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| **Human Rights Council Advisory Committee**  **Questionnaire on “Neurotechnology and human rights”** |

**Background**

In accordance with Human Rights Council [resolution 51/3](https://undocs.org/A/HRC/RES/51/3), the Advisory Committee is preparing a study “on the impact, opportunities and challenges of neurotechnology with regard to the promotion and protection of all human rights” to be presented to the Council at its fifty-seventh session (September 2024). In the preparation of this study, the Advisory Committee was asked “to seek the views and inputs from, and to take into account the relevant work already done by, stakeholders, including Member States, international and regional organizations, the Office of the United Nations High Commissioner for Human Rights, the special procedures of the Human Rights Council, the treaty bodies, other relevant United Nations agencies, funds and programmes within their respective mandates, national human rights institutions, civil society, the private sector, medical and technical communities, academic institutions and other relevant stakeholders”.

Neurotechnologies are defined for the purposes of this study, as those devices and procedures used to access, monitor, investigate, assess, manipulate and/or emulate the structure and function of the neural systems of natural persons.[[1]](#footnote-1) They are meant to either record signals from the brain and “translate” them into technical control commands, or to manipulate brain activity by applying electrical or optical stimuli.[[2]](#footnote-2)

**Deadline**

Responses to the questionnaire can be submitted until **2 July 2023**. Nonetheless, on exceptional basis, late responses or further information relevant to the work of the Advisory Committee on this topic may be accepted.

**Questionnaire**

Please answer the questions that are most relevant to your field of expertise or operation. There is no need to answer questions that may not be relevant to your work. Please respond as succinctly as possible and provide examples and substantive information where possible.

**Questions**

**I. All stakeholders** (core questions)

*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.
2. Is there any actor in the public or private sector developing this kind of technology in your country? Please provide information, if possible.
3. 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.

*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.

Right to Privacy: Neurotechnologies, especially those involved in brain-computer interfaces (BCIs), could raise privacy concerns. These technologies may access, record, or transmit an individual's neural data, which could reveal sensitive information about their thoughts, emotions, and mental states. Breaches of privacy at the neural level could be more dangerous than conventional ones because they can bypass the level of conscious reasoning, leaving individuals without protections from having their mind involuntarily read. This risk applies to participants in predatory neuromarketing studies and disproportionate uses of neurotechnology outside the clinics. With the growing availability of Internet-connected consumer-grade brain-computer interfaces, more and more individuals are becoming users of neurodevices. Protecting the right to privacy in the context of neurotechnologies would involve strict regulations on data collection, storage, and usage to prevent unauthorized access and misuse of neural information. A right to mental privacy would protect individuals against the unconsented intrusion by third parties into their brain data as well as against the unauthorized collection of those data.

Right to Mental Integrity: The right to mental integrity ensures that individuals have control over their own thoughts and mental processes without interference or manipulation. With advanced neurotechnologies, there might be the possibility of unauthorized access to someone's neural activity, leading to potential mental intrusion or manipulation. Preserving mental integrity would require establishing legal and ethical boundaries to ensure that individuals' mental processes are not subject to manipulation or coercion without their informed consent. Mental integrity may also entail a right to psychological continuity (Ienca & Andorno 2017) to preserve people’s personal identity and the continuity of their mental life from unconsented external alteration by third parties. Psychological continuity is an important issue in the context of national security, where mandatory personality-changing interventions might be justified in light of greater strategic or security goals. Brain interventions that reduce the need for sleep are already being pursued in the military, while similar interventions that make soldiers more belligerent or fearless are scientifically plausible.

Right to Equality and Non-Discrimination: The availability and access to neurotechnologies could potentially exacerbate existing social inequalities. If neurotechnologies become widespread, those who can afford them or have better access to healthcare might gain cognitive advantages, leading to disparities between the neuroenhanced and non-enhanced populations. To safeguard the right to equality, it would be crucial to ensure fair and equitable distribution of safe and effective neurotechnologies, and to prevent discrimination based on cognitive abilities or the use/non-use of neuroenhancements.

