In the 2nd medium-term plan, which was determined under the new system and ends in 2010, regards research and development on issues that are expected by society to be dealt in focused and concentrated manners as important project research, and also regard some other issues that may be regarded as important projects, although these are actually not implemented as important project research themes, as strategic research themes, and is proceeding with those research in focused and concentrated manners, allocating those themes about 60% of the research budget.

The important project research is subject to external evaluation by highly specialized researchers from universities and the Private Sector who have experience in academia as well as evaluation by project leasers’ self-assessment and Public Works Research Institute’s internal evaluation. Therefore, PWRI has determined “Independent Administrative Agency Public Works Research Institute Evaluation Guidelines” and is having evaluation at Public Works Research Institute Evaluation Committee Subcommittee in accordance with the guidelines.

In fiscal year 2008, the committee carried out the mid-term evaluation in the third year of the mid-term plan, post-stage evaluation on the themes that ended in Fiscal Year 2007 and pre-stage evaluation on the new themes. The committee also explained the summary of the overall research results of the research and development the Institute carried out in the previous year, while it reported opinions collected from the committee members to the Ministry of Land, Infrastructure, Transport and Tourism Independent Administrative Agency Evaluation Committee Public Works Research Institute Subcommittee.

This printed report includes the summary of results of the evaluation conducted by Public Works Research Institute Research Evaluation Committee/ Subcommittee in fiscal year 2008.

Public Works Research Institute Material
September 2008

Index

Forewords

Fiscal Year 2008 Public Works Research Institute Research Evaluation Committee

Chapter 1 Research Evaluation System

1	Independent Administrative Research Institute Research Evaluation Guidelines	1
2	Research systems and research themes to be evaluated	5
3	Research Evaluation Committee	11
4	Evaluation flow	14
5	Evaluation items and evaluation procedure	17
6	Evaluation for fiscal year 2008	24
7	Evaluation results fiscal year 2008	25

Chapter 2 Results of evaluation by Research Evaluation Subcommittee and PWRI's measures

①	Research of prevention/ reduction of flood disasters in the world by comprehensive flood risk management technology	31
②	Development of qualitative reinforcement of river embankments for improvement on safety in water management	46
③	Anti-seismic technology for road/ river facilities for durability against earthquakes	56
④	Development of risk forecast/ disaster reduction technology against sediment disaster caused by torrential rain/ earthquakes	81
⑤	Research on advanced use of cold region seaside	92
⑥	Technology related to improvement on road disaster prevention standards to deal with large scale rock slope collapse, etc	106
⑦	Research on improvement on safety/ efficiency of winter roads	114
⑧	Technology to reduce environment risks in our lives	136
⑨	Research on advanced design methods for efficient road foundation development	153
⑩	Research on advanced maintenance management technology for road structures	161
⑪	Research on cold region durability of public works	188
⑫	Development of recycling facility construction technology for formation of circulating society	206
⑬	Development of preservation/ reconstruction technology for aquatic ecosystem	217
⑭	Development of dam technology for preservation of the natural environment	247
⑮	Development of river track design technology for river areas that forms a part of the environment around cold region rivers	265
⑯	Development of a local biomass recycling system that centers shared biogas plants	282
⑰	Research on improvement on the water supply system and preservation of the structural functions of agricultural water supply facilities	295

Chapter 3	Summary of the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba and opinions	
1	Subcommittee 1 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	304
2	Subcommittee 2 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	305
3	Subcommittee 3 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	307
4	Subcommittee 4 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	309
5	Subcommittee 5 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	311
6	Subcommittee 6 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	312
7	Subcommittee 1 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	313
8	Subcommittee 1 related summary and opinion on the research cooperation between Civil Engineering Research Institute for cold Region and Tsukuba	314
Chapter 4	Summary of overall research results implemented by the Institute in the previous year	315
Chapter 5	Research Evaluation Committee review	
1	Public Works Research Institute review	336
2	Measures by Public Works Research Institute	337
Reference-1	Minutes	
1	Fiscal Year 2008 Public Works Research Institute Research Evaluation Committee meeting minutes	339
2	Public Works Research Institute Research Evaluation Subcommittee 1, minutes	346
3	Public Works Research Institute Research Evaluation Subcommittee 2, minutes	355
4	Public Works Research Institute Research Evaluation Subcommittee 3, minutes	361
5	Public Works Research Institute Research Evaluation Subcommittee 4, minutes	368
6	Public Works Research Institute Research Evaluation Subcommittee 5, minutes	386
7	Public Works Research Institute Research Evaluation Subcommittee 6, minutes	391
8	Public Works Research Institute Research Evaluation Subcommittee 7, minutes	403
9	Public Works Research Institute Research Evaluation Subcommittee 8, minutes	408
Reference-2	Implementation plans	
①	Research of prevention/ reduction of flood disasters in the world by comprehensive flood risk management technology	414
②	Development of qualitative reinforcement of river embankments for improvement on safety in water management	419

③ Anti-seismic technology for road/ river facilities for durability against earthquakes	424
④ Development of risk forecast/ disaster reduction technology against sediment disaster caused by torrential rain/ earthquakes	434
⑤ Research on advanced use of cold region seaside areas	438
⑥ Technology related to improvement on road disaster prevention standards to deal with large scale rock slope collapse, etc	444
⑦ Research on improvement on safety/ efficiency of winter roads	447
⑧ Technology to reduce environment risks in our lives	455
⑨ Research on advanced design methods for efficient road foundation development	461
⑩ Research on advanced maintenance management technology for road structures	464
⑪ Research on cold region durability of public works	476
⑫ Development of recycling facility construction technology for formation of circulating society	486
⑬ Development of preservation/ reconstruction technology for aquatic ecosystem	493
⑭ Development of dam technology for preservation of the natural environment	506
⑮ Development of design technology for basin and river tracks that forms a part of the environment around cold region rivers	514
⑯ Development of a local biomass recycling system that centers shared biogas plants	522
⑰ Research on improvement on the water supply system and preservation of the structural functions of agricultural water supply facilities	527

Fiscal Year 2008 Research Evaluation Committee

Chapter 1 Research Evaluation System

1. Independent Administrative Agency Public Works Research Institute Research Evaluation Guidelines

The full text of Independent Administrative Agency Public Works Research Institute Research Evaluation Guidelines (hereinafter called “Research Evaluation Guidelines”) determined by PWRI is as follows.

Independent Administrative Agency Public Works Research Institute Research Evaluation Guidelines

Chapter 1 General rules

Article 1 Purposes

This guideline’s purpose is to determine items, which are essential for evaluation implemented by Independent Administrative Agency Public Works Research Institute (hereinafter called “the Institute”).

Article 2 Research Evaluation Internal Committee

1. Research Evaluation Internal Committee (hereinafter called “Internal Evaluation Committee”), which consists of those in managerial positions of the Institute, shall be established.
2. The chairman and the members of the committee are as listed in a separate table. Some of those who are not committee members may attend the meeting if the chairman judges it necessary.
3. Internal Evaluation Committee shall evaluate the research determined in Article 5 and submit the result to the chairman.
4. The Internal Evaluation Committee shall have the office for Internal Evaluation Committee 1 in Research Planning Section, Planning Department, and one for Internal Evaluation Committee 2 in Planning Section, Civic Engineering Research Institute for Cold Region.

Article 3. Public Works Research Institute Research Evaluation Committee

1. In order to evaluate important research among the research the Institute carries out, Public Works Research Institute Research Evaluation Committee (hereinafter called “External Evaluation Committee”), which consists of people of learning and experience such as specialists at universities or in the Private Sector shall be established.
2. The committee members shall be the chairmen of the subcommittee as determined in Article 4, Item 2, and be appointed by the chairman. However, the appointment shall be cancelled if consignee-consigner relationship is made between them and the Institute during their term of office.
3. The External Evaluation Committee shall have a chairman and a deputy chairman. The chairman shall be elected by mutual vote among the members and the deputy chairman

- shall be appointed by the chairman from the other members of the committee.
4. The term of office for the External Evaluation Committee shall be two years. Their reappointment shall not be prevented.
 5. Based on the evaluation results by the Internal Evaluation Committee and Public Works Research Institute Research Evaluation Subcommittee (hereinafter in this Article called "External Evaluation Subcommittee"), External Evaluation Committee shall evaluate research themes as determined in Article 6 and present the results to the chairman.
 6. Concerning the evaluation in the above Item, the chairman shall be able to have members of External Evaluation Subcommittee attend the External Evaluation Committee if he recognizes it necessary.
 7. The office of External Evaluation Committee shall be placed in Research Planning Section, Planning Department and Planning Section, Civil engineering Research Institute for Cold Region.

