Summary of the Advisory Board's Evaluation for FY2020

- Advisory Board Members:
  Prof. Brenda Howard (UK Centre for Ecology & Hydrology)
  Prof. Sergey Fesenko (Russian Academy of Sciences, Russian Institute of Radiology and Agroecology)
  Prof. Wolfgang Raskob (Karlsruhe Institute of Technology)
  Dr. Satoshi Yoshida (National Institutes for Quantum and Radiological Science and Technology)
- Annual Symposium: March 18, 2021
- Advisory Board meeting: March 24, 2021 Venue: Online
  Agenda: 1. Annual Symposium FY2020
  2. Activity Report FY2020 (Evaluation period: April 1, 2020 - March 31, 2021)
  3. Activity Report FY2019*(Evaluation period: April 1, 2019 - March 31, 2020)
  (*The agenda for the FY2019 meeting, which was cancelled due to COVID-19, were also discussed.)
- Received common statement and written comments from each member after the meeting

Minutes: Major points raised by the Advisory Board (ADB) and proposed response by IER

1. Annual Symposium FY2020

   ADB : I have the impression that the contents have been enriched and improved. In particular, I was very impressed by Deputy Director Takamura's research, which truly connects science and people. This is one of the strengths of the IER.

   ADB : The activities (objectives) should be clearly presented/stated and easy to understand for the part of the audience who are not scientists, specifying on the objectives and usefulness of the research activities. For example, "What IER can do where (in the difficult-to-return areas / forests / agriculture), and how IER can help people." Presentation in a Q&A format could be an option to make it easier for people to understand.

   → Based on a previous suggestion from the ADB, the symposium FY2020 again consisted of a poster session for experts and a symposium for the general public. We would like to continue this as it is considered to be an effective structure. The question asked by Dr. Yoshida of ADB during the general discussion made it easy for the general public to understand the major differences in environmental radioactivity between Fukushima and Chernobyl. We would like to take the advice into account such as paying attention to people's interest, clarifying the objectives, and considering the presentation form in the future annual symposia.

2. Activity Report and general activities FY2020

   (a) Activity Report

   ADB : It is necessary to reconsider the descriptions in the annual report to be reviewed by the ADB, such as contents that have not been updated or changed in a fiscal year or items that are disclosed on websites, etc. Human resources, for example, it is sufficient to include information on retirees and new hires. Please focus on what is important (progress/change).

   → We will strive to improve the contents and descriptions so that new events of the year can be easily understood.

(b) Research Activities

ADB : Advice and suggestions on individual studies (biological dosimetry, omics technologies, bioavailability, rationale for 129I studies, transition models during forest fires, dose models, machine learning approaches).

→ The relevant researchers will include additional explanations in the activity report FY2020.

ADB : What is the next stage of the SATREPS project? As it is a valuable research activity, I expect more efforts to be made to continue it.

→ We are working on the proposal for the next stage of our project. We will make possible effort to ensure continuous research.

ADB : Although the number of research topics/presentations is important, but it is also important to enrich and develop the content and quality of the topics from the perspective of "e.g. 5 years from now". It is recommended to clarify plans and goals based on clear reasons (Clear why) for conducting the research (i.e. reasons that can justify the research objectives). Modeling of conceptions (objectives and concepts) and vision papers play an important role for this.

→ We will work on formulating a practical vision paper to set clear mid- to long-term goals.

(c) Management and Education

We received continuous advice from the previous year on safety management and risk assessment measures, creation of performance indicators, quality control (QA/QC) measures, and strengthening of the student acceptance system (scholarships, etc.). We started working on these improvements.

(Please refer to “FY2019 Evaluations and Responses” FY2019 Evaluations and Responses)

Comments from Advisory Board in writing

Common statement

IER research focuses on six topic areas, namely, "Rivers and Lakes", "Oceans", "Ecosystems", "Speciation Radiochemistry", "Measurements and Analyses", and "Modeling". While individual research is consistently outstanding, there is little evidence of integrated activities or outcomes. Interaction between monitoring and research activities with modelling can be intensified and is likely to be mutually beneficial. Furthermore, duplication of work in individual projects should be avoided by setting up transversal work activities.

