



ABSTRAK

Mulai pertengahan 1950an, di tengah Perang Dingin dan dekolonisasi, ilmu pengetahuan dan teknologi nuklir tumbuh menjadi bidang yang berkaitan erat dengan kepentingan strategis negara-negara di seluruh dunia. Dalam keterbatasan infrastruktur riset Indonesia bercita-cita membangun pembangkit listrik tenaga nuklir, suatu lambang modernitas abad atom. Produksi ahli nuklir melalui pendidikan menjadi prioritas.

Penelitian ini mendokumentasikan proses formasi pendidikan kesarjanaan ilmu pengetahuan nuklir di Indonesia dari konsepsi, penyelenggaraan, hingga fluktuasi. Serta, memperlihatkan relasi antara universitas dan negara dalam pembentukan program pendidikan kesarjanaan tersebut. Dengan menggunakan metode sejarah, penelitian ini memanfaatkan sumber primer berupa arsip, wawancara, surat kabar, majalah, dan prosiding seminar sezaman; serta sumber sekunder berupa buku dan artikel.

Penelitian ini menyimpulkan, pendidikan kesarjanaan ilmu pengetahuan nuklir menjadi titik temu bagi kepentingan nasional untuk membangun bangsa, kepentingan ilmiah untuk memajukan pengetahuan, dan kontestasi Perang Dingin. Selama 1950an–1968 tampak bahwa negara bersandar pada inisiatif dan peran aktif universitas untuk merintis pendidikan kesarjanaan ilmu pengetahuan nuklir. Universitas berkontribusi merumuskan program nuklir Indonesia, memotori diseminasi pengetahuan nuklir serta mengelola instalasi nuklir. Setelah transisi rezim pemerintah, relasi berubah mulai 1968 ketika negara melalui Badan Tenaga Atom Nasional berkomitmen meningkatkan pengetahuan sumber daya manusianya tanpa bergantung dengan lembaga lain. Lalu, sentralisasi infrastruktur riset nuklir kepada negara menjadikan BATAN sebagai lembaga terdepan di bidang reaktor. Semakin konkretnya prospek PLTN seiring perbaikan ekonomi, dorongan pembangunan negara melalui teknologi, dan koordinasi kebijakan energi nasional, memperbesar kebutuhan terhadap sarjana teknik nuklir. Maka Jurusan Teknik Nuklir Universitas Gadjah Mada berdiri pada 1977 atas sponsor negara dengan orientasi pada bidang energi. Tetapi hingga Orde Baru runtuh PLTN urung dibangun. Situasi ini, ditambah sifat keilmuan yang partikular dan hubungan yang terbatas dengan industri, membuat pendidikan sarjana teknik nuklir stagnan. Keadaan ini mendorong Jurusan Teknik Nuklir untuk memperluas visinya ke bidang non-energi, hingga pada 2001 mengubah namanya menjadi Jurusan Teknik Fisika UGM. Maka, pendidikan sarjana teknik nuklir Indonesia tidak lagi menjadikan bidang energi nuklir sebagai orientasi satu-satunya.

Kata Kunci: diseminasi ilmu pengetahuan dan teknologi nuklir, pendidikan sarjana, pembangkit listrik tenaga nuklir, Jurusan Teknik Nuklir Universitas Gadjah Mada, Badan Tenaga Atom Nasional



ABSTRACT

Starting from mid-1950s, in the midst of the Cold War and decolonization, nuclear science and technology grew into a field closely related with strategic interests of countries around the world. With limited research infrastructure Indonesia aimed to build nuclear power plants, a symbol of nuclear age modernity. Production of nuclear experts through education became a priority.

This study documents the formation process of nuclear sciences higher education in Indonesia starting from its conception, implementation, to fluctuation. It also shows the relation between university and the state during the formation process of the aforementioned higher education programme. Using the historical research method, this study utilizes primary sources such as archives, interviews, newspapers, and seminar proceedings from the period studied, and secondary sources such as books and articles.

This study concludes that nuclear sciences higher education was a convergence point of national interest to build the nation, scientific interest to advance knowledge, and Cold War contestation. During 1950s–1968 it appeared that the state relied on universities' initiatives and active participation to pioneer nuclear sciences higher education. Universities contributed in formulating Indonesia's nuclear programme, driving the dissemination of nuclear knowledge and managing nuclear installations. After government regime transition, this relationship changed starting in 1968 when the state through the National Atomic Energy Agency committed to improve the knowledge of its human resources without relying on outside institutions. Then, the centralization of nuclear research infrastructure towards the state made BATAN the most advanced institution in the field of reactors. The prospect of power plants—which became increasingly concrete along with economic improvements, technology-driven state development, and national energy policy coordination—caused the growing need for nuclear engineers. Thus the Department of Nuclear Engineering of Universitas Gadjah Mada was formed in 1977 by the sponsor of the state and oriented towards the energy sector. However until the New Order regime crumbled power plants have yet to be built. Coupled with the particular nature of the field and limited links to industries, this situation rendered nuclear engineering higher education stagnant. The Department of Nuclear Engineering thus expanded its vision to include the non-energy sector, until it changed its name to Department of Engineering Physics in 2001. Thus, nuclear engineering higher education in Indonesia does not place nuclear energy sector as the only orientation anymore.

Keywords: dissemination of nuclear science and technology, higher education, nuclear power plants, Universitas Gadjah Mada Department of Nuclear Engineering, National Atomic Energy Agency