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Engaging civil society in the energy transition: The role of grids

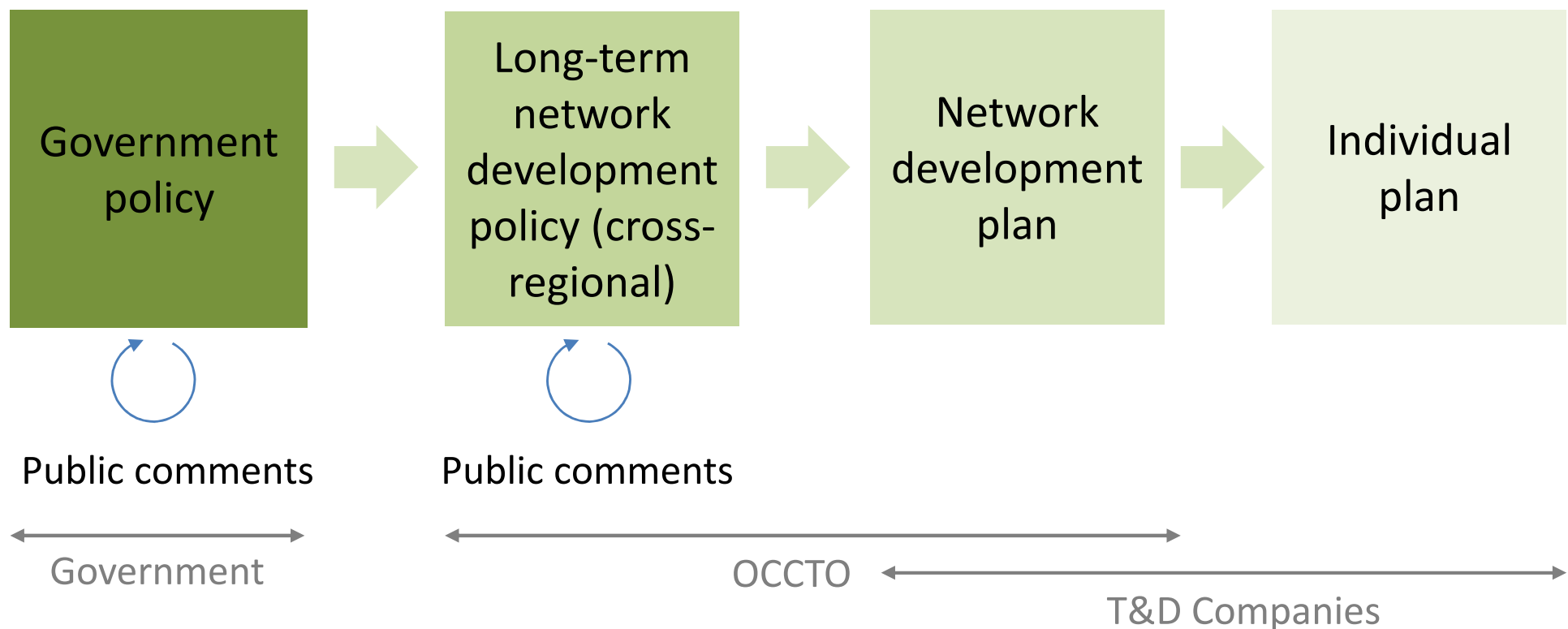
Grid Planning and Stakeholder Engagement in Japan

