

A photograph of Mount Fuji, the highest mountain in Japan, under a soft, hazy sky at dawn or dusk. The mountain's peak is visible, and the lower slopes are partially obscured by a layer of white clouds. The overall color palette is muted, with blues, greys, and soft oranges.

Country Report of Japan

The 21st FNCA Ministerial Level Meeting

December 10, 2020

Mr. SANO Toshio, Vice Chairman

Atomic Energy Commission of Japan

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1-1 Restarting Status of the Nuclear Power Plants in Japan

As of 4th, November, 2020

Restarted
9 reactors

In Operation : 1 reactors (Date of Restart)
Suspended : 8 reactors

Passed NRA Review
for the Permission for Changes
in Reactor Installation
7 reactors

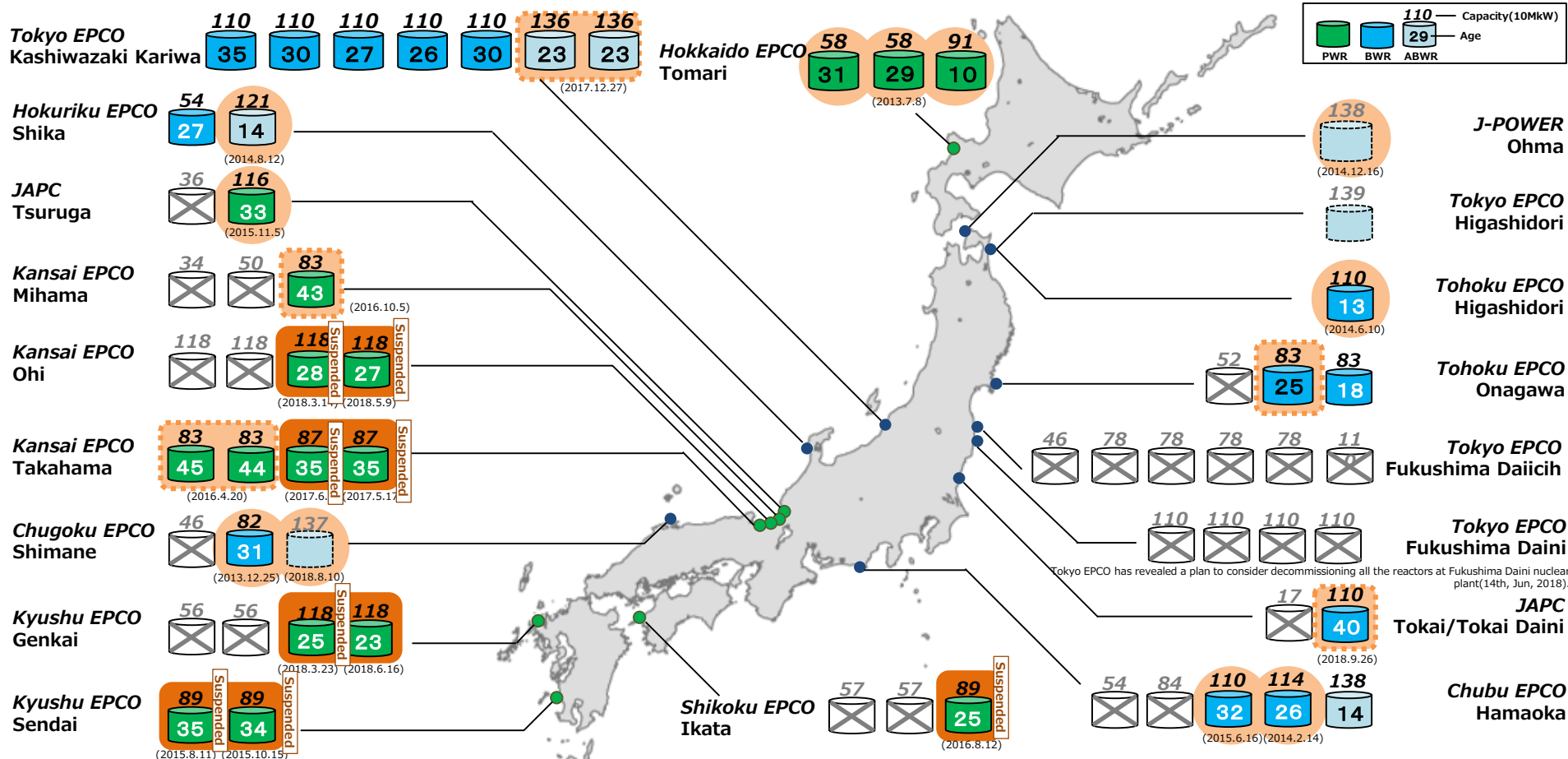
(Date of Approval)