Article 4. Public Works Research Institute Research Evaluation Subcommittee

1. For efficient implementation of research evaluation by External Evaluation Committee, Public Works Research Institute Research Evaluation Subcommittee, which consists of people of learning and experience such as specialists at universities or in the Private Sector shall be established.
2. The chairman and the members of External Evaluation Subcommittee shall be appointed from those who are not in consignee-consigner relationship with the Institute. However, if consignee-consigner relationship arises between any of them and the Institute during their term of office, the appointment shall be cancelled. The chairman shall be able to concurrently take the deputy chairman's position as well.
3. The term of office for the External Evaluation Committee members shall be two years. However, reappointment shall not be prevented.
4. External Evaluation Committee shall evaluate research themes as determined in Article 6. based on reports by Internal Evaluation Committee and report the results to the External Evaluation Committee.
5. Concerning the evaluation in the above Item, the chairman shall be able to have those other than the members of External Evaluation Subcommittee attend the External Evaluation Subcommittee if he recognizes it necessary.
6. The office of External Evaluation Subcommittee shall be placed in Research Planning Section of Planning Department, Planning Section of Civil engineering Research Institute for Cold Region and in representing research groups, which are subject to evaluation by the relevant External Evaluation Subcommittee.

Chapter 2 Research themes to be evaluated by Research Evaluation Internal Committee

Article 5 Research themes that Research Evaluation Internal Committee evaluates

The research themes that Internal Evaluation Committee evaluates shall be as follows

- ① Research themes management expenses grant is allocated
- ② Among research themes consigned to the Institute, ones that the chairman recognizes as requiring evaluation by Internal Evaluation Committee.

Article 6. Research themes to be evaluated by Public Works Research Institute Research Evaluation Committee

1. Research themes that External Research Evaluation Committee shall be all the research themes described below.

- ① Important Project Research themes that have been listed in the plan to achieve the mid-term goals of Independent Administrative Research Institute Public Works Research Institute Research Evaluation.
- ② Other research themes that the chairman judges necessary for the External Evaluation Committee to evaluate.
2. Among the individual research themes of Important Project Research, cooperative research themes that the members of the Evaluation Committee, and the chairman and members of the Subcommittee are working on as cooperating researchers, and ones which are related to research conducted with competitive research funds shall not be evaluated by the those committees. However, evaluation may be conducted by those committees if those committee members' cooperative research themes are not related to individual themes.

Chapter 3. Public presentation of research evaluation and results

Article 7. When to evaluate

Research evaluation by Internal Evaluation Committee, External Evaluation Committee and External Evaluation Subcommittee shall be conducted as described below. The mid-term evaluation, however, shall be omitted accordingly.

- ① Before starting research
- ② Mid-stage of research
- ③ After completing research
- ④ Other stage when Internal Evaluation Committee, External Evaluation Committee and External Evaluation Subcommittee.

Article 8. Evaluation before starting research

1. Evaluation before starting research (hereinafter called "pre-stage evaluation") shall be in principle conducted in the fiscal year before the fiscal year when the research is implemented.
2. In pre-stage evaluations, the following shall be discussed and evaluate appropriateness of the research theme.
 - ① Necessity of the research
 - ② Goals to attain
 - ③ Implementation system of the research
 - ④ Results of self-assessment
 - ⑤ Other items according to the contents of research

Article 9. Evaluation at the mid-stage of research.

1. Evaluation of mid-stage of research (hereinafter called "mid-stage evaluation") shall be conducted in principle two fiscal years after the initiation of the research.
2. Concerning mid-stage evaluation, the following shall be discussed to evaluate appropriateness of continuation of the research.
 - ① How the research is progressing
 - ② Any necessity of review
 - ③ Results of self-assessment
 - ④ Other necessary items according to the contents of research.

Article 10. Evaluation after completing research

1. Evaluation after completing research (hereinafter called "post-stage evaluation") shall be

conducted in the fiscal year after the year when research was completed.

2. Concerning post-stage evaluation, the following shall be discussed to evaluate effect of the implemented research.

- ① Outcomes of the research
- ② Self-assessment results
- ③ Other necessary items according to the contents of research.

Article 11. Public presentation of evaluation results

1. Results of evaluation by Internal Evaluation Committee shall be publicly presented on the website.
2. As well as on the website, research results by External Evaluation Committee of External Evaluation subcommittee shall be also compiled as Public Works Research Institute materials.

Chapter 4 Implementation of research

Article 12. Deciding which research themes to implement/ continue

Research themes to implement or continue shall be determined by the chairman of the board by taking into consideration pre-stage evaluation by Internal Evaluation Committee and External Evaluation Committee, or mid-stage evaluation results.

Additional rule

The guidelines shall be applied on April 1, 2001 and onward

Additional rule

The guidelines shall be implemented on April 20, 2004 and onward.

Additional rule

Article 1. The guidelines shall be implemented on April 1, 2006.

Article 2. Transitional measures related to the integration of Public Works Research Institute are as described in the following items.

1. Regardless of the rule in the previous article, the post –stage evaluation of the research that ended in 2005 and the research during the period from fiscal year 2001 to fiscal year 2005 according to the mid-term plans shall be implemented based on “Independent Administrative Agency Public Works Research Institute Research Evaluation Guidelines”.
2. Regardless of the rule in the previous article, the post –stage evaluation of the research that ended in 2005 and the research during the period from fiscal year 2001 to fiscal year 2005 according to the mid-term plans shall be implemented based on Independent Administrative Agency Civil Engineering Research Institute of Hokkaido Plans No. 262, (January 4, 2002) “Independent Administrative Agency Civil Engineering Research Institute of Hokkaido Research Evaluation Regulations”, Independent Administrative Agency Civil Engineering Research Institute of Hokkaido Plans No. 263, “Independent Administrative Agency Civil Engineering Research Institute of Hokkaido Research Evaluation Guidelines” and Independent Administrative Agency Civil Engineering Research Institute of Hokkaido Plans No. 49 “Project Research Technical Support Committee Regulations related to empirical examination of local independency in terms of power supply that contributes to measures against the global warming”.
3. In conducting the post-stage evaluation in the previous item, the committee members that Civil Engineering Research Institute appointed shall be regarded as having been appointed by the chairman of the board of Public Works Research Institute.
4. With the completed post-stage evaluations in the item 1. and item 2., the committee members

appointed by the chairman of the board or Public Works Research Institute on March 31, 2006 and before and the appointment of committee members in item 3. shall be regarded as having been cancelled.

Article 3. Until the time chairman is appointed at External Evaluation Committee that consists of the members who were appointed on or after April 1, 2006, what is determined as being recognized by the chairman shall mean what the chairman of the board recognized as necessary in Article 3 item 6 and Article 4 item 5 of the guidelines.

Additional rule

The guidelines shall be implemented on September 1, 2006 and onward.

Additional rule

The guidelines shall be implemented on April 15, 2008 and onward.

Separate Table

Structure of Internal Evaluation Committee

	Internal Evaluation Committee 1	Internal Evaluation Committee 2
Chairman	The Chairman of the Board*	Deliberative members (CERI for Cold Region)
Member of committee	Deliberative member (Tsukuba) Research Adjustment Director (Tsukuba) Research Adjustment Director (CERI for Cold Regions) Geological Director General Affairs Department Manager Planning Department Manager Technology Promotion Head quarter Head Material Foundation Research Group Head Aquatic Environment Research Group Head Hydraulic Engineering Research Group Head Sediment Management Research Group Head Road Technology Research Group Head Water Disaster Research Group Head Anti-seismic General Research Department Director Bridge Structure Research Group Head	Research Adjustment Director (CERI for Cold Regions) Research Adjustment Director (Tsukuba) Planning Department Manager Technology Promotion Head quarter Head Management Department Manager Technology Development Adjustment Director Cold Region Basic Technology Research Group Head Cold Region Hydrosphere Research Group Head Cold Region Road Research Group Head Cold Region Agriculture Foundation Research Group Head Special Research Director (Cold Region Public Works Research Institute) Research Planning Department Director General Research Department Director