The SATREPS project, even if suffering from COVID-19, is important for understanding differences and similarities in remediation following the two major nuclear accidents Chernobyl and Fukushima. As the project ends in March 2022 we consider it important to perform the necessary steps to ensure that the activity can continue in a second phase.

International cooperation is important to make the research visible to others. In this respect, IER could highlight more effectively its contribution to international initiatives such as IAEA and UNSCEAR reports which emerged in the framework of activities related to the tenth anniversary of the FDNPP accident.

The start of a doctoral program in 2020 can be seen as an important step towards the development of a centre for human resources that can underpin the continuation of such research activities.

Dissemination and two-way communication to the research community and lay people has been effectively promoted by IER. It is strongly recommended to continue or even expand such activities, in particular presenting research results to assist efforts to reestablish occupation of the difficult to return area. The practical aspects of the research is of high importance for local citizens to enable them to make informed decisions on their future plans.

The annual report contains much valuable information. However greater clarity and visibility of the achievements of the reporting year would be achieved if some of the information (also available on the web site) was not included each year. The report might then focus on the achievements and possible applications of the research. A section on the current and future research objectives might complement the report. Further information might be provided via links to sections of the IER web page.

As discussed at the Advisory Board meeting this March, the development of a vision paper would be beneficial. Such a paper might be one of the possible tools to shape the development of the institute and provides an underlying rational for particular research priorities.

Prof. Brenda Howard

IER are to be commended for continuing to have an annual meeting made available to scientists and the public for this financial year. There was some focus on the SATREP project with interesting results. The continued goal to share research achievements with both local people (via talks) and experts (including posters) is commendable, given covid-related constraints.

IER provides much information on the web site and during the annual meetings which is available in both Japanese and English. This must involve considerable efforts and resources and is much appreciated.

The annual report contains much general information that has been given in previous annual reports and is a rather long document. Greater clarity and visibility of the achievements of the reporting year would be gained if some of the information was not repeated each year. Such information can could be readily accessed on the web site. The annual report could only focus on changes to the previous year. As an information source it is often true that “less is more” for such reports and allows the reader to ingest the main messages more effectively.

IER could highlight more effectively its contribution to international initiatives on the tenth anniversary of the FDNPP accident such as the recent IAEA tecdoc 1927 and the UNSCEAR report which reviewed some iER outputs. Also, IER could consider in fy 2021-2022 whether there was any scientific issues raised in these documents that IER felt it could contribute to addressing, such as the effect on non human biota and scientific work to assist efforts to reestablish occupation of the difficult to return area.

The research activities in all areas continue to be impressive and have clearly not been too detrimentally affected by the covid pandemic.

Prof. Sergey Fesenko

The reviewer had a chance to comment the performance reviews of the IER during short time and this gave an opportunity to see more precisely the annual progress in the developments provided in the years 2020-2021. In 2020-2021, many constraints were implemented both in Japan and many other countries. Therefore, the network of the international collaboration of the IER was seriously affected. In particular, the joint research programme of the SATREPS project was needed to be revised as well as reconsider plans of the field missions of external researchers.

As earlier, the IER research included six projects, namely, "Rivers and Lakes", "Oceans", "Ecosystems", "Speciation Radiochemistry", "Measurements and Analyses", and "Modeling". In the reviewed period, the IER projects provided many new data and developments were presented. The cooperation research among projects was increased and the projects were better structured compared to that of in recent years. In many cases, key findings were presented in the publications in the scientific journal. The institute published in 58 articles in the scientific journals delivered by more than 60 presentations and lectures at the conferences and seminars. This option allows better accessing the details of the studies presented in the IER annual report.

The year 2021 will remain in the history of the Institute as the year of a first release of the students who obtained a Master's Degree in Science and Engineering under supervision of the IER. The PhD research was organized in the frame of the IER programme and contributed to the 2020-2021 years findings. This emphasizes a high importance and efficiency of the decision to establish the Environmental Radioactivity Science Master’s Program in the Graduate School of Symbiotic Systems Science and Technology of Fukushima University.