Under NRA Review
11 reactors

(Date of Application)

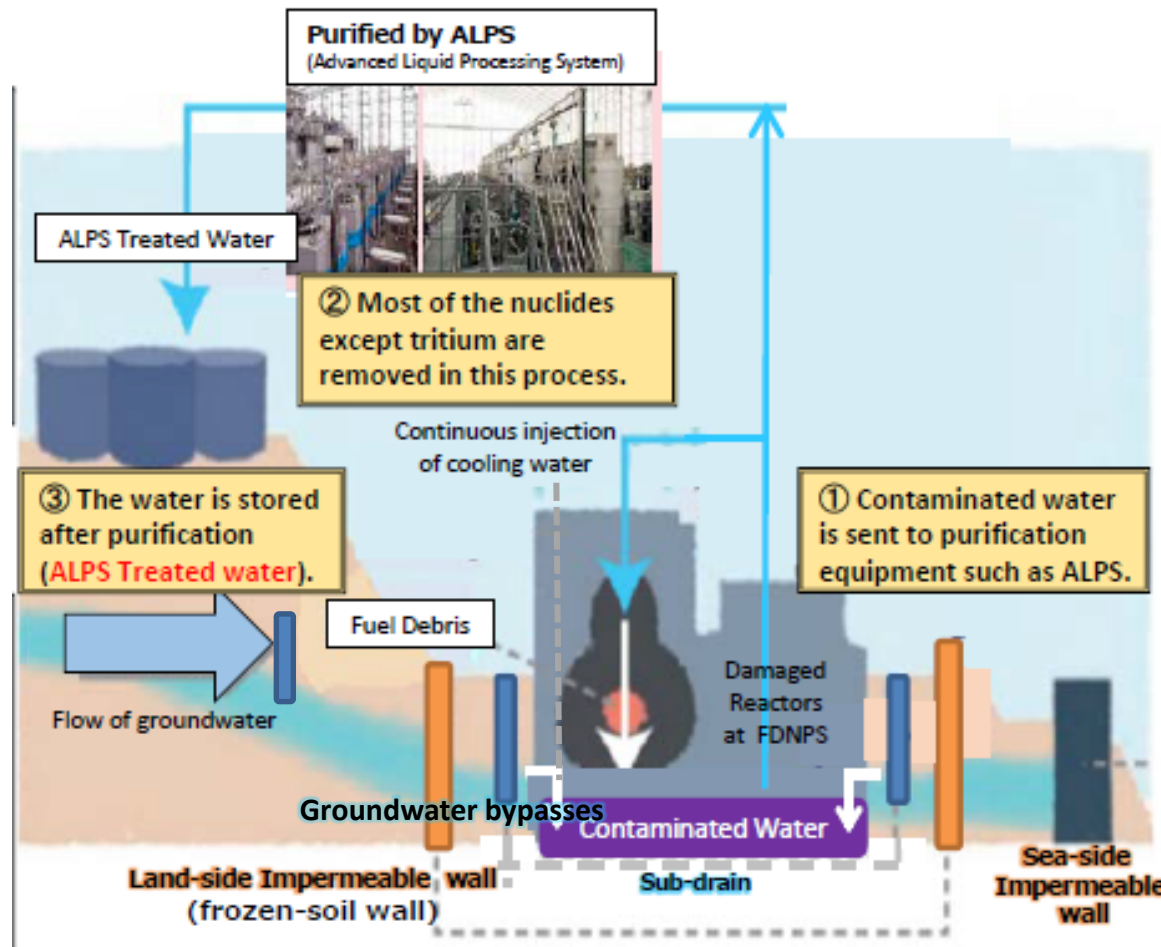
Not yet Applied
9 reactors

already
decided/predicted to
Decommission
24 reactors



1-2 Current status of ALPS (Advanced Liquid Treatment System) treated water

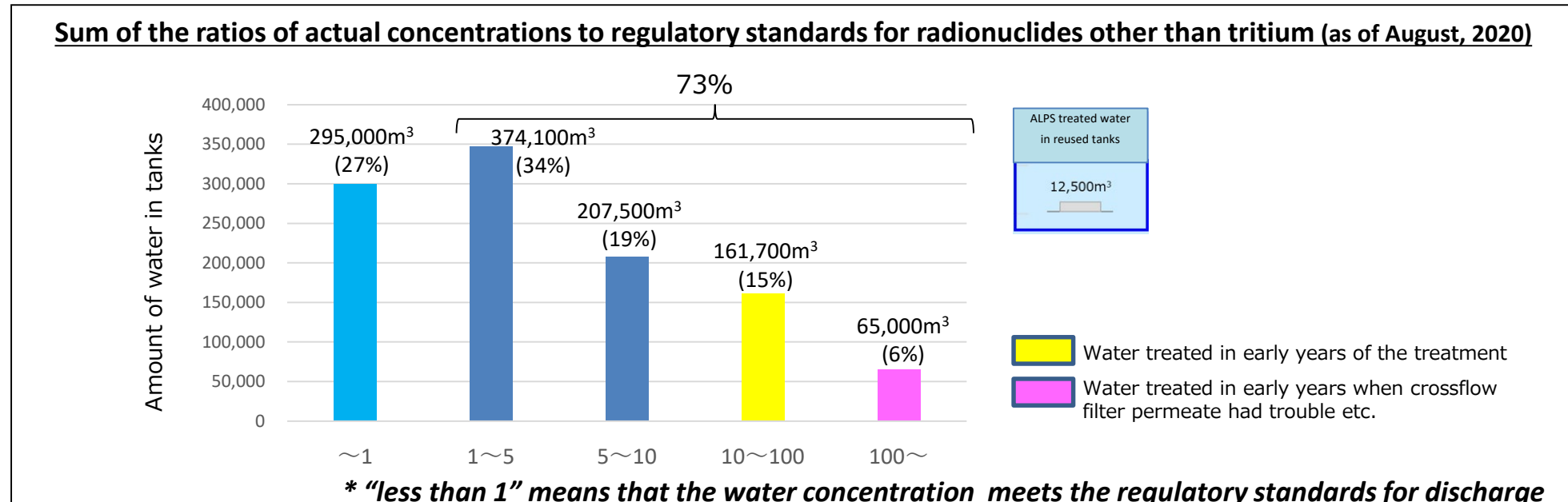
- ◇ The water for cooling fuel debris gets contaminated and stagnates in the buildings.
 - ✓ The level of groundwater outside is controlled to be higher than that of water inside the buildings, to prevent the contaminated water from flowing out.
 - ✓ As a result, groundwater keeps flowing into the buildings and contaminated water keeps generated in the buildings every day.



- **Sub-drains** are wells located near the buildings, from which groundwater is pumped up to reduce the level of groundwater.
- **Frozen-soil walls** surround the buildings to redirect the groundwater's flow.

1-2 Characteristics of ALPS treated water

- ◇ Regarding **about 30 %** of the treated water stored in tanks, the concentration of radionuclides other than tritium meets the regulatory standards for discharge.
- ◇ Regarding **about 70 %** of the water, the concentration of radionuclides exceeds the regulatory standards. It will be **re-purified** to meet the regulatory standards with an exception of tritium.
 - * In early years, the ALPS treatment has been carried out by prioritizing the volume of water treatment to quickly reduce the radiation impact to outside the site. There were also cross filter permeate troubles and other troubles.
- ◇ **Re-purification test** implemented by TEPCO shows that the ALPS has the capability to remove the radionuclides sufficiently.
- ◇ In the case of releasing it to the environment, the treated water will be sufficiently diluted also to meet the regulatory standard for tritium.