	Research Planning Department Director	
	General Research Department Director	

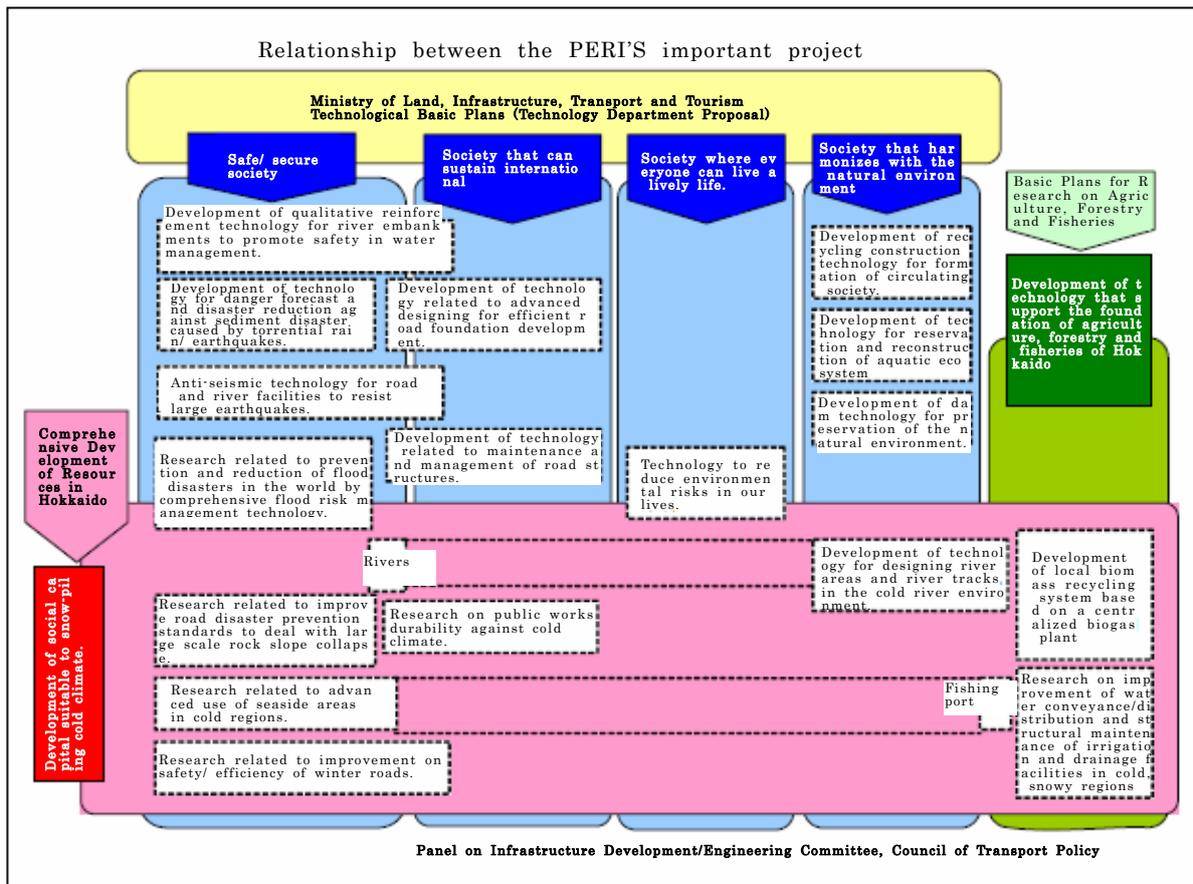
*In charge of General Affairs Department, Planning Department, Tsukuba Central Research Laboratory,
Water Disaster/ Risk Management International Center and Structure Maintenance Research Center

2. Research system and research themes to evaluate

1) Focused implementation of important project research and strategic research

Based on Ministry of Land, Infrastructure, Transport and Tourism Technological Basic Plans, Comprehensive Development of Resources in Hokkaido and Agriculture, Forestry and Fisheries Research Basic Plans, 17 themes of important project research have been set for the 2nd Medium-term plans that started from fiscal year 2006.

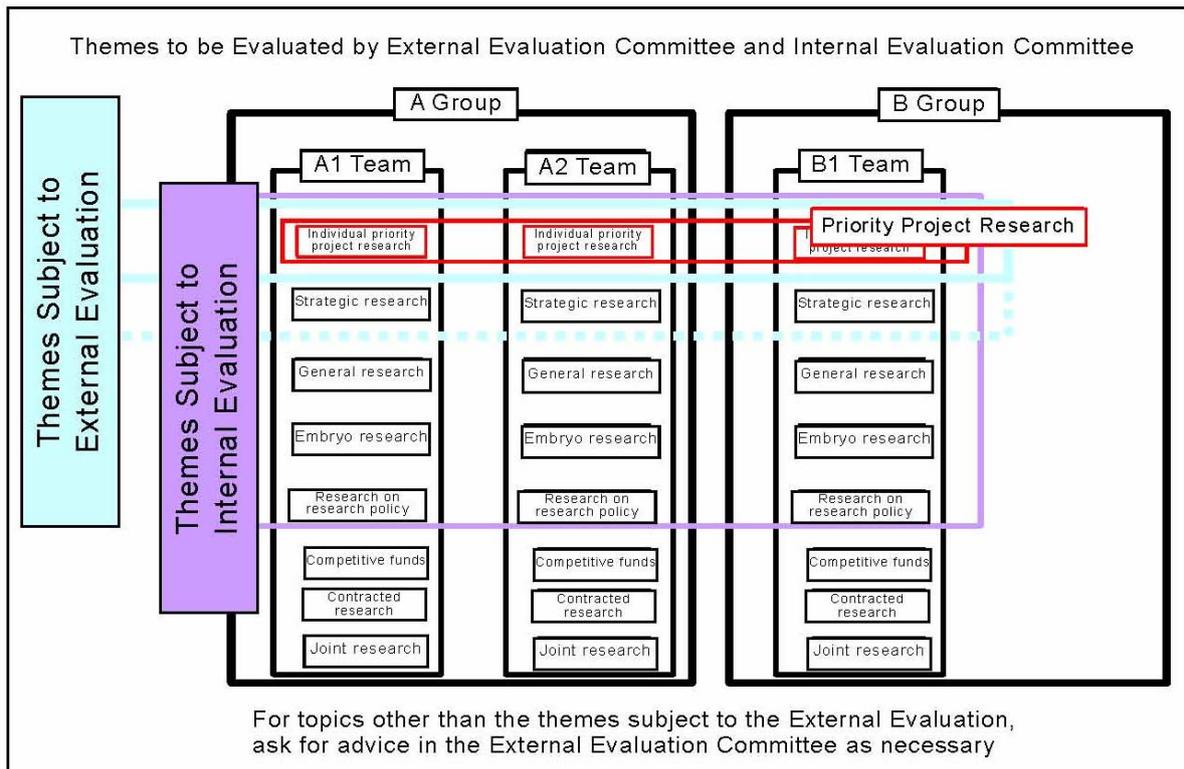
Also, to focus on the implementation of important research and development, 71% of the total research budget for fiscal year 2006 has been allocated to the important project research and the strategic research.



2) Research systems and research to study.

Research themes to be evaluated by the evaluation committees are summarized in the system shown below. Internal Evaluation Committee shall conduct evaluation on all research themes to which management expense grant is allocated.

Important project research shall be evaluated by External Evaluation Committee which consists of learned and experienced specialists from universities, the Private Sectors, etc. Also, concerning strategic research themes, the Institute shall explain them to External Evaluation Committee and have their advice.



3) Research themes to evaluate

In Fiscal Year 2008, the third year into this medium-term plan period, 65 themes were evaluated in the mid-stage evaluation.

Also in the post-stage evaluation, 7 themes that were completed in Fiscal Year 2007 and, in the post-stage evaluation, 15 new themes were evaluated.

Subcommittee 1

Important Project Research Theme

3 Anti-seismic technology for road/ river facilities to resist large earthquakes

Individual themes

- Development of anti-seismic reinforcement methods related to the existing difficult-to-reinforce road bridges (mid-stage evaluation)
- Experimental research related to anti-seismic reinforcement technology for bridge abutments on liquidified ground. (mid-stage evaluation)
- Experimental research related to emergency recovery technology of earthquake stricken road bridges. (mid-stage evaluation)
- Experimental research related to anti-seismic reinforcement technology for mountain road embankments. (mid-stage evaluation)
- Investigation related to anti-seismic reinforcement technology for river structures based on deformability in strong earthquakes. (mid-stage evaluation)
- Research related to ultimate strength of concrete dams against earthquakes. (mid-stage evaluation)
- Research related to estimation methods for degree of earthquake disasters using the memory-type detection sensor. (post-stage evaluation)
- Research related to repair/ reinforcement of concrete dams. (post-stage evaluation)
- Research related to evaluation of soundness of dams. (post-stage evaluation)

Important Project Research Theme

14 Development of dam technology for preservation of the natural environment.

Individual themes

- Research on properties of materials and design methods for trapezoid CSG dams. (mid-stage evaluation)
- Research related to durability evaluation methods for non-standardized frames. (mid-stage evaluation)
- Development of strength evaluation methods for weak layers in dam foundations, etc. (mid-stage evaluation)
- Research related to flow in reservoirs and downstream of reservoirs, and sediment transport models. (mid-stage evaluation)
- Research related to advanced control on reservoir downstream supplied sediment. (mid-stage evaluation)