Despite of the great success in the IER performance there are some options for further improvements. The coordination among research groups could be improved. There are still some duplications between research objectives and results achieved by the different projects. Thus, study on radionuclide transfer in the revers are considered in three Projects: Ocean, Rivers and Lakes and Ecosystems. It would be desirable to reconsider how the projects complement each other and to increase synergies in the research. The report largely provides information on what was done and, sometimes, how it was done. It would be desirable to highlight key findings from the research and practical importance of the data achieved for management on affected areas. The practicability of the research and potential applications of the results achieved could be better presented. It is also recommended to make the research objectives and goals be related to the management options to mitigate consequences of the Fukushima Daiichi accident.

Prof. Wolfgang Raskob

As for last year's meeting of the Advisory Board, physical participation in the Annual Symposium of the IER was not possible and our Board meeting took place via the Internet. Nevertheless, colleagues from IER provided all information for the evaluation in time. Let us hope that the meeting next year will be performed again in person.

The general direction of work continues with six research areas performing excellent research in the areas Oceans, Rivers and Lakes, Ecosystems, Speciation Radioactivity, Measurement and Analysis and Modelling. This outstanding research was disseminated via national and international journal papers, presentations and talks to local population and I want to highlight again the importance of dissemination activities at all levels.

Five out of the six research areas focus on descriptive research performing mainly experimental work activities at a very high level. One area is devoted to modelling. It is recommended to better combine both, modelling and experiments, to get synergies in understanding the processes and possible solutions for pressing questions such as how to support the return process of the evacuated people. In general, the development of conceptual models also for research areas with focus on experimental work is recommended to better define/understand research needs.

The STREPS project, even if suffering from COVID-19, is important for understanding differences and similarities in remediation following the two major nuclear accidents Chernobyl and Fukushima. This understanding will not only help Ukraine, but also Japan to direct research into still open questions. Therefore it is important to continue that activity in a second phase.

Quality management procedures are of importance for any experimental work and in particular in relation to the ERAN database. In this respect developing of basic principle is encouraged.

As discussed at the Advisory Board meeting this March, the development of a vision paper would be very much acknowledged. Such a paper might shape the development of the institute and provides the rational for particular research needs.

A final point is related to national and international cooperation. IER is very much connected nationally and internationally and these links are very important for dissemination and attracting excellent researchers. As

the consequences of the Fukushima disaster are long-lasting, attracting young scientists and promoting young careers is a goal that is important for sustainability of IER.

Dr. Satoshi Yoshida

The IER has been steadily conducting research and producing scientific results, centering on the long-term behavior of radionuclides, and continues to actively provide feedback to the residents of Fukushima and work on human capacity building.

In particular, the establishment of the doctoral program in April 2021, following the start of master's program, is the appraisable result of the Institute's efforts over many years and is expected to become the core of human resource development in this field in the future.

The ERAN project is expected not only to function as a multi-institutional collaborative research network in the field of environmental radioactivity, but also to become a place for human resource development. It is commendable that many research themes have been conducted with IER as the host institution. It is also expected that the network will develop into a foundation for the career path of young researchers in the future.

SATREPS has contributed to solve the ongoing long-term environmental problems in Chernobyl, and at the same time, it has provided a large number of scientific findings that can be applied to the environment of Fukushima, as well as a chance for international experience for young researchers. As the project is scheduled to be completed in March 2022, it is expected that the results achieved so far will be published as scientific reports etc., and that efforts will be made to develop the next phase of the project. Since this is a valuable project connecting two regions affected by major nuclear accidents, the continuation of the project is highly desirable not only for its academic and social contributions but also for human resource development.

Each of the individual studies has produced steady results. On the other hand, the common goal of the entire institute is becoming difficult to see. Individual data might be utilized by model project for improving the accuracy of the model, and/or might be systematically utilized in outreach activities (risk communication) for residents.