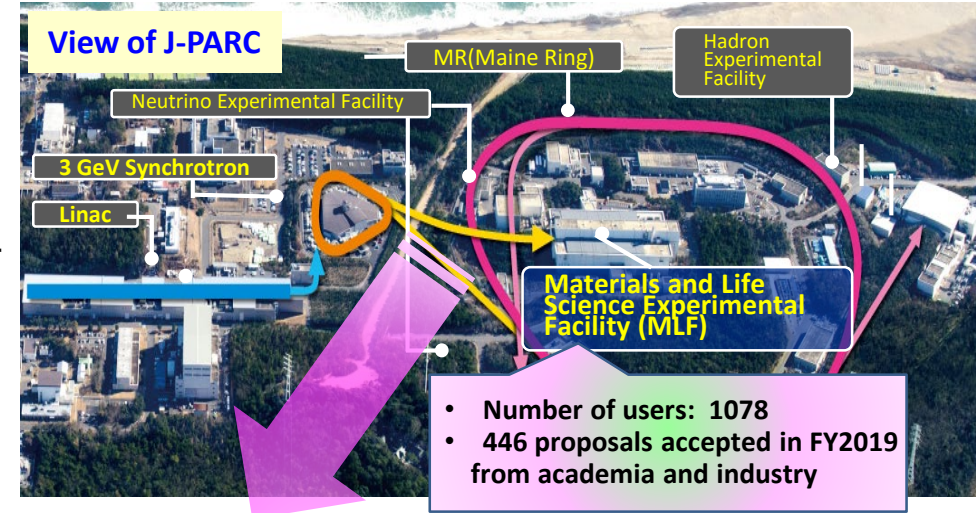


2-1. Action taken to sustain the activities under the Pandemic (JAEA) Action taken at J-PARC

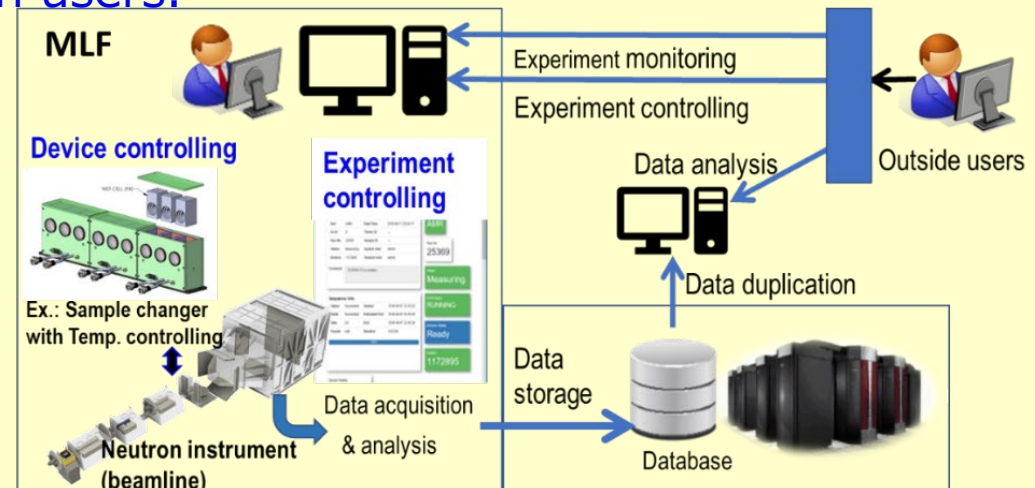
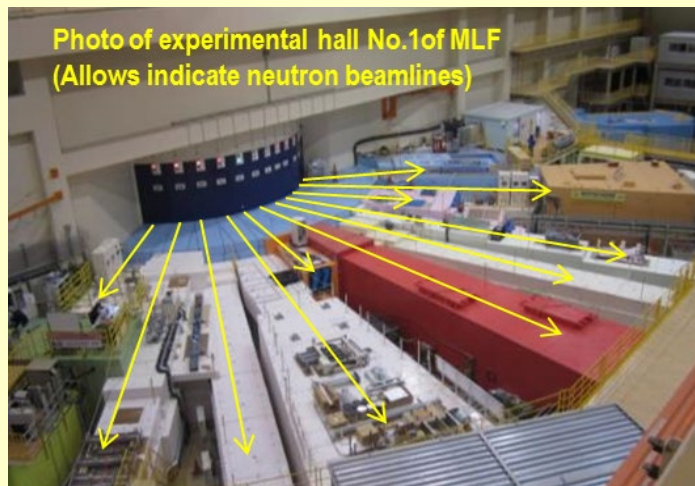


