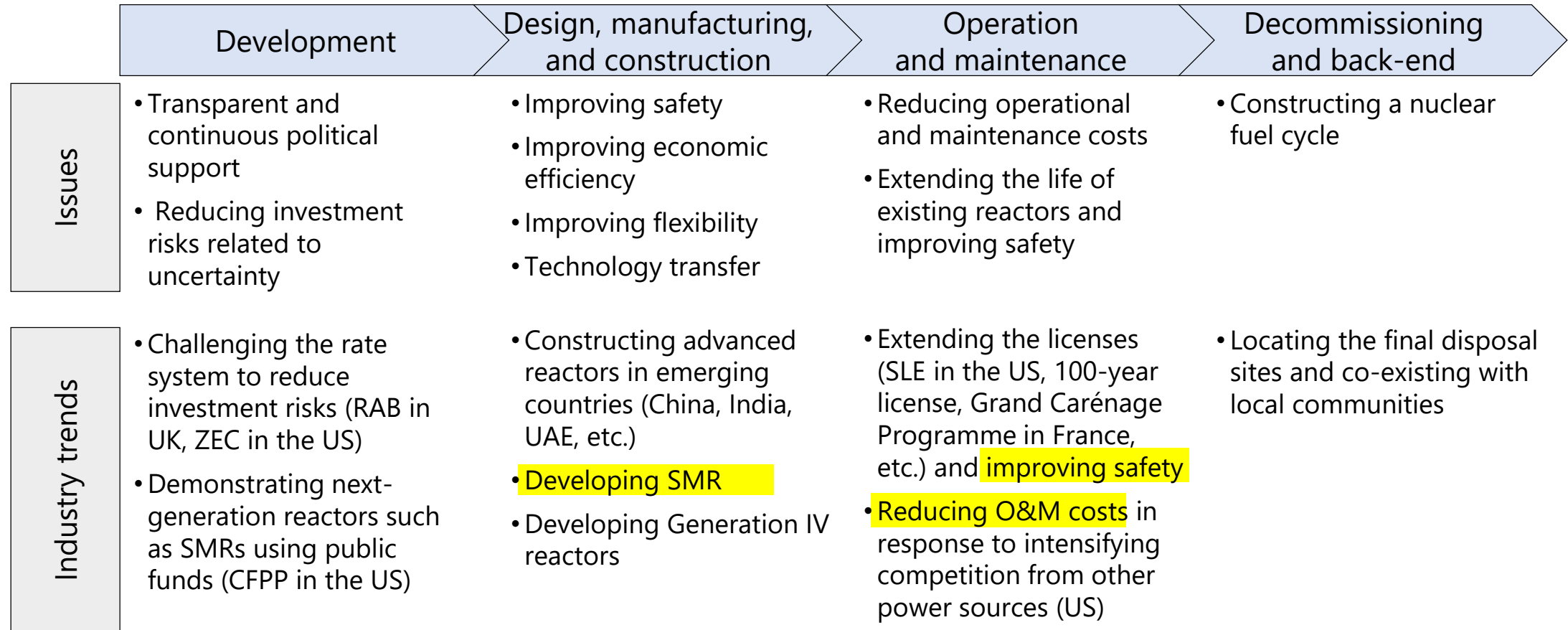


Industry trends of Nuclear Energy

- Nuclear Energy can be a potential option to realize the Paris Agreement and initiatives has been taken with a focus on improving safety, reducing both risks and costs.



 Areas of innovation to focus on

Technology trends of Nuclear Energy

- The development of SMRs for new facilities is gaining momentum, whereas for existing facilities, digital technology is being used to improve safety and reduce O&M costs.

Development of SMRs

Issues
<ul style="list-style-type: none"> Responding to safety concerns regarding Nuclear Energy Dealing with the excessive cost-overrun of newly Installed Light-water reactors (LWRs) Integrated operation with rapidly spreading renewable energy
Innovations
<ul style="list-style-type: none"> The IAEA* has summarized the 55 reactor types of SMRs being developed worldwide. All of them are characterized in terms of safety, economic efficiency, and flexibility. <ul style="list-style-type: none"> ✓ Safety: Passive safety system (e.g. cooling without the pump) ✓ Economic efficiency: Simple design, reducing cost by modularization, and relatively easy to finance due to small-scale ✓ Flexibility: Some designs take advantage of the SMRs to increase operational flexibility. There are also floating reactors that offer flexibility in location High-temperature technologies, such as high-temperature gas reactors are also envisaged for industrial applications

Safety Improvement and O&M Cost Reduction

Issues
<ul style="list-style-type: none"> Improving competitiveness against renewable energy and existing energy sources Reducing operation costs while improving safety
Innovations
<ul style="list-style-type: none"> Upgrading existing plants through the introduction of digital instruments, etc., to improve safety and economy at the same time Standardizing business processes for asset management and maintenance based on RCM (Reliability Centered Maintenance) using Big data and AI is becoming more advanced Developing Accident Tolerant Fuel (ATF), which prevents severe accidents even in the event of a severe situation such as the loss of all power sources Initiatives are also underway to share know-how in the supply chain