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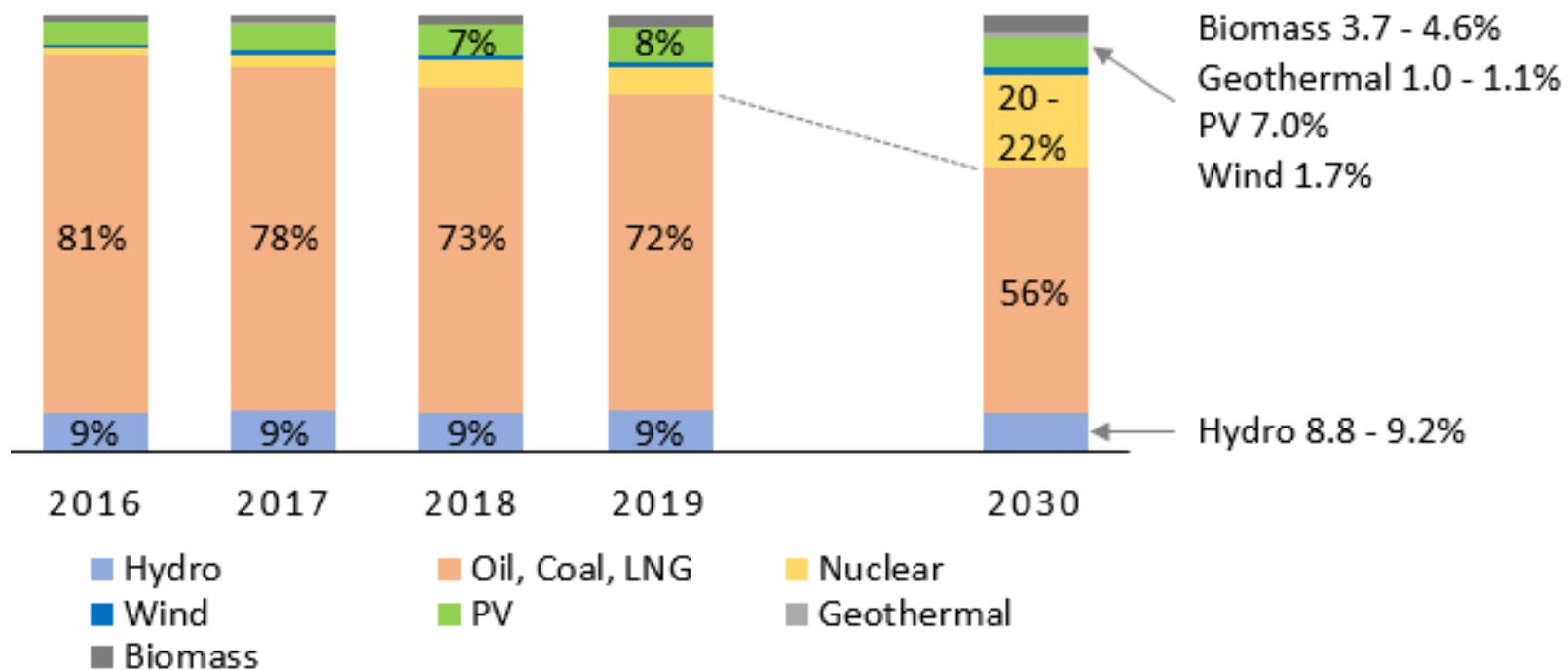
Energy Mix and Grid Planning

- The long-term network development policy is established based on the government policy including the future energy mix.
- Both policies are established through respective committees and public comments.
- Committees are composed of members from various sectors such as academia, legal, consumer and energy (gen, retail, T&D).



Target Energy Mix in 2030

- The target energy mix in 2030 was established in 2015, considering 3E + S: energy security, economic efficiency, environment and safety.
- Current government policy (strategic energy plan) was updated in 2018. Discussions to update it were started in the government committee last month.



Created from the government statistics on generation records.