Finally, neurotechnologies have profound implications for the right to freedom of thought, a fundamental human right recognized by various international human rights instruments, including the Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR). The right to freedom of thought encompasses the right of individuals to hold their own beliefs, opinions, and thoughts without interference, coercion, or discrimination. Neurotechnologies, especially those involved in brain-computer interfaces (BCIs), could potentially infringe upon the users’ freedom of thought if their innermost cognitive processes are subject to unauthorized scrutiny and influence. Advanced neurotechnologies could be used for manipulation or coercion, violating individuals' freedom to form their own thoughts and beliefs. If neurotechnologies are misused to influence or control someone's cognitive processes, their autonomy and right to independent thought could be compromised. Finally, neurotechnologies, particularly those related to cognitive enhancement, raise questions about the boundaries between natural and artificially enhanced cognitive abilities, potentially impacting individuals' sense of self and identity. Authors such as Ienca and Andorno (2017), Ienca (2021) and Farahany (2019, 2023) have argued that a right to cognitive liberty would ensure that individuals have control over their own cognitive functions and can explore their thoughts and beliefs freely.

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?

Privacy and Data Security: As neurotechnologies collect and process sensitive neural data, there is an amplified risk of privacy breaches and unauthorized access to an individual's thoughts, emotions, and mental states. Ensuring robust data security measures and clear regulations to protect individuals' neural information becomes crucial.

Informed Consent and Autonomy: Obtaining informed consent in the context of neurotechnologies can be challenging due to the complexity of the technology and the potential for unknown long-term effects. There is a risk that individuals may not fully understand the implications of using these technologies and may unknowingly surrender control over their cognitive processes.

Neuroenhancement and Equality: If neurotechnologies are used for cognitive enhancement, it could lead to societal disparities. Access to these enhancements might be limited to certain privileged groups, exacerbating existing inequalities and creating a "cognitive divide" between those who can afford enhancements and those who cannot.

Neuromarketing and Manipulation: Consumer-oriented neurotechnologies designed for marketing or advertising purposes may raise concerns about manipulation. If businesses can tap into consumers' neurological responses, there is a risk of exploiting vulnerabilities and influencing decision-making without individuals' awareness, hence violating their mental integrity.

Ethical Use and Misuse: The misuse of neurotechnologies, whether for illicit surveillance, unauthorized behavioral influence, or other malicious purposes, poses serious ethical quandaries. Striking the right balance between beneficial uses and potential harm becomes crucial in regulating their development and deployment.

Potential for Coercion and Control: Neurotechnologies could be misused to manipulate or control individuals against their will, leading to potential abuses in areas like marketing, criminal justice, interrogation, or military applications.

Long-Term Health Implications: The long-term effects of using neurotechnologies on the brain and overall health are not yet fully understood. There might be unforeseen risks and health consequences that could emerge over time, warranting careful monitoring and research.

Consumer-oriented technologies often have fewer regulatory barriers compared to medical devices, which can increase the risk of rushed development and inadequate safety measures. This lack of oversight may lead to products with unclear or underestimated risks being introduced to the market. Additionally, consumer-oriented neurotechnologies might prioritize profitability and convenience over ethical considerations and accessibility for vulnerable groups. If these technologies are not designed with inclusivity in mind, there is a risk that persons with disabilities and other vulnerable populations may be further marginalized and excluded from accessing the benefits of these advancements.

1. What groups are more vulnerable or at risk? Please, identify three and explain why.

Marginalized and Disadvantaged Populations: Socioeconomically disadvantaged communities may face greater vulnerability. They may have limited access to healthcare and technology, making it difficult for them to benefit from neurotechnological advancements. This could exacerbate existing inequalities as more privileged groups gain access to cognitive enhancements, potentially leading to a "cognitive divide" between the haves and have-nots.

Children and Adolescents: Younger individuals may be at higher risk due to their developing brains. The impact of neurotechnologies on their cognitive development and long-term health is not well understood, making them particularly vulnerable to potential risks and unintended consequences. Issues related to informed consent and autonomy also become more complex when dealing with minors, as they may not fully comprehend the implications of using such technologies.

Elderly and Persons with Disabilities: The elderly and individuals with disabilities might be susceptible to exploitation or coercion regarding the use of neurotechnologies. These technologies could offer potential benefits, such as improved communication for individuals with speech impairments or enhanced cognitive function for seniors. However, there is a risk of unscrupulous actors taking advantage of vulnerable individuals who may be more desperate to seek solutions or improvements for their conditions.

