**The Republic of Korea’s Response to the**

**Questionnaire on “Neurotechnology and Human Rights”**

*General*

1. **Has your country taken any policy action or initiative in relation to neurotechnology and human rights at the national level? If so, please share any relevant information.**

* As for the Korean government’s policy on neurotechnology, there is a statutory plan called the “4th Master Plan for Brain Research Promotion” under the *Brain Research Promotion Act*. Since its launch in 1998, the Master Plan has been updated every 5 years, and now the 4th Plan (2023-2027) is under way. This Master Plan addresses socio-ethical issues and discussions, given the nature of brain research that involves human identity and free will.
* Regarding policies on human rights issues in the field of biology, the *Bioethics and Safety Act* was legislated in 2004. This act stipulates the basic principle that the human rights and welfare of the research subjects must be a top priority.

1. **Is there any actor in the public or private sector developing this kind of technology in your country? Please provide information, if possible.**

* There are various entities that are developing neurotechnology in Korea. The list includes prestigious universities, such as Seoul National University and the Korea Advanced Institute of Science and Technology (KAIST), public research institutes, such as the Korea Brain Research Institute (KBRI) and the Korea Research Institute of Bioscience and Biotechnology (KRIBB), and private businesses that develop medical devices utilizing neurotechnology.

1. **Indicate your level of awareness (high/medium/low) in relation to the state of development of neurotechnologies and preparedness to tackle the challenges posed by the early commercialization of these technologies**

* We have a high level of awareness and preparedness to tackle the challenges posed by the early commercialization of neurotechnology. On March 2 this year, the Korean government announced the “New Bio-Health Industry Regulation Innovation Plan”. We are also preparing measures to address socio-ethical issues related to brain-machine interface or brain-computer interface (BMI/BCI), which are one of the outcomes of our R&D in neuroscience and technology. Notably, the Korean government has established a consultative body which consists of experts from the private and public sectors to discuss socio-ethical issues in technology development. This body aims to develop and implement guidelines on clinical trials, safety, and research ethics.

*Impact, opportunities and challenges*

1. **What human rights will be mostly impacted by the development and use of neurotechnologies? Identify the three rights most impacted and briefly explain why.**

* 1) The possibility of human identity confusion caused by human enhancement. 2) Privacy concerns around brain data. 3) Possible damage to human free will when memory manipulation/fabrication happens for commercial or political purposes.
* When neurotechnology is utilized not for a medical purpose but to enhance memory or cognitive ability highly, the technology may go beyond the general boundary of human cognition and cause confusion in human identity.
* Also, in the process of collecting and analysing a massive amount of brain data, securing brain data whose specific owners can be identified may lead to infringement of privacy.
* Lastly, if the development of neurotechnology enables the manipulation of memory and the technology is used for a commercial or political purpose, it may damage human free will and undermine the foundation of social order that is built on the premise of free will.

1. **What are the biggest challenges and risks that the development, test and use of neurotechnologies pose to human rights? Will such risks be amplified by the development of consumer-oriented neurotechnologies?**

* Even if the technology is developed safely, consumers’ access to new technologies may vary depending on its cost of use. Hence, equality may be undermined due to differences in access to medical treatment or human enhancement.

1. **What methods can be used to identify and assess the potential risks and impact of these technologies on human rights, in particular the human rights of persons with disabilities and other groups in vulnerable situations?**

* We believe that we can identify and assess such potential risks and impacts through systems such as technology assessments.

1. **From a human rights perspective, what opportunities could be use of neurotechnologies bring? Can these opportunities be balanced against the identified risks and impact?**

* The development of neurotechnology directly has to do with improving the human quality of life, for example, assisting communication or movement of quadriplegic patients or curing patients with Alzheimer’s disease.
* If we can successfully manage and monitor the potential risks of neurotechnology, we believe that the positive impact brought by the advancement of this technology will outweigh the potential risks.

*National framework*

1. **Is the national legal framework adequate to face the challenges that the development, test and use of neurotechnologies pose to human rights? Please explain briefly and indicate the relevant pieces of legislation and whether these are plans to develop any (or further) legislation**

* The current legal framework may have limits in keeping up with the fast-developing pace of neurotechnology. So, the Korean government is planning to establish a response system based on pan-governmental collaboration.
* With such a response system, we will review the current challenges in R&D and clinical applications and discuss the reformation of the legal framework where necessary.

1. **Does national legislation on privacy and data protection cover mental privacy and/or personal brain data? Please explain.**

* Article 3 of the *Bioethics and Safety Act* stipulates that the privacy, personal information, and human rights of human subjects of research shall be protected. And under Article 7, the National Bioethics Committee has been established in order to deliberate on policies regarding bioethics, safety, the keeping and storing of records, the disclosure of information, etc. In addition, Article 10 mandates the establishment of an Institutional Review Board (IRB) for organizations conducting research on human subjects, human derivatives, etc. to ensure bioethics and safety, including the protection of research subjects.
* Also, Article 19 (Prohibition against Divulgence of Confidential Information) of the *Medical Service Act* requires the protection of patients’ privacy, and the *Personal Information Protection Act* controls the use of private and sensitive information, such as brain images.
* Placing a heavy emphasis on data security, personally identifiable information such as brain images and genetic information are anonymized before they are made available for sharing and utilization at the R&D stage.

1. **Is your national institutional framework for human rights well-equipped to address the new challenges posed by neurotechnologies?**

* By its nature, neuroscience and technology require more rigorous standards than other technologies. Nevertheless, considering the expected benefits of disease treatment and enhanced cognition that the technology can bring, we need a reasonable balance to facilitate R&D. At this stage, we are beginning to open discussions in full swing.

*International framework*

1. **What are the main international regulatory and governance gaps that you have identified as regards neurotechnology and human rights?**

* The Recommendation of the Council on Responsible Innovation in Neurotechnology, adopted by the Organisation for Economic Co-operation and Development (OECD) in December 2019, is the first international standard on neurotechnology. This recommendation is a meaningful output, but it is a soft law without binding power.

1. **What actions would you advocate for to address these gaps and potential human rights impact at the international level? Please elaborate on specific normative or institutional measures you would propose and assess the feasibility of their implementation.**

* Opportunities should be provided for researchers to recognize and share the various opportunities and threats that neurotechnology presents. Researchers should also be supported in establishing their ethics code.

1. **What international organization, bodies, or agencies would be in your opinion best placed to oversee and prevent potential abuses or misuses resulting from the use of neurotechnologies?**

* Since adopting the Recommendation of the Council on Responsible Innovation in Neurotechnology in 2019, the OECD has been operating a steering group of experts within the BNCT working group in order to support the implementation of the recommendation. This steering group serves as a platform to share the implementation status of the recommendation and best practice cases, so it can play an important role in identifying potential threats. /END/