• J-PARC (Japan Proton Accelerator Research Complex)

- ✓ World's best research environment providing a variety of high intensity beams for materials & life science and particle and nuclear physics.
- ✓ Materials and Life Science Experimental Facility (MLF) is open for neutron and muon users to promote Japan's Science & Technology.
- **Preparation for remote access experiments at MLF**
 - ✓ Alternative facility use method under COVID-19 pandemic
 - ✓ Under way at several neutron beamlines

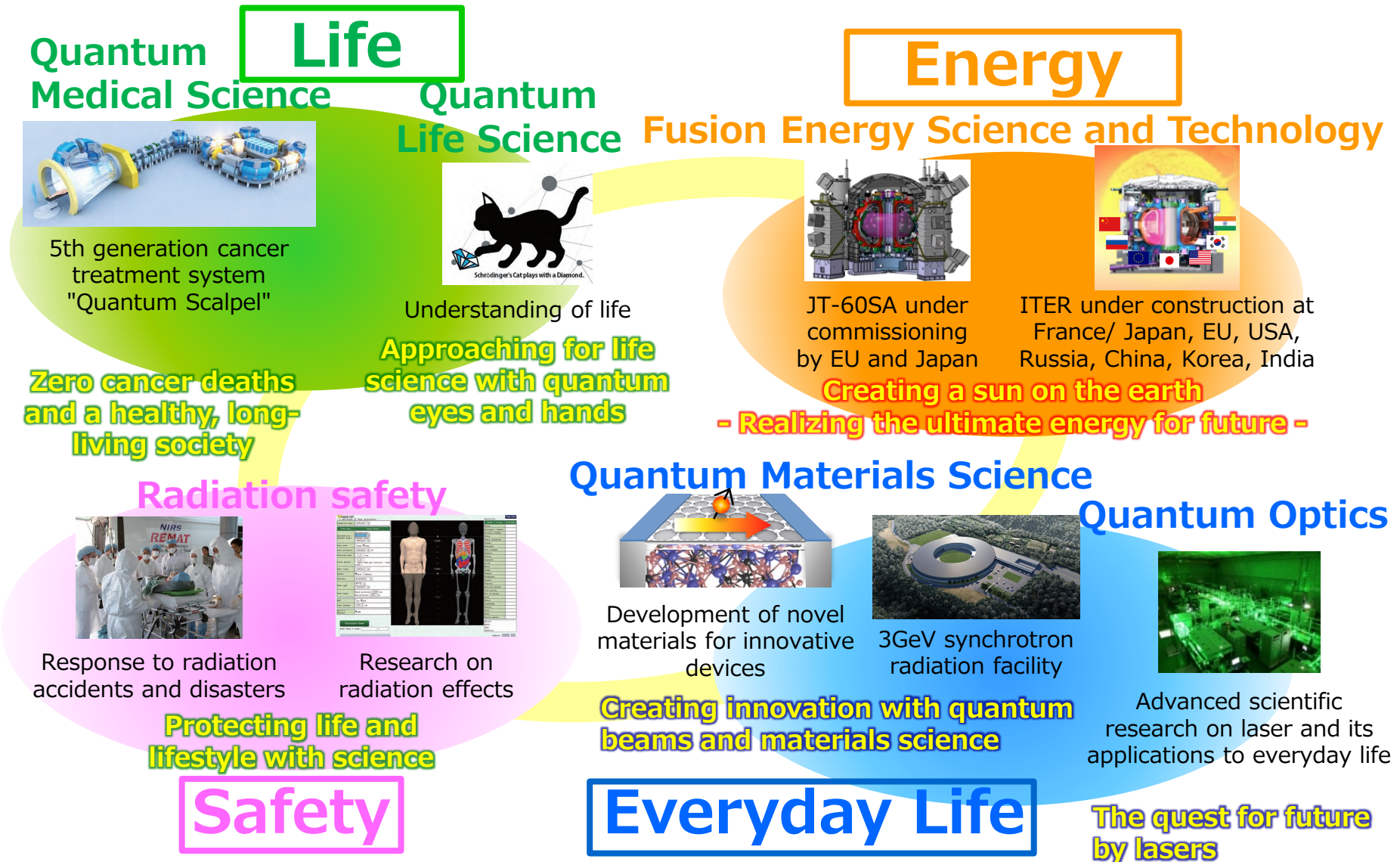


Remote access experiments with automated device controlling will ensure research opportunity and increase available beam time for outside neutron users.



2-2. Action taken to sustain the activities under the Pandemic (QST)

-1) What's QST?



2-2. Action taken to sustain the activities under the Pandemic (QST)

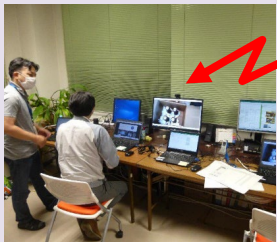
-2) Action taken at QST and possible research areas

QST has responded to the COVID-19 pandemic recognizing that

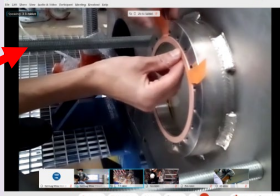
- 2-3 years are necessary for the end of the pandemic,
- The COVID-19 pandemic is one of the new pandemics emerging in the 21st century.