Subcommittee 2

Important Project Research Theme

9 Research related to advanced designing methods for efficient road foundation development.

Individual themes

- Research on advanced theoretical designing of pavement structure. (mid-stage evaluation)
- Research on advanced performance evaluation for paved road surface. (mid-stage

evaluation)

Important project research theme

10 Research on advanced maintenance management technology for road structures.

Individual themes

- **Research on advanced theoretical designing of pavement structure. (mid-stage evaluation)**
- **Research related to durability of coated concrete repair/ reinforcement materials (mid-stage evaluation)**
- **Research on repair for steel bridge anti-corrosion work (mid-stage evaluation)**
Research related to management goal determination methods for pavement (mid-stage evaluation)
- **Research related to efficient maintenance/ repair methods for pavement. (mid-term evaluation)**
- **Research on repair methods by desalting for concrete structures damaged by salt.(post-stage evaluation)**
- **Research related to anti-deformation work selection methods for existing concrete road bridges. (post-stage evaluation)**
- **Research on soundness evaluation of existing concrete road bridge. (pre-stage evaluation)**
- **Research related to condition evaluation technology for fatal damages to the existing steel bridges. (pre-stage evaluation)**
- **Research related to building of diagnosis/ measures knowledge database for road bridges. (Pre-stage evaluation).**

Subcommittee 3

Important project research theme

1 Research on prevention/ reduction of flood disasters in the world by comprehensive flood risk management.

Individual themes

- **Research related to continuing Tsunami measures in developing countries. (mid-stage evaluation)**
- **Research on utilization of satellite imagery for water disaster risk evaluation. (pre-stage evaluation)**
- **Research related to utilization of the artificial satellite rainfall information in areas where hydro-geological information is scarce. (pre-stage evaluation)**
- **Research related to development/ distribution of comprehensive flood analysis system in developing countries. (pre-stage evaluation)**

Important project research theme

2 Development of qualitative reinforcement technology for river embankment to improve safety in water management.

Individual themes

- **Development of technology to improve anti-erosion functions of river embankments. (mid-stage evaluation)**
- **Research related to research methods of water permeation properties for foundation grounds of river embankments,(pre-stage evaluation)**
- **Research related to evaluation methods for weak parts of river embankments. (pre-stage evaluation)**
- **Development of internal property / structure precise evaluation technology for weak**

parts of embankments. (pre-stage evaluation)

Important project research theme

4 Development of technology for risk forecast and disaster reduction against sediment disaster caused by torrential rain/ earthquakes.

Individual themes

- Research related to safety evaluation methods against earthquake for river areas in mountainous areas. (mid-stage evaluation)
- Research related to collapse/ debris flood occurrence/ danger evaluation methods using accurate measurement of geospatial information. (post-stage evaluation)
- Research related to property change in strength of landslide clay caused by earthquakes.(post-stage evaluation)
- Research related to danger evaluation of risk evaluation for aftershock areas/ landslide during earthquakes. (pre-stage evaluation)

Subcommittee 4

Important project research theme

8 Technology to reduce environment risk to our lives.

individual themes

- Research related to rise and fall of disease causing microbes in aquatic environment. (mid-stage evaluation)
- Research related to evaluation methods for behavior of physiologically active substances and impact of the ecosystem in aquatic environment. (mid-stage evaluation)
- Identification of the state of physiologically active substances in the sewage and control over them (mid-stage evaluation)
- Research related to rise and fall of disease causing microbes in aquatic environment. (mid-stage evaluation)
- Research related to management/ control technology to deal with soil/ subterranean water. (mid-stage evaluation)
- Development of technology to deal with naturally existing heavy metal contamination. (mid-stage evaluation)

Important project research theme

12 Development of recycle technology for formation of a circulating society.

Individual themes

- Research related to technology to turn local biomass of public enterprise origin into resource and to utilize it. (mid-stage evaluation)
- Research related to effective use of reclaimed materials from other industries. (mid-stage evaluation)
- Research related to recycling of decayed asphalt. (mid-stage evaluation)
- Research related to technology to turn local biomass of public enterprise origin into resource and to utilize it. (mid-stage evaluation)

Important project theme

13 Development of preservation/ reconstruction of aquatic ecosystem.

Individual themes

- Research related to technology to change biomass of public enterprise origin into resource and to utilize it. (mid-term evaluation)
- Research on research methods for living environment of aquatic organisms and investigation of their ecological functions. (mid-term evaluation)
- Research related to methods to estimate the impact of river construction works on the

- behavior of wild animals and to monitor the impact. (mid-stage evaluation)
- Research related to development of methods of plant management in river areas. (mid-stage evaluation)
- Research related to methods to process river banks to create nature-rich rivers. (mid-stage evaluation)
- Research related to methods to determine water flow amount to maintain the soundness of ecosystem of the river bed. (mid-stage evaluation)
- Research related to water/ substance circulation management support models in river areas. (mid-stage evaluation)
- Research related to investigation of relationship between nutritious salts that flow down rivers and the river ecosystem. (mid-stage evaluation)
- Research related to reconstruction of the ecosystem at the downstream of dams by returning earth and sand. (mid-stage evaluation)

Subcommittee 5

Important project research theme

- 6 Research related to improvement of road disaster prevention standard to deal with large scale rock slope collapse.

Individual themes

- Research related to advanced evaluation/ inspection of rock slope collapse. (mid-stage evaluation)
- Research related to rationalized/ advanced road disaster prevention works. (mid-stage evaluation)

Important project research theme

- 11 Research related to cold region durability of public works facilities.
- Research related to optimization of peaty soft ground preventive works. (mid-stage)
 - Research related to concrete frost damage and salt damage combined decay behavior and evaluation.(mid-stage evaluation)
 - Research related to durability improvement of concrete in snow piling cold regions. (mid-stage evaluation)
 - Research related to improvement of load carrying capacity of structures to deal with their lower performance in snow piling cold region. (mid-stage evaluation)
 - Research related to measures against decay of pavement in cold regions.
 - Research related to public works facility management in snow piling cold region. (mid-stage evaluation)

Subcommittee 6

Important project research theme

- 5 Research related to advanced use of seaside areas in cold regions

Individual themes

- Research related to improvement of use of seaside facilities in cold regions. (mid-stage evaluation).
- Research related to occurrence property of drift ice and its impact on structures.(mid-stage evaluation)
- Research improvement of functions of aquatic habitat in port areas in cold regions and technology for preservation of water environment. (mid-stage evaluation)
- Development of under-water structures inspection technology to deal with icy ports. (pre-stage evaluation)

Important project research theme

- 15 Development of technology to design river areas and river track in the cold region river areas.

Individual themes

- **Development of technique to create diverse river environment and maintenance by reproducing winding shape of rivers, etc. (mid-stage evaluation)**
- **Development of technology for sound river track design for natural reproduction of cold water fish. (mid-stage evaluation)**
- **Investigation of the salt water intrusion phenomenon in the freezing season and development of salt water intrusion control methods.**
- **Development of methods to control outflow of pollution load from large scale farming area to the environment. (mid-stage evaluation)**
- **Research related to investigation on the mechanism of formation of river track and measures against closure of bridges due to drift woods. (pre-stage evaluation)**

Subcommittee 7

Important project research theme

- 7 Research related to improvement of safety/ efficiency of winter roads.

Individual themes

- **Research related to winter road maintenance. (mid-term evaluation)**
- **Research related to measures against traffic accidents in cold regions. (mid-stage evaluation)**
- **Research related to evaluation of performance of snow prevention facilities. (mid-stage evaluation)**
- **Research related to reduction of anti-freeze agent use. (pre-stage evaluation)**
- **Development of technology for swift handling of snow and ice. (pre-stage evaluation)**

Subcommittee 8

Important project research theme

- 16 Development of recycling system for local biomass that mainly uses shared biomass gas plants.

Individual subject theme

- **Development of technology to turn biomass into fertilizer/ energy and investigation of efficient transport methods for them.(id-stage evaluation)**
- **Development of technology for effective local use of substances generated from biomass. (mid-stage evaluation)**
- **Investigation of production environment improvement effect of fertilizing effect of irrigation. (pre-stage evaluation)**

Important project research theme

- 17 Research related to improvement of the water transfer function and prevention of the structure and function of agricultural water facilities in snow piling cold regions.