In general, vulnerable groups may face challenges in accessing neurotechnologies, understanding the risks involved, and having a voice in shaping regulations and policies. Additionally, these groups may be disproportionately affected if the development and use of neurotechnologies lead to further social stratification and discrimination based on cognitive abilities.

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? Will such risks be amplified by the development of consumer-oriented neurotechnologies?

Ienca & Malgieri (2022) have called for the introduction of a “Mental Data Protection Impact Assessment” (MDPIA), i.e. a specific DPIA procedure that can help to better assess and mitigate risks that mental data processing can bring to fundamental rights and freedom of individuals. According to the MDPIA model, mental data processing must be considered at high risk and the data controller is obliged to:

* describe the processing (including a description of the logic of the technology)
* perform a balancing test based on necessity and proportionality of the data processing in relation to the purposes,
* assess the actual risks for fundamental rights and freedoms
* propose suitable measures to address and mitigate those risks.

This operation could imply an audit of the technological components of the processing (e.g., AI-driven processing) and a reconsideration of the algorithm in case some risks can be mitigated “by design”.

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

From a human rights perspective, the use of neurotechnologies presents several potential opportunities:

* Improved Healthcare and Rehabilitation: Neurotechnologies can revolutionize healthcare by providing new tools for diagnosing and treating neurological disorders and mental health conditions. They could offer more precise and personalized therapies, leading to better outcomes for patients with neurological disabilities.
* Enhanced Communication and Accessibility: Neurotechnologies may offer innovative solutions for individuals with communication impairments, such as those with locked-in syndrome or speech disorders. Brain-computer interfaces (BCIs) could enable them to communicate and interact with the world more effectively.
* Assistive Devices for People with Physical and Cognitive Disabilities: Neurotechnologies could lead to the development of advanced assistive devices that improve the mobility and autonomy of persons with cognitive and physical disabilities, enhancing their ability to participate in society and exercise their rights.
* Neuroeducation and Learning: Neurotechnologies have the potential to enhance learning and cognitive abilities, benefiting education systems and enabling individuals to access knowledge and information more effectively.
* Pain Management: Neurotechnologies offer new possibilities for managing chronic pain and neurological conditions, potentially improving the quality of life for individuals suffering from pain-related disabilities.
* Research and Understanding of the Brain: Advancements in neurotechnologies can deepen our understanding of the brain and cognitive processes, leading to insights that could inform policies, interventions, and support for human rights.
* Neurodiversity and Acceptance: A better understanding of the neurodiversity of human brains might lead to increased acceptance and appreciation of diverse neurotypes and cognitive abilities, reducing discrimination and stigma against individuals with neurological differences.

*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 there are plans to develop any (or further) legislation.
2. Does national legislation on privacy and data protection cover mental privacy[[3]](#footnote-3) and/or personal brain data?[[4]](#footnote-4) Please explain.

While some national legislation may indirectly cover aspects of mental privacy and personal brain data, specific regulations explicitly addressing these issues are relatively limited. Here are some ways in which existing privacy and data protection laws may offer some level of coverage:

* General Privacy Principles: Many data protection laws incorporate general principles that emphasize the protection of personal data and respect for individuals' privacy rights. Some of these principles, such as the requirement for informed consent, may extend to data collected from neurotechnologies.
* Sensitive Personal Data Categories: In some jurisdictions, certain categories of sensitive personal data, such as health-related information, may be subject to enhanced protection under data protection laws. Whether personal brain data obtained through neurotechnologies could fall into this category is open to debate.
* Anonymization and Pseudonymization: Data protection laws often require data to be anonymized or pseudonymized to protect individuals' identities. Applying these techniques to personal brain data can help minimize risks associated with re-identification.
* Data Security and Breach Notification: Data protection laws typically require organizations to implement appropriate security measures to safeguard personal data and notify individuals in case of data breaches. These provisions could apply to mental privacy and personal brain data as well.

