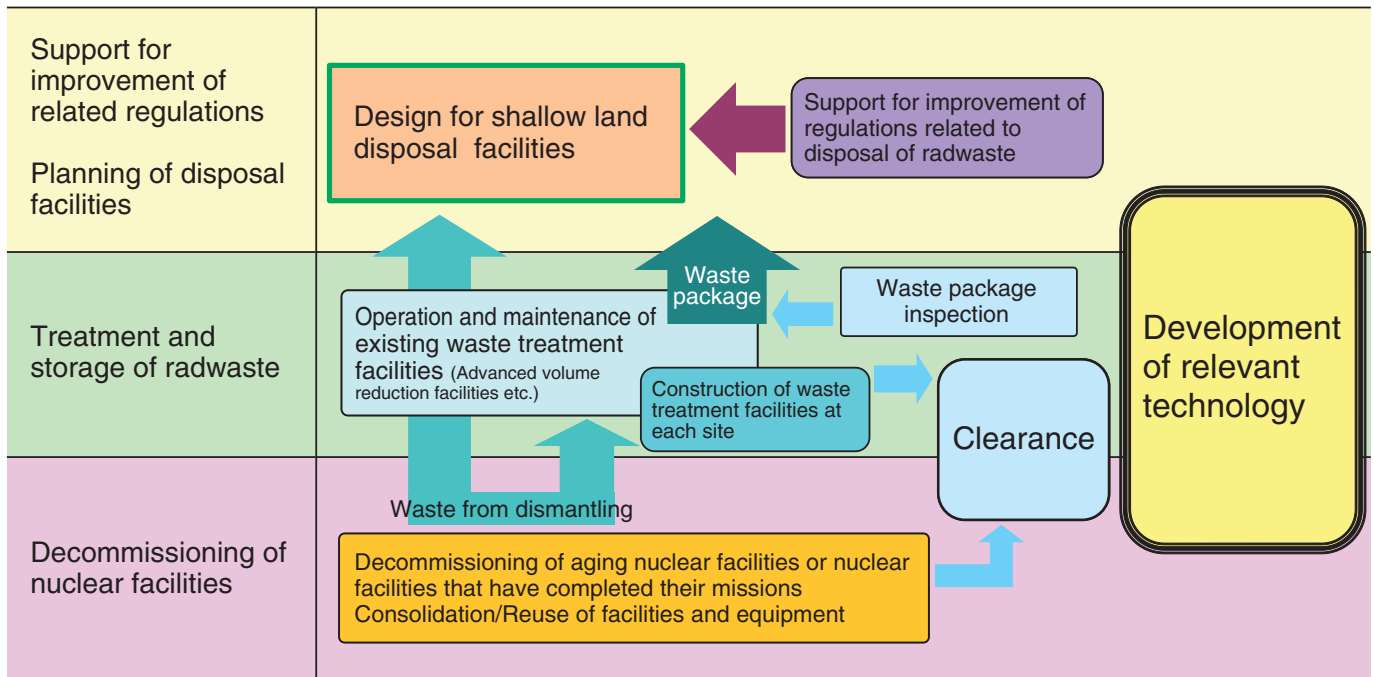


## Executing Decontamination & Dismantling and Radwaste Treatment & Disposal



**Fig.9-1 Outline of measures for decommissioning and radwaste treatment/disposal**

We are setting up systems for the purpose of decommissioning nuclear facilities and for radwaste management. In addition, we are developing related technology, planning and constructing radwaste treatment/disposal facilities, and providing support for the improvement of related regulations.

Decommissioning of nuclear facilities and radwaste treatment/disposal are two of our major missions. In these missions, we will be disposing radwaste generated not only from our research activities but also from universities, institutes, industrial facilities, etc.

We are setting up systems for decommissioning nuclear facilities and for managing radwaste. We are also developing the related technology (Fig.9-1).

### R&D for decommissioning

We have been developing a decommissioning engineering system and a waste/scrapped material clearance verification/evaluation system.

As part of development of the decommissioning engineering system, a method used for evaluating the decommissioning cost was assessed by applying it to the actual decommissioning of the Fugen nuclear facility (Topic 9-1).

### R&D for waste treatment

For radwaste treatment and disposal, it is important to improve the safety of radwaste disposal and reduce the expense; therefore, technological development is required for

reducing the quantity of radwaste. As part of the technical development, decontamination methods for removing radionuclides from wastes have been developed. Here, we used a decontamination method that involves the use of supercritical carbon dioxide (prepared by pressurizing and heating carbon dioxide) as the separation medium and also as a surfactant. We succeeded in directly dissolving europium oxide, which is used instead of trivalent actinide, in the supercritical carbon dioxide (Topic 9-2).

### R&D for waste disposal

For the proper disposal of radwaste packages produced by various research facilities, the evaluation of radioactive content in the waste packages is indispensable. Therefore, we have prepared a basic analytical flow and developed related techniques that allow rapid analysis of the radwaste. In the analysis, reference materials containing known amounts of a radionuclide are needed to ensure that the radioactivity data obtained by the rapid method are reliable. A method for preparing reference material containing a known activity of  $^{14}\text{C}$  or  $^{36}\text{Cl}$ , which hardly remains at a high temperature in molten radwaste, was developed (Topic 9-3).