Individual themes

- **Development of technology to improve safety and durability of structure and functions of agricultural water facilities. (mid-stage evaluation)**
- **Research related to repair planning technology for agricultural water facilities. (mid-stage evaluation)**

3. Research evaluation committee

In fiscal year 2006, Research Evaluation Internal Committee (hereinafter called “Internal Evaluation Committee”) and Public Works Research Institute Evaluation Committee (hereinafter called “External Evaluation Committee) were organized due to the integration of former Public Works Research Institute and former Civil Engineering Research Institute of Hokkaido.

Main amendments

- 1) Internal Evaluation Committees are placed in Tsukuba and Sapporo and shall aim to jointly operate by assigning some committee members concurrently to the both committees.
- 2) External Evaluation Committee shall be integrated and accordingly reorganize subcommittees depending on research themes for evaluation.
- 3) Those in consigner- consignee relationship shall be excluded form External Evaluation Committee.
- 4) Role-sharing between External Evaluation Committee and External Evaluation Subcommittee and reviewing items to deliberate.

1) Internal Evaluation Committee

Table - List of Public Works Research Institute Research Evaluation Committee (Internal Evaluation Committee)

	Internal Evaluation Committee 1	Internal Evaluation Committee 2
Chairman	The Chairman of the board *	Deliberative members (CERI for Cold Region)
Member of committee	Research Adjustment Director (Tsukuba) Research Adjustment Director (CERI for Cold Regions) Geological Director General Affairs Department Manager Planning Department Manager Technology Promotion Head quarter Head Material Foundation Research Group Head Aquatic Environment Research Group Head Hydraulic Engineering Research Group Head Sediment Management Research Group Head Road Technology Research Group Head Water Disaster Research Group Head Anti-seismic General Research Department Director Bridge Structure Research Group Head Research Planning Department Director General Research Department Director	Research Adjustment Director (CERI for Cold Regions) Research Adjustment Director (Tsukuba) Planning Department Manager Technology Promotion Head quarter Head Management Department Manager Technology Development Adjustment Director Cold Region Basic Technology Research Group Head Cold Region Hydrosphere Research Group Cold Region Road Research Group Head Cold Region Agriculture Foundation Research Group Head Special Research Director (Cold Region Public Works Research Institute) Research Planning Department Director General Research Department Director
Research to be evaluated	Research conducted by Tsukuba Central Research Laboratory, International Center for water Hazard and Risk Management and Center for Infrastructure Asset Management Technology and Research	Research conducted by Civil Engineering Research Institute for Cold Region

*In charge of General Affairs Department, Planning Department, Tsukuba Central Research Laboratory, Water Disaster/ Risk Management International Center and Structure Maintenance Research Center

2) External Evaluation Committee

8 Public Works Research Institute Research Evaluation Subcommittee were organized according to “Research Evaluation Guidelines” in conducting research evaluation on 17 important project research themes.

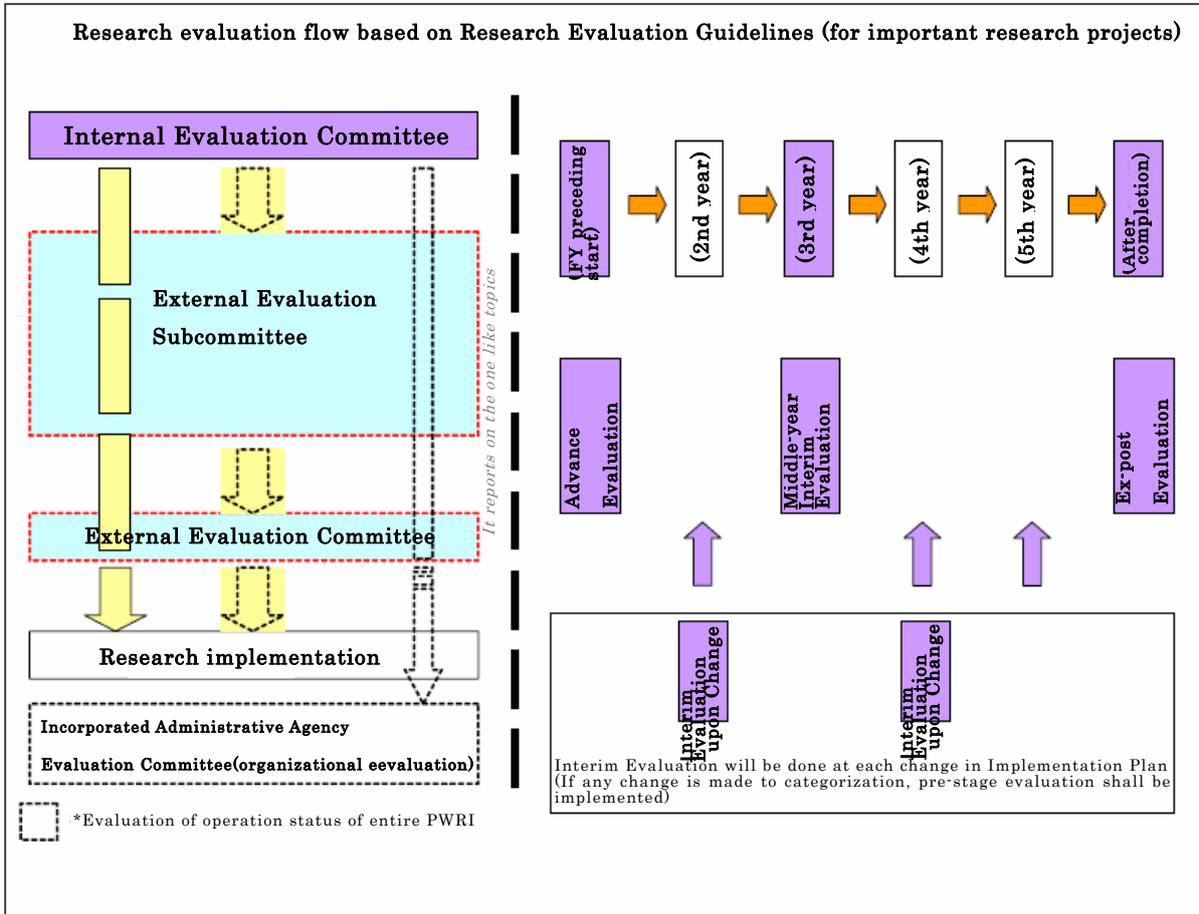
In order to facilitate “external evaluation by highly specialized learned and experienced people”, the 17 themes were allocated to each subcommittee depending on their subject fields.

Subcommittee	Field	Priority project research to be Evaluated
Subcommittee 1	Quake-proof/ dam	(3) Seismic resistant technologies for road and river facilities against strong earthquakes (14) Development of environmentally sound dam technologies
Subcommittee 2	Road structures	(9) Research on improvement of design methods for efficient construction of highway infrastructures (10) Research on improvement of maintenance and management technologies for road structures
Subcommittee 3	Flood/ landslide disaster	(1) Research on prevention and mitigation of flood-related disasters in the world by utilizing integrated risk management approaches (2) Development of technologies for strengthening river levees against floods (4) Development of technologies for predicting or mitigating sediment-related risks posed by severe rainfalls or earthquakes
Subcommittee 4	Environment/ recycling	(8) Development of technologies for decreasing environmental risks in life (12) Development of recycling construction technologies for creating zero-waste society (13) Conservation of aquatic ecology and development of reconstruction technologies
Subcommittee 5	Basic technologies for cold regions	(6) Research for improving road safety standards against large-scale rock slope failures (11) Research on durability of civil engineering structures against cold weather
Subcommittee 6	Hydrosphere in cold regions	(5) Research on efficient utilization of sea fronts in the cold region (15) Development of environmentally sound design techniques for watershed areas and river channels in cold regions
Subcommittee 7	Road in cold regions	(7) Research for improving safety and efficient use of winter road
Subcommittee 8	Agricultural infrastructure for cold regions	(16) Development of local biomass recycling system based on a centralized biogas plant (17) Research on improvement of water conveyance/distribution and structural maintenance of irrigation and drainage facilities in cold, snowy regions

