

## Approach and Criteria for Setting the Moonshot Targets (Draft)

### <Policy on Setting the Moonshot Targets>

Following opinions given at the 1st Visionary Council, and EC report, we should:

- 1) Specify categories and areas (including 2 or 3 big goals) where Japan should especially promote the ambitious research and development
- 2) Set one or more specific mission(s) to be achieved (namely, the Moonshot Targets) by the promotion of ambitious research and development in each category and area (consequently, approximately total 5 missions in all categories and areas)

### <Criteria for Setting the Moonshot Targets (Missions)>

#### ○ Inspiring

- ✓ The targets can bring an enormous impact on the future industry and society, if they are realized, despite the difficulty to achieve (Inspire citizens and the industrial world)

→ “The basic approach for the Moonshot Research and Development Program”

(Decided at Council for Science, Technology and Innovation (CSTI), on December 20, 2018)

- ✓ Many citizens and overseas countries can share the value of importance of the targets (Inspire citizens and the world)

→ The targets should be able to show the possible and ambitious dream to citizens, especially the young, which consequently can get them enthralled and excited. The enthralling targets which can get overseas researchers ambitious to participate in projects one after another are desirable. (the opinion given at the 1st Visionary Council)

Missions should be ambitious on the basis of the potential values, and meet people's desires and social needs. (EC report)

- ✓ The targets can be achieved by bringing together the wisdom of scientists, for the purpose of the Japanese national interest and strong industrial competitiveness  
(Inspire researchers and the industrial world)

→ “The basic approach for the Moonshot Research and Development Program”  
(Decided at Council for Science, Technology and Innovation (CSTI), on December 20, 2018)

## ○ Imaginative

- ✓ The purpose, importance, and urgency of the targets are clearly understood

→ The targets should be imaginable enough for most of citizens to visualize the image of the future where the targets are realized (the image of goal) in their mind.  
(the opinion given at the 1st Visionary Council)  
Missions should embody both of the urgency and importance. (EC report)

- ✓ Many citizens can clearly imagine the future potential prosperity which is realized by the innovative technology brought by the Moonshot Research and Development Program

→ The targets should be imaginable enough for most of citizens to visualize the image of the future where the targets are realized (the image of goal) in their mind.  
(the opinion given at the 1st Visionary Council)

## ○ Credible

- ✓ The ambitious targets which are difficult but scientifically possible  
(plural technological ideas with feasibility are already found)

→ (The factor for success of the Moonshot Research is) the provision of the scientific theory which supports the feasibility of Moonshot Targets.  
(the opinion given at the 1st Visionary Council)

- ✓ The status of achievement is verifiable

→ It is important to clarify the specific targets.

(the opinion given at the 1st Visionary Council)

✓ **Consistency with the aim of existing related strategy and policy**

→ Generation of synergistic effect with the strategy in the field of AI technology, biotechnology, quantum technology, etc. is also important.

(the opinion given at the 1st Visionary Council)

# Case Studies of Setting Missions in Europe and America

(Appendix 1)

	Categories (Focus Areas)	Challenges (Big Goals)	Missions (Moonshot Targets)	Projects
Case of EU (Mission-Oriented Research and Innovation Policy)	● Resources and Environment	● No household garbage	● Completely recyclable packaging technology	● . . . ● . . . ● . . .
		● Prevent water scarcity	● New membrane technology	● . . . ● . . . ● . . .
	● Cybersecurity	● Server safe navigation	● Innovative cybersecurity technology	● . . . ● . . . ● . . .
Case of DARPA in America (Ongoing Program)	● Military Affairs	● Maintain the technological predominance of U.S. Forces, and prevent “technological surprise” which threatens national security	● Realize the quick and scalable measures for medical treatment and protection of soldiers against the menace of pathogens, etc.	● Platform to support the stability of the world and military posture, to cope with the rapid spread of pandemic infection (Pandemic Prevention Platform) ● Support military health and readiness by protecting soldiers from accidental misuse of genome editing technologies (Safe Genes) ● . . .
			● Accelerate soldiers' resilience	● Development of neurotechnology to recover the injured brain and facilitate memory formation in such brain (Restoring Active Memory) ● Technology to provide users with near-natural control of prosthetic hands and arms via bi-directional peripheral nerve implants (Hand Proprioception and Touch Interfaces) ● . . . <div>Composition ration of budget for DARPA (FY2018)<ul style="list-style-type: none"><li>● Basic research 15.2%</li><li>● Applied research 43.8%</li><li>● Development of advanced technology 40.1%</li></ul></div>
Japan (Moonshot)	?		Requirements <ul style="list-style-type: none"><li>● Inspiring</li><li>● Imaginative</li><li>● Credible</li></ul> <div>The most difficult: the image in the appendix?</div>	Ambitious research and development to proactively bring various knowledge and ideas from the stage of basic research
Scope of Visionary Council				

# Image of Granularity of Targets (Draft)

(Appendix 2)

Challenges (Examples of Big Goals)	Missions (Images of Moonshot Targets)
Realize a carbon recycling society	✓ Establish the recycle system of CO2, and stem the rise of atmospheric concentration of carbon dioxide
	✓ Eliminate the plastic trash, and make ocean beautiful again
	⋮
Take the initiative in worldwide activities to realize smart cities and smart villages	✓ Realize the unstaffed construction sites to eliminate demanding, dirty, and dangerous operations
	✓ Halve the damage caused by birds and animals in agricultural, mountain, and fishing villages, and aim to coexist with wild animals
	⋮
Protect ourselves from natural threats	✓ Predict the unknown influenza, and establish the effective measures for those who are prone to infections
	⋮
Innovation of telecommunications infrastructure	✓ “Post-Internet” development which is free from the restriction of electricity
	⋮
⋮	⋮