

## **Accelerator Development Plan to Support National Research and Innovation Program**

Indonesia's Nuclear Energy Agency (BATAN) was established in 1958 in accordance with Law No. 10/1997 regarding Nuclear Energy with the main duties in conducting research, development and utilization of nuclear energy base on safety for peace and welfare. Thus, BATAN is a key player in research and innovation related to nuclear energy which covers five main areas as shown in Figure 1, that area 1) Energy, 2) Industry, 3) Health, 4) Food and Agriculture, and 5) Environment. To achieve the goals, BATAN has been operating various nuclear facilities which are spread out in four nuclear area, that are Research Reactors, Irradiator, as well as Accelerator. The most important achievements in each field are, the research reactor's fuel element which has been and is being used in G.A. Siwabessy Research Reactor, various mutation plant breeding which is spread nationwide, various radio pharmaceutical, and the development of accelerators. As long as Indonesia became member state in IAEA, these achievements are inseparable from the support of the Agency (IAEA) through various projects (Technical Cooperation). Drawing on its national widely acknowledged expertise, BATAN actively participates in collaborative projects with a large number of other government institution, academic and industrial partners. Collaborative Projects with Ministry of Education and culture, BATAN have been involved in archeological activities especially in artefacts dating and elements analysis using nuclear techniques.

On April 2021, the New Agency called National Research and Innovation Agency (BRIN) was established by Presidential Regulation No. 78. This agency is formed by integrating all of previous Research and Development Agencies and from all of Research and Development Department in Ministry. Consequently, BATAN was also integrated in this Agency. The main objectives of this integration are, 1) to improve efficiency and effectiveness of resources, and 2) to create critical mass in Research and Innovation in Indonesia. As shown in Figure 2, BRIN's organization structure covers all research field, including science and technology and called as "Research Organization". According to this structure, collaboration between Research Organization could go effectively.

As a new agency, BRIN established some program to create critical mass on Research Innovation by Developing an Advance Research Infrastructure and Human Resources. In Infrastructure Development, some Nuclear Facilities are consider to be built, especially accelerator. The development of accelerator is considering by building advance accelerator and conducting research and innovation in order to acquire accelerator technology. In Human Resources Development, Study Assignment Program in Graduate degree, apprenticeship, training by providing scholarship and through IAEA projects. Besides that, BRIN launched

post graduate program by inviting doctoral graduate (national and foreigner), for conducting research and innovation in BRIN. To accelerate global research achievement, BRIN also launched Invited Professor Program for conducting research and innovation in BRIN in collaboration with its researchers.

As BRIN Policy's that all of research and facilities are open platform, thus all of nuclear facilities are being planned could be used by another researcher within BRIN or external (National or International). Therefore, the various nuclear techniques could contribute and support in Heritage Management (characterization, preservation, conservation, and consolidation) intensively.