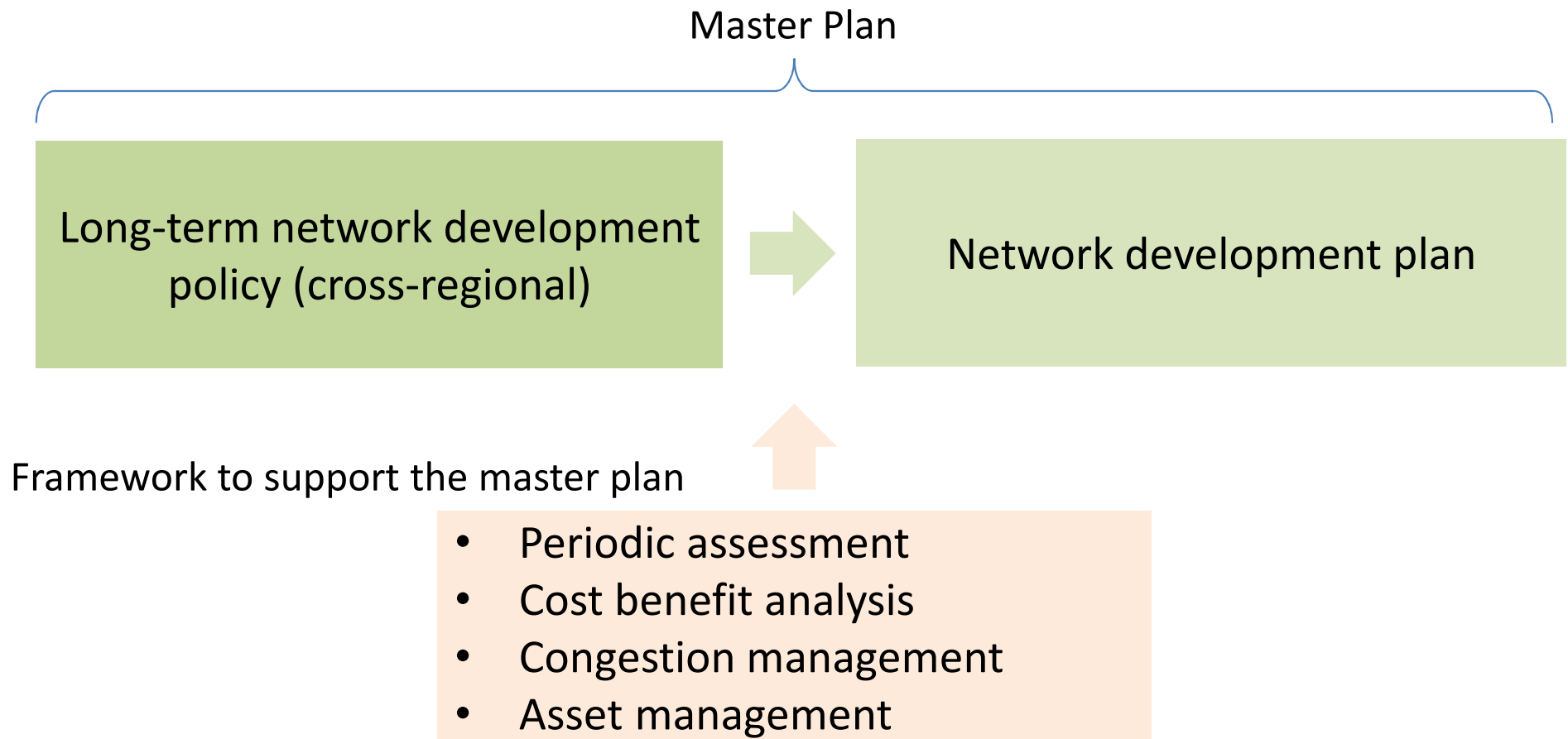
https://www.enecho.meti.go.jp/statistics/electric_power/ep002/results_archive.html

Residential PV is not included in the records.



Grid Planning - Master Plan

- Current long-term network development policy (cross-regional) was established in 2017. It is updated approximately every 5 years.
- The discussion was started to update the master plan in August this year.



Recent Changes and Discussions

Transition from 'Pull' to 'Push'

- The transition from 'Pull' to 'Push' is necessary to achieve the large integration of renewable energy while limiting the public burden.
- Pull: Grid planning according to the each connection application
Push: Grid planning based on the generation potential
- The following changes are included in the discussion to achieve the transition.

- A) Invitation of the connection application for the individual reinforcement issued by the T&D company
- B) Acquisition of the connection capacity for the off-shore windfarm by the government
- C) Grid planning based on the cost benefit analysis considering the generation potential