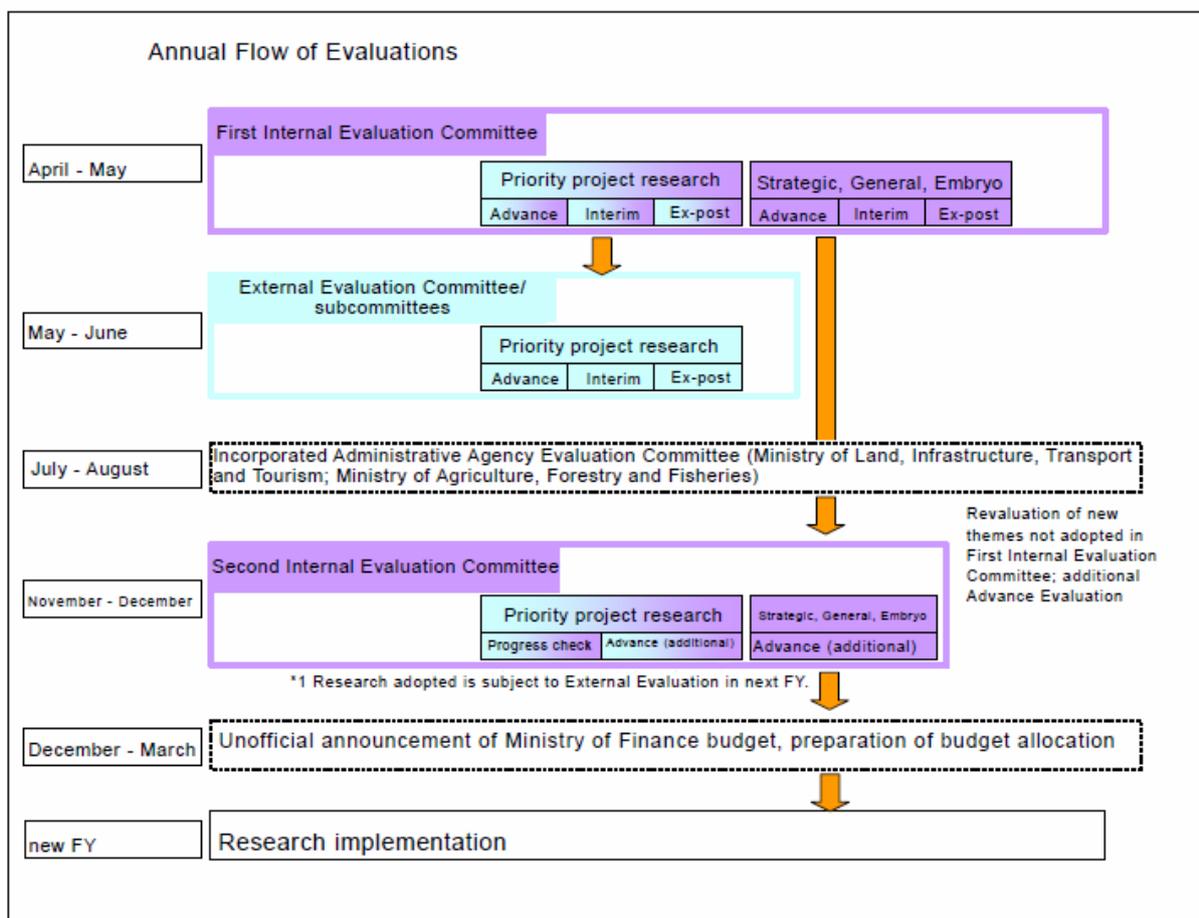
The chairmen, the deputy chairmen and the subcommittee chairmen are

Public Works Research Institute Research Evaluation Committee		
	Name	Subcommittee
Chairman	Takeshi Tamura	Subcommittee 2
Deputy Chairman	Atsushi Kasahara	Subcommittee 7
Committee members	Kazuhiko Kawashima	Subcommittee 1
	Tadashi Yamada	Subcommittee 3
	Tetsuro Tsujimoto	Subcommittee 4
	Takashi Mikami	Subcommittee 5
	Toshihiko Yamashita	Subcommittee 6
	Fujio Tsuchiya	Subcommittee 8
Subcommittee 1		
	Name	Institute
Chairman	Kazuhiko Kawashima	Professor, G.S of Science & Engineering, Tokyo Institute of Technology
	Junichi Koseki	Professor, Institute of Industrial Science, the University of Tokyo
	Masaharu Fujita	Professor, Disaster Prevention Research Institute Kyoto University
	Kitataka Uji	Professor, Tokyo Metropolitan University
Subcommittee 2		
	Name	Institute
Chairman	Takeshi Tamura	Professor, G.S. Engineering, Kyoto University
	Kenichi Maeda	Professor, Tokyo Metropolitan University
	Toyoaki Miyakawa	Professor, G.S. Engineering, Kyoto University
	Kenji Himeno	Professor, Faculty of Science and Engineering, Cho University
Subcommittee 3		
	Name	Institute
Chairman	Tadashi Yamada	Professor, Faculty of Science and Engineering, Cho University
	Takahisa Mizuyama	Professor, G.S. Kyoto University
	Makoto Nishigaki	Professor, Okayama University
	Yoshihisa Kawahara	Professor, Hiroshima University
Subcommittee 4		
	Name	Institute
Chairman	Tetsuro Tsujimoto	Professor, Nagoya University
	Izumi Washiya	Professor, University of Tokyo
	Masaaki Hosomi	Professor, Tokyo University of Agriculture and Technology
	Takeshi Katsumi	Associate Professor, Kyoto University
Subcommittee 5		
	Name	Institute
Chairman	Takashi Mikami	Professor, Hokkaido University
	Makoto Hisada	Associate Professor, Tojoku University
	Seiichi Miura	Professor, Hokkaido University
Subcommittee 6		
	Name	Institute
Chairman	Toshihiko Yamashita	Professor, Hokkaido University
	Hajime Nakayama	Professor, Kyoto University
	Toshikuni Okamura	Professor, Hokkaido University
Subcommittee 7		
	Name	Institute
Chairman	Atsushi Kasahara	Professor, Hokkaido University
	Takashi Nakatsuji	Professor, Hokkaido University
	Shuuhei Takahashi	Professor, Kitami Institute of Technology
Subcommittee 8		
	Name	Institute
Chairman	Tsuchiya Fujio	Professor, Obihiro University of Agriculture & Veterinary Medicine
	Shuichi Hasegawa	Professor, Hokkaido University
	Atsushi Hasegawa	Principal, Hakodate Industrial High School

- Evaluation of general themes in strategic research, general research, budding research takes the same flow as that of important project research. We have requested External Evaluation Committee and the Subcommittees to introduce themes to us and to instruct us on them.



- Basically, Internal Evaluation Committee shall hold two annual meetings, and External Evaluation Committee and each Subcommittee shall have one annual meetings.
- The first Internal Evaluation Committee meeting shall be held in connection with External Evaluation Committee meeting and Independent Administrative Agency Evaluation Committee meeting (institutional evaluation) to be held later on so that the committee functions as a part of the institutes' management cycle.
- The second Internal Evaluation Committee meeting shall focus on progress of each research theme.
- Should there be any significant change, special Internal Evaluation Committee meeting shall be held. For fiscal year 2007, an Internal Evaluation Committee meeting was held in January in connection with the transferred projects from Civil Engineering Research Institute such as technological development, etc.



5. Evaluation Items and Evaluation Procedure

(1) Research Evaluation Procedures and Themes to be Evaluated

The evaluations of priority project researches by the Public Works Research Institute Research Evaluation Committee (hereinafter called "Research Evaluation Committee") were carried out in two stages as shown below:

First of all, in the Public Works Research Institute Research Evaluation Subcommittees (hereinafter called "Research Evaluation Subcommittees"), after the project leader explains about the research based on the Priority Project Research Implementation Plan prepared through the Public Works Research Institute Research Evaluation Internal Committee (internal evaluation), a question-and-answer session was held, and based on such results, each subcommittee member filled in the Priority Project Research Advance Evaluation Sheet (hereinafter called "Advance Evaluation Sheet") and the Priority Project Research Interim Evaluation Sheet (hereinafter called "Interim Evaluation Sheet") about their evaluation results.

As for Advance Evaluation, "Social demand," "Necessity for implementation by PWRI," "Position/level as research," "Performance objectives," "Measures to spread outcome," "Annual plan for research," and "Research method and implementation system" were explained.

As for Interim Evaluation, "Progress status of research," "Degree of progress (self-evaluation)," "Major theses published," "Contribution to business/society," "Project leader's analysis," and "Necessity for changing plans and its description" were explained.

As for Ex-post Evaluation, "Performance objectives and degree of attainment (Research outcome)," "Major theses published," "Contribution to business/society," "Patent obtained, etc.," "Spread of outcome," and "Project leader's analysis" were explained.

After a question-and-answer session, each subcommittee member filled in the Advance Evaluation Sheet and the Interim Evaluation Sheet about their evaluation results. Additionally, the Public Works Research Institute prepared the responses to the comments made on the Evaluation Sheet, and obtained the approval of each subcommittee member.

After this, the Research Evaluation Committee research held an overall question-and-answer session based on the evaluation results by each Research Evaluation Subcommittee to obtain the overall compatibility among each subcommittee's evaluation results, and after final confirmation of the research, made the Committee's general evaluation.

(2) Evaluation Items and Evaluation Sheet for Advance Evaluation

Below are the evaluation items.