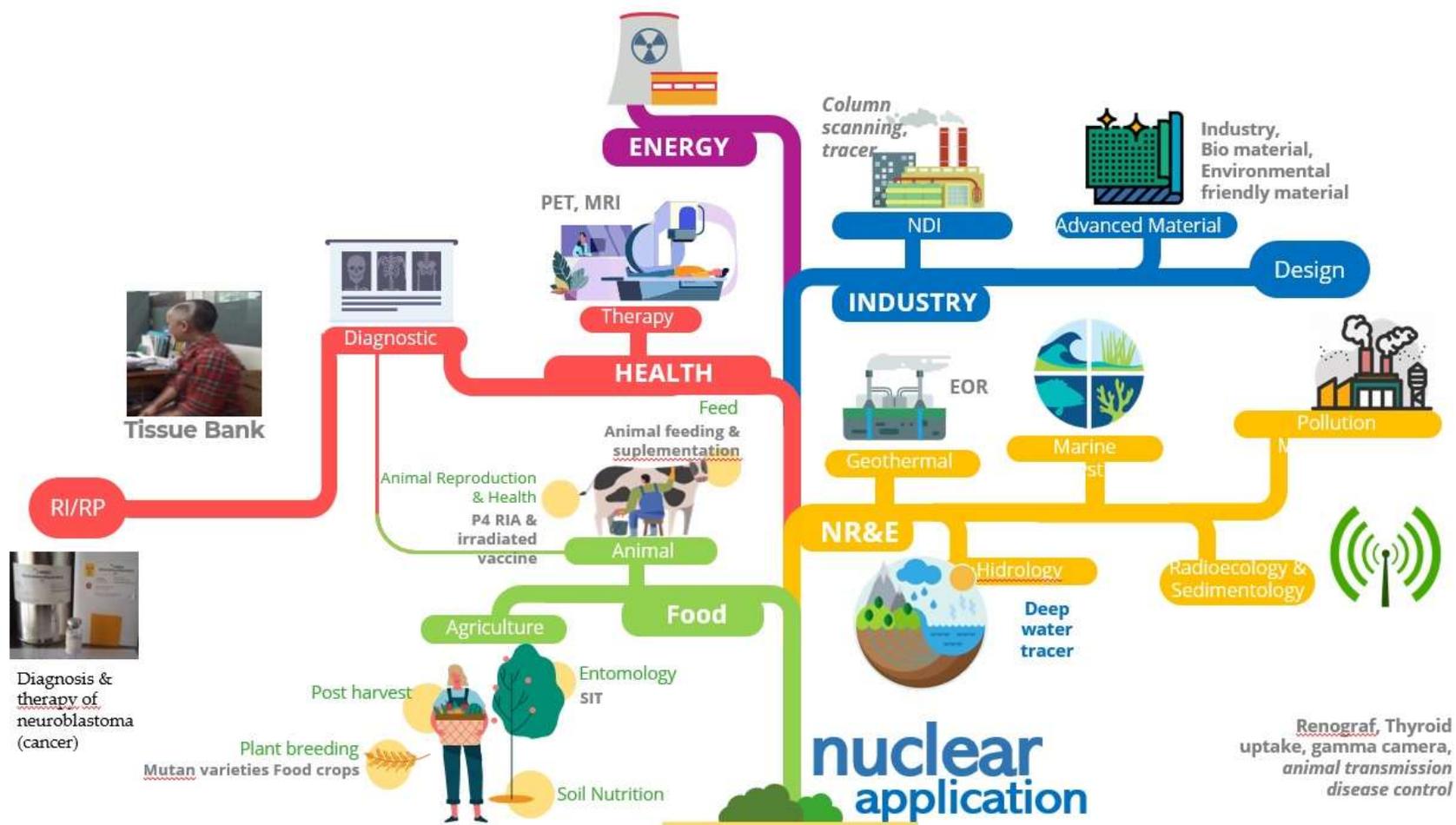


Figure 1 Field of Research

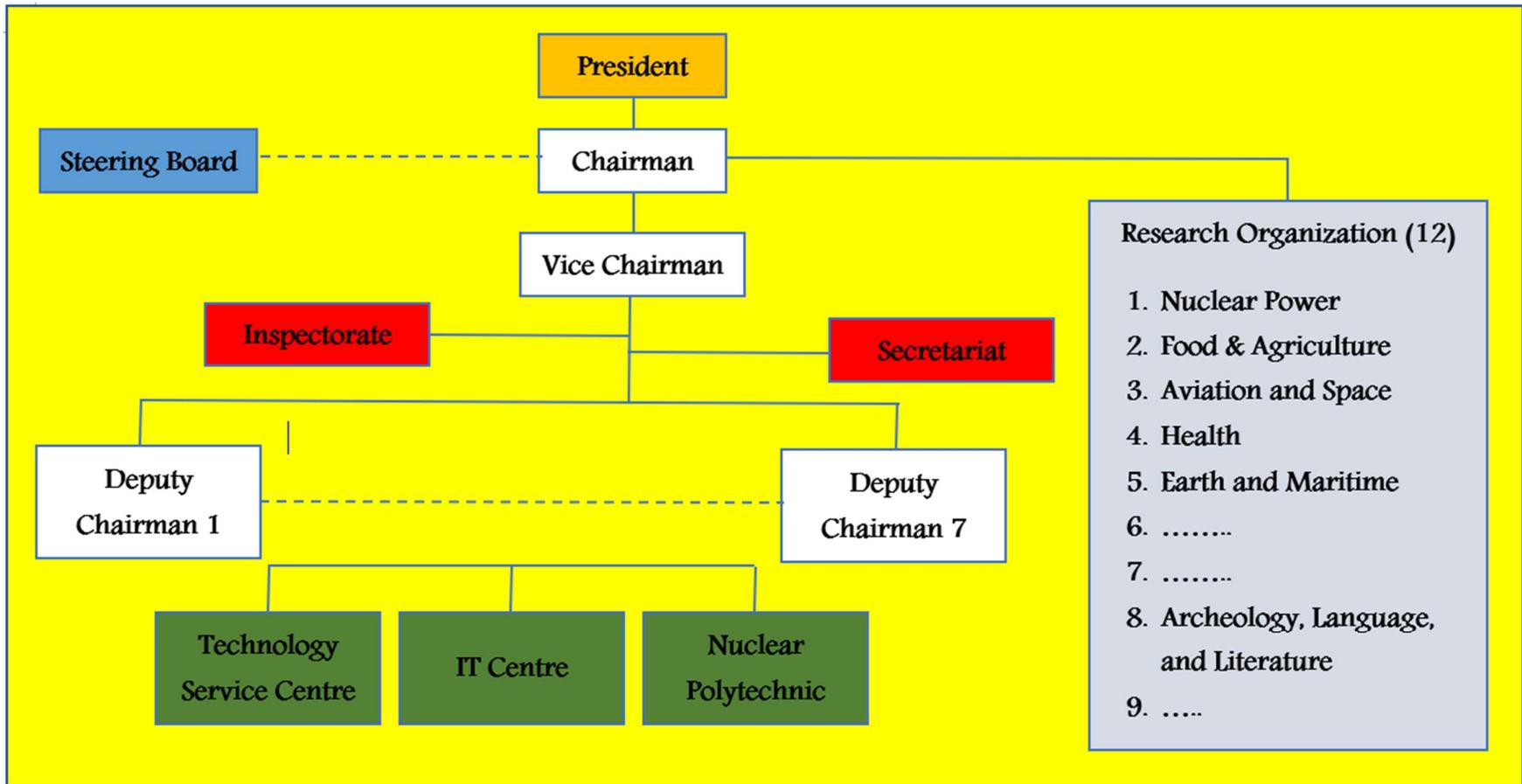


Figure 2 Organization Structure of National Research and Innovation Agency