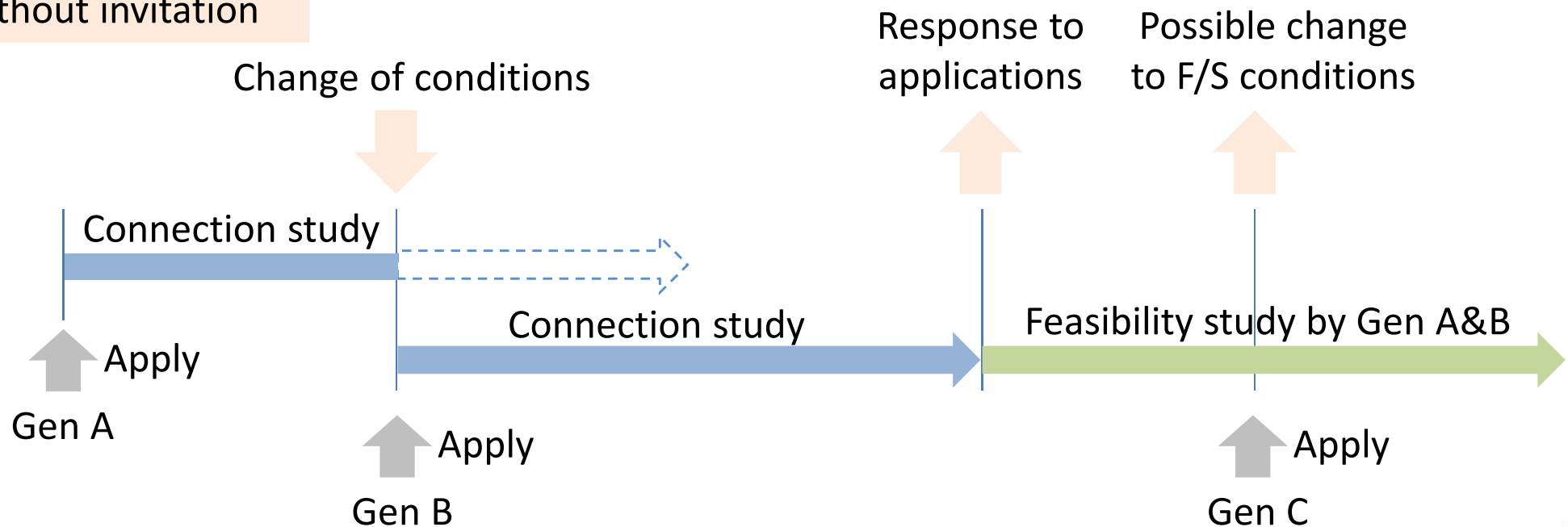
Recent Changes and Discussions

Invitation of Connection Application

- When the connection study is performed for each application, the condition for the study can be changed during the study period due to additional applications.
- By inviting connection applications for the individual reinforcement for a certain period, the connection study can be done considering the generation potential in the area.

➡ More systematic and efficient process

Without invitation



Recent Changes and Discussions

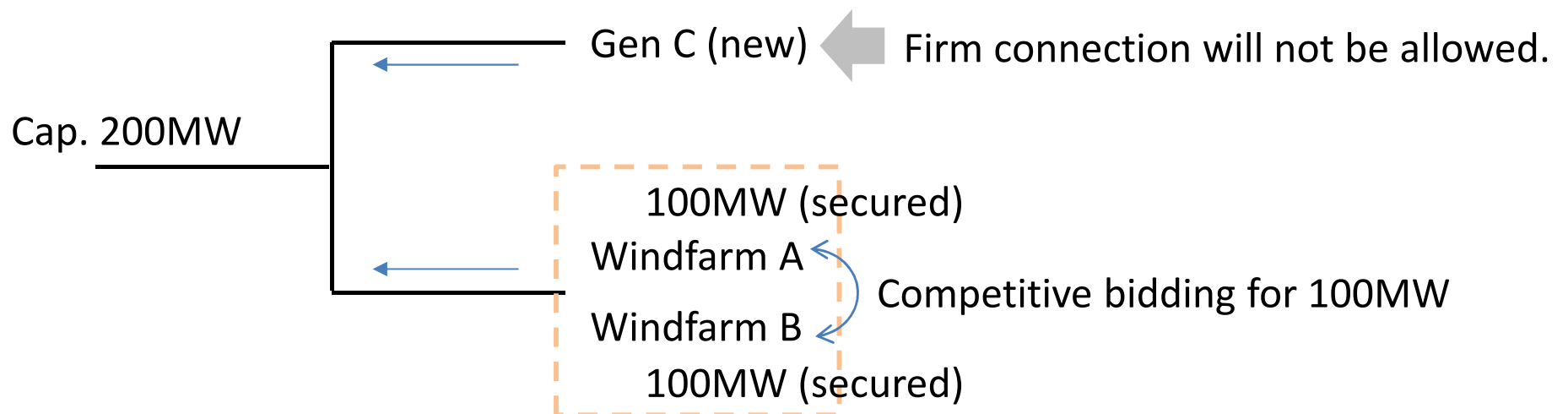
Connection Capacity for Off-shore Windfarms

- When a off-shore wind developer without a connection right wins in the competitive bidding, the right is transferred to the successful bidder.



- The transfer process could be complicated.
- Other generation companies may not be able to secure the connection right due to the surplus connection capacity acquired by multiple windfarm developers.

- The government will acquire the connection capacity for the off-shore windfarm in advance based on the windfarm capacity for the competitive bidding.



Recent Changes and Discussions

from First-come-first-served to Merit Order

- The transmission capacity has been allocated to generators on the first-come-first-served basis.
- After the whole capacity is allocated, generators can apply for the non-firm connection in some areas. (will soon be expanded to the whole country.)



- Cheaper or more environmentally-friendly generators may need to reduce their outputs due to the non-firm connection.

- The discussion was started in July this year to study the possible congestion management after the transition from the first-come-first-served basis to the merit order basis.

Possible methods for congestion management

Re-dispatch

Market zonal pricing

Market nodal pricing

Efficiency
Price signal
Time for transition



Master Plan - Schedule

- The master plan is expected to be established in spring 2022.
- When each supporting framework is established, it will be applied even before the establishment of the master plan.

