

## Review background/aims

- GOSAT series greenhouse gas observation activities that have been conducted since 2009 are considered **an international public good** necessary for monitoring progress towards the targets of the Paris Agreement.
- Increasing space debris in recent years has led to concerns about the ongoing stable utilization of space. GOSAT space debris mitigation measures to be incorporated into the Basic Plan on Space Policy.
- The Ministry of the Environment, **as the GOSAT project leader with responsibility for proper satellite operation and disposal**, established an internal review team in March 2020 to consider space debris mitigation measures.

### 【International initiatives】

- IADC Space Debris Mitigation Guidelines established by the Inter-Agency Space Debris Coordination Committee (IADC) in 2002.
- United Nation's COPUOS Space Debris Mitigation Guidelines (2007).
- ISO 24113 space debris mitigation requirements (2010)

### 【Domestic initiatives】

- The Space Activities Act (2016), stipulates space debris mitigation measures as a condition for permission to launch satellites and other space activities.



- These primarily apply to new satellites, while compliance for existing satellites is voluntary.

### 【Direction for GOSAT-1 measures】

- Space debris mitigation measures
  - During observation operation period: Prevention of in-orbit self-destruction and collisions → Already addressed
  - **After observation operation period: Decommissioning**  
→ **Concrete measures need to be considered.**



### 【Criteria for determining when to terminate observation】

- ① **Potential continuity of GOSAT observation mission**
- ② **Potential for securing functionality required for decommissioning**

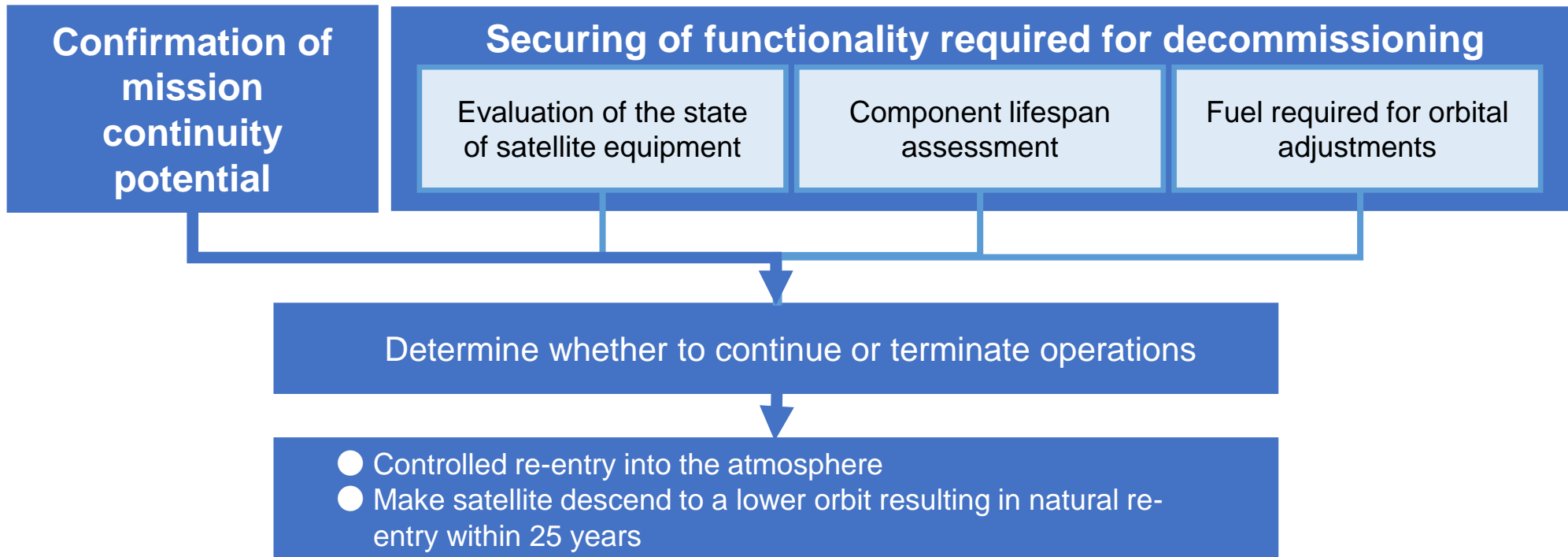
### 【Disposal methods】

- ① **Controlled re-entry of satellites into the atmosphere.**
- ② **Decommissioning satellites by lowering them to an orbit where they will naturally fall back to Earth within 25 years.**

### 【Direction for initiatives】

- **Once the mission has been transferred over to GOSAT-2, in order to mitigate space debris, even if satellites remain in a usable state beyond their design life**, they will be decommissioned at an appropriate time in consultation with relevant parties and users following discussions between the Ministry of the Environment, NIES, and JAXA.
- **The approach to operation continuity evaluation and proper disposal, as outlined in this policy, will be communicated domestically and internationally.** This will help build momentum for initiatives and policy considerations relating to space debris mitigation in Japan and abroad.

- While compliance with domestic and international regulations and guidelines is voluntary for existing satellites, compliance for GOSATs by proactively applying these regulations and guidelines is under consideration.
- The approach to continuity/termination evaluation for GOSAT-1's operations will be summarized and publicly disclosed.
- Aim is to implement disposal methods that minimize the risk of space debris generation.



- **Setting of a global precedent by publishing procedures for evaluating space debris mitigation measures** for existing operational satellites for which international guidelines and specific rules in Japan are yet to be clearly defined.
- The policy of decommissioning satellites in an appropriate manner, even if they **remain usable beyond their design lifespan**, upon obtaining the understanding of relevant parties and users, and considering the option of controlled re-entry into the atmosphere, **is a first for Japanese Earth observation satellites**.
- The publication of the Interim Summary will generate momentum for consideration of space debris mitigation measures for existing satellites operated by other government ministries and agencies and private companies in Japan. It will also serve as an opportunity to globally communicate the importance of initiatives and policies relating to space debris mitigation for existing satellites.