Evaluation Items

Necessity for this research (problem recognition)

[Social demand] What sort of social demand exists toward, and what sort of social contributions (outcome) are expected from, this research?

- Appropriate Partly inappropriate Inappropriate

[Necessity for implementation by PWRI] What is the reason for PWRI to carry out this research?

- Appropriate Partly inappropriate Inappropriate

Outcome to be produced in this research (performance objectives)

[Position/level as research] Briefly provide the position/level seen from the development stage of the research.

- Appropriate Partly inappropriate Inappropriate

[Performance objectives] Are the performance objectives of this research specific and appropriate? How are they related to social contributions (outcome)?

- Specific and appropriate
- Partly abstract or inappropriate
- The whole plan requires reviewing.

[Measures to spread outcome] Have any measures to spread the outcome connected with a business, etc. outcome for each performance objective been planned in advance?

- Appropriate
- Partly requires reviewing
- The whole plan requires reviewing.

[Annual plan for research] Is the annual plan appropriate for the objective?

- Appropriate
- Partly requires reviewing
- The whole plan requires reviewing.

[Research method and implementation system] What sort of research methods and cooperation system are considered to be required?

- Appropriate
- Partly requires reviewing
- The whole plan requires reviewing.

Overall evaluation

- To be implemented based on Implementation Plan
- To be implemented after modifying Implementation Plan based on comment above
- To be redeliberated after modifying Implementation Plan based on comment above
- To be cancelled

* Specific comments and advice regarding the evaluation results were provided, as necessary.

The Advance Evaluation Sheet Form 4 (overall evaluation) and Form 5 (evaluation of individual themes) are provided below.

Priority Projects Research (overall) pre-stage evaluation sheet

Form 4

Evaluator : _____

Priority research Projects theme	Project Leader		Evaluator : _____	
Researched by				
Research period	~	Total budget		
Evaluation items	Project leader's understanding	External evaluation committee's evaluation results and grounds for them		
Necessity of this research (Recognizing the issue)	[Social requirements] What are the social requirements for this research?	Understanding on regarding social requirements <input type="checkbox"/> Appropriate <input type="checkbox"/> A little inadequate <input type="checkbox"/> Inadequate		
Outcome to be produced in this research (Performance objectives)	[Setting of Performance objectives] Are Performance objectives set for this research period appropriate? Have any new Performance objectives been added to the ones set in the Medium-term plans?	Range of performance objectives setting <input type="checkbox"/> Appropriate <input type="checkbox"/> Too large <input type="checkbox"/> Too small <input type="checkbox"/> There is something that should be added <input type="checkbox"/> There is something unnecessary		
Contents of individual themes	[Setting individual themes] Do you think the individual subject you have set is necessary and sufficient for attaining the performance objectives above?	Contents of the theme <input type="checkbox"/> Appropriate <input type="checkbox"/> Inadequate <input type="checkbox"/> Addition of themes <input type="checkbox"/> Removal of themes <input type="checkbox"/> Sorting similar themes		
	[Research system] What kind of internal/ external cooperation system do you think is necessary for attaining the performance objectives?	Actual research system <input type="checkbox"/> Appropriate <input type="checkbox"/> Inadequate <input type="checkbox"/> The internal system is not appropriate <input type="checkbox"/> Cooperation with external bodies is not appropriate		
	[Budget size] Do you think the budget you request is necessary and sufficient for materializing the performance objectives above?	Budget size is <input type="checkbox"/> Appropriate <input type="checkbox"/> Too large <input type="checkbox"/> Too small <input type="checkbox"/> Materials for decision-making are not sufficient		
Total evaluation	<input type="checkbox"/> To be implemented in accordance with the implementation plans <input type="checkbox"/> To be implemented after revision of the implementation plan following the comments above <input type="checkbox"/> To be re-deliberated after revision of the implementation plan following the comments above		[Other advice concerning improvement of research contents]	

Priority Projects Research (Individual theme) pre-stage evaluation sheet

form 5

Project research theme	Person responsible for the research		Research period	
Priority research Projects theme			~	
Research budget	<input type="checkbox"/> General Account <input type="checkbox"/> Flood Control Account <input type="checkbox"/> Road maintenance Account		Total budget	(Amount requested)
Evaluation items	Recognition of the person responsible for the research/ Research contents	External evaluation committee's evaluation results and grounds for them		
Necessity of this research (Recognizing the issue)	[Necessity of public works] What is the reason for the implementation of the public works?	Understanding regarding social requirements/ social contribution is <input type="checkbox"/> Appropriate <input type="checkbox"/> A little inadequate <input type="checkbox"/> Inadequate		
	[Necessity of public works] What is the reason for the implementation of the public works?	Understanding regarding necessity of public works research is <input type="checkbox"/> Appropriate <input type="checkbox"/> A little inadequate <input type="checkbox"/> Inadequate		
Results from this research (Attaining performance objective)	[Meaning and standard of this research] Write a brief comment on the meaning and the standard of this research by judging from its	Recognition of the meaning of the research <input type="checkbox"/> Appropriate <input type="checkbox"/> A little inadequate <input type="checkbox"/> Inadequate		
	[Contents of the goals to attain] Are the goals of this research concrete and appropriate? How do they relate to social contribution?	Contents of the performance objectives (results, outcomes) <input type="checkbox"/> Concrete and appropriate <input type="checkbox"/> Abstract and partly not appropriate <input type="checkbox"/> The whole plan needs revision		
	[Result distribution and measures] Are distribution of each result and measures for that to connect them to enterprises, etc. thought out in advance?	Result distribution and measures <input type="checkbox"/> Appropriate <input type="checkbox"/> Revision partly needed <input type="checkbox"/> The whole plan needs revision		
Research system	[Research plan for the next year] Is the plan appropriate for the goals?	Annual plan for the research <input type="checkbox"/> Appropriate <input type="checkbox"/> Revision partly needed <input type="checkbox"/> The whole plan needs revision		
	[Research methods/ implementation system] What kinds of research methods do you think are required?	Research methods/ implementation system <input type="checkbox"/> Appropriate <input type="checkbox"/> Revision partly needed <input type="checkbox"/> The whole plan needs revision		
Overall evaluation	<input type="checkbox"/> To be implemented in accordance with the implementation plans <input type="checkbox"/> To be implemented after revision of the implementation plan following the comments above <input type="checkbox"/> To be re-deliberated after revision of the implementation plan following the comments above <input type="checkbox"/> To be cancelled		[Other advice concerning improvement of research contents]	

(3) Evaluation Items and Evaluation Sheet for Interim Evaluation

Below are the evaluation items.

Evaluation Items

Progress status

Evaluate the progress of this research as "quick," "as planned," "a little behind," or "behind."

- Quick As planned A little behind Behind

Announcement of outcome

Evaluate the announcement of the research outcome as "Appropriate," "A little inadequate," or "Inadequate."

- Appropriate A little inadequate Inadequate

Overall evaluation (continuation of research)

Provide the overall evaluation in terms of continuation of research from among the following five classifications.

- To be continued as originally planned
- To be continued after modifying Implementation Plan as proposed
- To be continued after modifying Research Plan based on comment shown right
- To be redeliberated after reviewing Research Plan based on comment shown right
- To be cancelled for a reason shown right

* Specific comments and advice regarding the evaluation results were provided, as necessary.

The Interim Evaluation Sheet Form 6 (overall evaluation) and Form 7 (evaluation of individual themes) are provided below.

