

## The basic approach for the Moonshot Research and Development Program

Council for Science, Technology and Innovation (CSTI)

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### 1. Purpose of the Program

Japan is now faced with many difficult issues, such as an aging and declining population, extreme natural disasters, and the global climate change. These issues must be addressed and resolved by science and technology so we may bring a better future to our society.

Under the circumstance, in order to overcome these difficult challenges without being afraid of making mistakes, the ImPACT program, a five-year research and development plan, was initiated in 2013 as a new framework for developing the fields that will continue to grow in the future.

ImPACT researches and developments (RD) were of high-risk but high-impact nature, with no guarantee of success but expected to have a profound impact on our industry and society once they have cleared their goals. Ideas for highly ambitious research subjects were sought from researchers across Japan. The most competent and ambitious of those applicants were chosen to be project managers (PMs) and tasked with controlling the RD initiatives under the ImPACT scheme.

These PMs have spontaneously crossed the boundaries of traditional organizations and research disciplines to bring together various knowledges and ideas for the high-risk high-impact RD activities that were outside the scope of traditional national projects. Their efforts have achieved some significant results in a very short time. On the other hand, there have been other approaches that were neither daring nor original enough to meet the Program's expectations for future disruptive innovations and high-impact. Concerns have been raised over the lack of participation by researchers outside Japan and cross-border collaborations, suggesting that the Program needed to be improved further.

Outside Japan, Europe, US, and China have been aiming to introduce disruptive innovation by announcing their ambitions and setting their goals for resolving difficult societal issues in a manner that was unthinkable in the past. These countries are investing in and driving high-risk high-impact RD on a scale totally different from Japan.

Their approach to RD management is to seek the best researchers from all over the world, bring together their expertise, and incorporate various ideas for business to build a global and open innovation platform while emphasizing speed.

Against this background, the new Moonshot Research and Development Program (“the Program”) will aim at starting disruptive innovations from Japan by promoting challenging RD based on revolutionary concepts that are not simply the extension of existing technologies, i.e. moonshots.

- a. Imagine the future society, identify its significant problems that are difficult to solve but will have tremendous impact when they are successfully resolved, and announce ambitious goals (“Moonshot Targets”) and initiatives that will attract people. Expertise of global researchers will be combined under the leadership of best researchers who are the vanguards of each field to clear the Targets.
- b. Insights and ideas that were still in their basic research yesterday are being applied to industry and society today at an astonishing speed, bringing disruptive innovations in many areas. In this situation, the Program will vigorously drive highly ambitious RDs that will maximize Japan’s basic research capabilities to identify and develop revolutionary researches without fearing failures.
- c. The Program will be managed in a new style that will always be aware of developments in global RD so that the relevant RD activities can be optimized as a whole, by allowing flexibility for their organizational structures and their activities to establish a world-leading RD framework. At the same time, opening and closing strategies will be fully implemented to allow for future commercialization.

The above guideline will be the leading principle for the management body, the Council for Science, Technology and Innovation (CSTI), under which all relevant government agencies will cooperate to drive the Program.

The National Research and Development Agencies (“the research promotion agencies”) tasked with this challenging RD initiative will be the Japan Science and Technology Agency (JST) and the New Energy and Industrial Technology Development Organization (NEDO). Program funds will be established for both agencies.

## **2. Basic Program framework**

For the purpose of this Program, the Cabinet Office (CAO), the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and the Ministry of Economy, Trade and Industry (METI) will collaborate to facilitate RD activities.

- (1) The CSTI will seek input from external experts before deciding the Moonshot Targets for this Program. The expert members of CSTI will offer high-level advice to effectively guide the entire Program towards the Moonshot Targets.
- (2) The CAO will seek input from the expert members of CSTI while collaborating with the MEXT and METI to achieve the following:
  - Identify Moonshot Target candidates
  - Establish an organizational structure for relevant government agencies to promote related RDs through collaboration (set up an inter-agency liaison and coordination committee)
  - Create a guideline for research promotion agencies defining the process of choosing RD subjects, designating PMs, interim evaluation, and final evaluation, together with other key considerations
  - Use discussions at the inter-agency liaison and coordination committee for achieving the Moonshot Targets by promoting relevant RDs strategically and seamlessly

- (3) The MEXT and METI will be tasked with the following:
- Collaborate with relevant government agencies to achieve the Moonshot Targets by developing an RD concept that defines areas and fields in which ambitious RD should be promoted
  - Use discussions at the inter-agency liaison and coordination committee for achieving the Moonshot Target in collaboration with the CAO to promote relevant RDs strategically and seamlessly
  - Give instructions to research promotion agencies
- (4) Each research promotion agency will carry out RD activities towards achieving the Moonshot Targets by:
- Appointing PMs to manage RD
  - Establishing organizational structure for promoting RD to carry out RD activities as well as related investigations and analysis
  - Using discussions at the inter-agency liaison and coordination committee to collaborate with the CAO, MEXT, and METI for promoting relevant RDs strategically and seamlessly
  - Managing the progress of RD through middle-term evaluation, final evaluation, and other methods
- (5) The CAO will set specific management guidelines for this Program separately in coordination with the MEXT and METI.