

Abstract

[Project Information]

Project Title : Research to Renovate and Recover an Integrated Environment in the Restoration Area Surrounding the Interim Storage Facility

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Keywords : Final disposal outside of Fukushima, utilizing pattern language, regional integrated assessment models, public acceptance, consensus-building framework

[Abstract]

This study consists of the following three research tasks for the out-of-prefecture final disposal of removed soil and waste, and the environmental restoration of the recovery area around the interim storage facility. (1) Propose a scenario for a technological system that combines efficient and low-cost technologies to achieve effective utilization and out-of-prefecture final disposal of removed soil and other materials. (2) To propose a future design that can serve as a reference for a concrete image of the reconstruction of the interim storage facilities and the surrounding area. (3) Assess the social acceptability of various options for smooth and fair consensus building for the out-of-county final disposal of removed soil and other materials, and establish a consensus building framework that takes into account social and economic aspects.

(1) Three volume reduction scenarios for removed soil and waste were considered. A final disposal system based on these scenarios was also proposed. In order to realize the volume reduction scenarios considered, two technical issues were investigated: direct cement solidification and maximum enrichment of molten fly ash containing radioactive Cs. The hydrogen gas generation behavior resulting from the enrichment of radioactive Cs was evaluated and it was suggested that the amount of hydrogen gas generated could be higher than previously assumed. Stabilized bodies

(final waste bodies) resulting from volume reduction have been extensively studied and their respective safety assessments have been reviewed. In addition, the durability of the engineered barriers to the respective stabilized bodies was experimentally clarified.

(2) A future vision was developed for the realization of a decarbonized future community in the area surrounding the interim storage facility, based on local resources and cooperation with local residents. Four regeneration scenarios (Quiet, Active, Prosperous and Vibrant) were proposed based on the premise of maximizing the use of local capital. In addition, a framework that reconciles scientific evidence and social consensus building was presented through dialogue with residents using pattern language and the construction of a regional integrated assessment model. In ecosystem monitoring, one of the regional capitals, we visualized natural resilience through quantitative assessment of biodiversity and carbon sequestration.

(3) Through national and international online questionnaires, postal report questionnaires, semi-structured interviews and citizens' workshops, a detailed analysis was carried out of the key issues of importance to stakeholders, social acceptability and characteristics of the decision-making process. The project also focused on the preservation and visualization of the historical and cultural heritage of the area surrounding the interim storage facility, contributing to the transmission of memories and records through large print journals, digital content and projection mapping produced in collaboration with local residents. In addition, by synthesizing the knowledge gained and organizing and presenting a set of 14 policy proposals, the project provided knowledge to inform policy decisions on the reuse and final disposal of the removed soil.

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