Priority project research (overall) Interim Evaluation Sheet

Priority project title			
Researched by		Total budget	
Research period		Project leader	
Performance objectives and progress	Performance objectives listed in Implementation Plan	Progress status of research	Degree of progress (self-evaluation)
			<input type="checkbox"/> Quick <input type="checkbox"/> As planned <input type="checkbox"/> A little behind <input type="checkbox"/> Behind
Major these published			
Contributions to business/society			
Project leader's analysis			
Plan change	Points changed	Reason for change	
<input type="checkbox"/> Changed <input type="checkbox"/> No change	<input type="checkbox"/> Individual themes set <input type="checkbox"/> Research system <input type="checkbox"/> Budget <input type="checkbox"/> Other		
Evaluation Committee's evaluation			
Progress status	<input type="checkbox"/> Quick <input type="checkbox"/> As planned <input type="checkbox"/> A little behind <input type="checkbox"/> Behind	Evaluator's comment	
Announcement of outcome	<input type="checkbox"/> Appropriate <input type="checkbox"/> A little inadequate <input type="checkbox"/> Inadequate		
Overall evaluation (continuation of research)	<input type="checkbox"/> To be continued as originally planned <input type="checkbox"/> To be continued after modifying Implementation Plan as proposed <input type="checkbox"/> To be continued after modifying Research Plan based on comment shown right <input type="checkbox"/> To be redeliberated after reviewing Research Plan based on comment shown right <input type="checkbox"/> To be cancelled for a reason shown right		

Priority project research (individual themes) Interim Evaluation Sheet

Priority project title		Project leader	
Individual theme title		Researched by	
Research period		Total budget	
Performance objectives and progress	Performance objectives listed in Implementation Plan	Progress status of research	Degree of progress (self-evaluation)
	(1)		<input type="checkbox"/> Quick <input type="checkbox"/> As planned <input type="checkbox"/> A little behind <input type="checkbox"/> Behind
	(2)		<input type="checkbox"/> Quick <input type="checkbox"/> As planned <input type="checkbox"/> A little behind <input type="checkbox"/> Behind
	(3)		<input type="checkbox"/> Quick <input type="checkbox"/> As planned <input type="checkbox"/> A little behind <input type="checkbox"/> Behind
	(4)		<input type="checkbox"/> Quick <input type="checkbox"/> As planned <input type="checkbox"/> A little behind <input type="checkbox"/> Behind
Major theses published			
Contributions to business/society			
Project leader's analysis			
Plan change	Points changed	Reason for change	
<input type="checkbox"/> Changed <input type="checkbox"/> No change	<input type="checkbox"/> Performance objectives <input type="checkbox"/> Research system <input type="checkbox"/> Research period <input type="checkbox"/> Research budget <input type="checkbox"/> Annual plan <input type="checkbox"/> Other		
Evaluation Committee's evaluation			
Progress status	<input type="checkbox"/> Quick <input type="checkbox"/> As planned <input type="checkbox"/> A little behind <input type="checkbox"/> Behind	Evaluator's comment	
Announcement of outcome	<input type="checkbox"/> Appropriate <input type="checkbox"/> A little inadequate <input type="checkbox"/> Inadequate		
Overall evaluation (continuation of research)	<input type="checkbox"/> To be continued as originally planned <input type="checkbox"/> To be continued after modifying Implementation Plan as proposed <input type="checkbox"/> To be continued after modifying Research Plan based on comment shown right <input type="checkbox"/> To be redeliberated after reviewing Research Plan based on comment shown right <input type="checkbox"/> To be cancelled for a reason shown right		

(4) Evaluation Items and Evaluation Sheet for Ex-post Evaluation

Below are the evaluation items.

Evaluation Items

Research outcome

Evaluate the accomplishment status of this research outcome based on the following four scales

- Accomplished intended objectives and made big technical contributions
- Accomplished only part of intended objectives but made technical contributions
- Technical contributions were not always sufficient but efforts at research can be appreciated
- Efforts at research were insufficient and require improving

Announcement of outcome

Evaluate the announcement of the research outcome as "Appropriate," "A little inadequate," or "Inadequate."

- Appropriate A little inadequate Inadequate

Efforts at spreading research outcome

Evaluate the activities to spread the research outcome as "Appropriate," "A little inadequate," or "Inadequate."

- Appropriate A little inadequate Inadequate

* Specific comments and advice regarding the evaluation results were provided, as necessary.

The Ex-post Evaluation Sheet Form 8 (overall evaluation) and Form 9 (evaluation of individual themes) are provided below.

6. Evaluation in fiscal year 2008.

The activities of the Research Evaluation Committee/ Research Evaluation Subcommittee are as follows.

Internal evaluation and external evaluation were completed by the end of June linked with the Institute's evaluation in July and the management cycle of the whole research institute such as the budget request. The agendas of the Research Evaluation Committee meeting and each subcommittee meeting are shown in the minutes at the end of this volume.

Internal Evaluation Committee

Internal Evaluation Committee	Date & Venue
Internal Evaluation Committee 1	April 25, 2008 Public Works Research Institute meeting room
	May 13, 14, 15 2008 Public Works Research Institute meeting room
Internal Evaluation Committee 2	Jan 22, 23, 24, 2008 Civil Engineering Research Institute for Cold Regions meeting room
	Jan 22, 23, 24, 2008 Civil Engineering Research Institute for Cold Regions meeting room

External Evaluation Committee

Subcommittee	Date & Venue	Subcommittee	Date & Venue
Subcommittee 1	June 4, 2008 Melparque Tokyo	Subcommittee 5	May 13, 2008 Civil Engineering Research Institute for Cold Regions meeting room
Subcommittee 2	June 6, 2008 Todofuken Kaikan	Subcommittee 6	May 23, 2008 Civil Engineering Research Institute for Cold Regions meeting room
Subcommittee 3	June 2, 2008 Sabo Kaikan	Subcommittee 7	June 3, 2008 Civil Engineering Research Institute for Cold Regions meeting room
Subcommittee 4	June 3, 2008 Yaesu Fujiya Hotel	Subcommittee 8	May 14, 2008 Civil Engineering Research Institute for Cold Regions meeting room

External Evaluation Committee	Date & Venue
Main committee meeting	June 24, 2008 Hotel Monterey Hanzomon



Institutional evaluation (Independent Administrative Evaluation Committee)

July 1 Independent Administrative Evaluation Committee Agricultural Subcommittee Public Works Department meeting (Ministry of Agriculture, Forestry and Fisheries)

July 29 Independent Administrative Evaluation Committee Public Works Subcommittee meeting (Ministry of Land, Infrastructure, Transport and Tourism)

August and onward

Independent Administrative Evaluation Committee meeting (Ministry of Agriculture, Forestry and Fisheries)

Independent Administrative Evaluation Committee General meeting (Ministry of Land, Infrastructure, Transport and Tourism)

Budgets

July Explanation on the demand for budgetary appropriation to Ministry of Land, Infrastructure, Transport and Tourism

September

Explanation on the demand for budgetary appropriation to Ministry of Finance

December

Unofficial notification of Ministry of Finance

February ~ March

Budgeting at the meeting of the internal chief examiners, etc.

7. 2008 Evaluation Result

Evaluation results of Subcommittee 1

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		3. Seismic resistant technologies for road and river facilities against strong earthquakes		
		Plan change: Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
0	4	0	0	0

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		14. Development of environmentally sound dam technologies		
		Plan change: Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
1	3	0	0	0

Evaluation results of Subcommittee 2

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		9. Research related to advanced designing method for efficient road foundation development		
		Plan change: Not Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
4	0	0	0	0

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		10. Research related to advanced maintenance/ management technology for road constructions		
		Plan change: Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
0	4	0	0	0

Evaluation results of Subcommittee 3

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		1. Research related to prevention/ reduction of flood disasters in the world by comprehensive flood risk management technology			Plan change: Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
0	4	0	0	0	

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		2. Development of qualitative reinforcement of river embankment for improvement of water management			Plan change: Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
0	4	0	0	0	

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		4. Development of danger prediction and disaster reduction to deal with sediment disaster caused by torrential rain/ earthquakes.			Plan change: Not Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
4	0	0	0	0	

Evaluation results of Subcommittee 4

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		8. Technology to reduce environment risk in our lives		
		Plan change: Not Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
4	0	0	0	0

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		12. Development of recycling construction technology for forming a circulating society		
		Plan change: Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
0	4	0	0	0

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		13. Development of technology for preservation/ reconstruction of aquatic ecosystem		
		Plan change: Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
0	4	0	0	0

Evaluation results of Subcommittee 5

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		6. Technology related to improvement of road disaster prevention standards to deal with large scale rock slop collapse			Plan change: Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
0	2	1	0	0	

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		11. Research related to durability of public works in cold regions			Plan change: Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
0	1	2	0	0	

Evaluation results of Subcommittee 6

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		11. Research related to advanced use of public works in cold regions		
		Plan change: Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
1	2	0	0	0

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		15. Development of technology to construct basin/ river track in river areas in cold region		
		Plan change: Changed		
Overall evaluation				
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right
1	2	0	0	0

Evaluation results of Subcommittee 7

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		7. Research related to improvement of safety/ efficiency of winter roads.			Plan change: Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
0	3	0	0	0	

Evaluation results of Subcommittee 8

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		16. Development of recycling system for local biomass that mainly uses shared biogas plants.			Plan change: Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
0	3	0	0	0	

Overall Middle-Year (Interim) Evaluation of Priority Project Research

Priority project research title		17. Research related to improvement of the water transfer function and prevention of the structure and function of agricultural water facilities in snow piling cold regions.			Plan change: Changed
Overall evaluation					
To be continued as originally planned	To be continued after modifying Implementation Plan as proposed	To be continued after modifying Research Plan based on comment shown right	To be redeliberated after reviewing Research Plan based on comment shown right	To be cancelled for a reason shown right	
0	3	0	0	0	