Sustainment of research activities

- Hand disinfection, wearing a mask, avoid the “3Cs” (closed spaces, crowded places, close-contact settings)
- Remote work and web meeting
- Install of the contact confirming application “COCOA”
- Telephone re-examination in QST Hospital, which is treating cancer with carbon ion radiotherapy
- Approaching introduction of **smart, remote and automated systems**



remote supervision to Italy

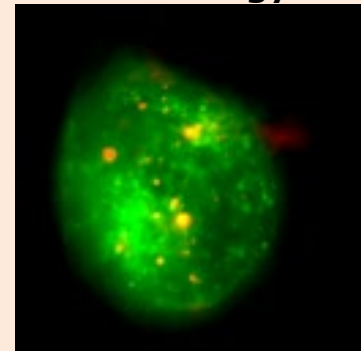


high-speed & highly-secure data transfer to EU for remote experiment

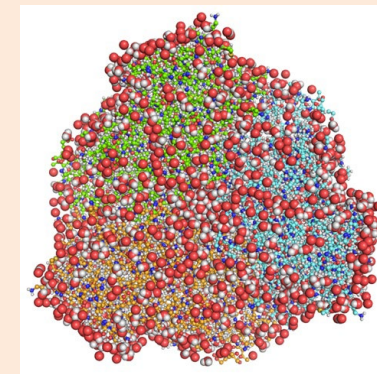
application of remote technologies in international projects

Possible research area

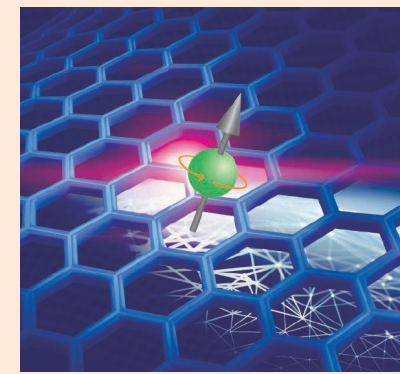
- **Quantum Life Science**
Drug discovery and understanding of aggravation mechanism utilizing quantum technologies such as “**quantum sensors**”, “**hyperpolarized MRI**” and “**structural analysis at the quantum level in enzymatic reactions**”
- **Quantum Materials Science**
Development of novel devices for new normal based on “**spin photonics**” utilizing quantum beam irradiation technology



quantum sensors



structural analysis



spin photonics



Thank you