Despite these potential overlaps, gaps remain in the specific protection of mental privacy and personal brain data. As explained by Ienca et al. (2022) this is due to specific features of brain data that appear challenging from a privacy and data security perspective. First, privacy is predicated upon the conscious ability of the individual to filter the flow of data and intentionally seclude private information. Brain data, in contrast, are mostly elusive to conscious control, hence cannot always be intentionally secluded. While this problem is shared with other data types (e.g., genetic data), it acquires greater ethical complexity in the neural domain. Specifically, brain data admit no separation between the data processed and the system that makes decisions about their processing (the human brain). Second, brain information is the ultimate resort of informational privacy since it includes unexecuted behavior, inner speech, or other non-externalized action. In principle, mental privacy can be preserved even if individual behavior is constantly surveilled through activity tracking, personal digital technology, self-quantification, or simple observation. It could be argued that when one agrees to allow brain data to be acquired, one seems to surrender the right to mental privacy, at least to some degree. However, in scenarios where brain data collection is either mandated (e.g. in the military sector or workplace) or competitively advantageous (e.g. Facebook’s plan to make brain-typing faster than the touch-screen), the risk of sharing data under explicit or implicit coercion is concrete. AI-driven brain data processing may allow access to mental information and bring privacy debates into partially uncharted territory. Legal systems are well-equipped to protect the ‘locus externus’ (behavior, verbal utterances, written text etc.) but less equipped to protect the ‘locus internus’ (e.g. unspoken information, preconscious preferences, attitudes, and beliefs). Data subjects may lose control over their brain data in several ways: (i) by consenting to the collection of their data without being adequately informed (e.g. on a device’s Terms of Use due to the complexity of the subject matter); (ii) by providing informed consent to the processing of their data for a certain purpose but remaining unaware of further reuses of their data for different purposes (including scraping by third parties); (iii) by being coerced to have their data collected (e.g. via employer’s mandate or in an interrogation context).

The nature of brain data might also compromise the ability of data subjects to exercise their rights to access, edit and delete their own data. For example, a data subject might not possess a computer powerful enough to process data from a BCI. Likewise, deleting brain data may substantially decrease the accuracy of ML models generated with these data. Finally, brain data processing generates a risk of “neurodiscrimination”, i.e., discrimination based on a person's neural signatures (indicating, for example, a dementia predisposition), or mental health, personality traits, cognitive performance, intentions and emotional states.

1. From a human rights-protection perspective, what are the main domestic regulatory gaps that can be identified? What legal (or other) measures are necessary to avoid human rights violations arising from the use of neurotechnologies in your opinion?
2. Is your national institutional framework for human rights well-equipped to address the new challenges posed by neurotechnologies?
3. What national entity would be best placed to exercise scrutiny and oversight to prevent potential abuses or misuses derived from the use of neurotechnologies? Is there any procedure in place to that effect?

The national entity best placed to exercise scrutiny and oversight to prevent potential abuses or misuses derived from the use of neurotechnologies would likely depend on the specific country's legal and regulatory framework. In cases where neurotechnologies are used for medical purposes, health regulatory authorities, such as the Food and Drug Administration (FDA) in the United States or the European Medicines Agency (EMA) in the European Union, could be responsible for approving and monitoring medical devices and treatments involving neurotechnologies. National data protection authorities are responsible for enforcing data protection laws and ensuring that the collection, storage, and use of personal data, including personal brain data, comply with privacy regulations. They may have oversight over the handling of neural information and ensure that individuals' privacy rights are respected. Many countries have ethics committees or institutional review boards (IRBs) that assess the ethical implications of research involving human subjects, including research using neurotechnologies. These committees review and approve research protocols to ensure that participants' rights and well-being are protected. Novel and additional oversight may be required. In particular, governments may establish advisory boards or expert panels composed of scientists, ethicists, legal experts, and representatives from civil society to provide guidance and recommendations on the responsible development and use of neurotechnologies.

*International framework*

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

Some authors have argued that brain data may be fully covered under the GDPR. However, there are several limits with this definition of brain data as personal data as defined by GDPR. Firstly, the GDPR is not applicable if brain data are anonymized even though the technical difficulty of anonymizing brain data leaves open the potential for re-identification. Research shows the feasibility of re-identifying data subjects based on electrophysiological measurements or neuroimaging data, predicting present emotional states and future behavior from brain data, as well as decoding information either from the neural activity of data subjects or their digital phenotypes. Because of the technology involved in the processing of brain data and its high contextualization, the likeliness that anonymized brain data (or data thought to be anonymized) will become re-identifiable is non-negligible.

Secondly, unique characteristics of brain data pose challenges to safeguarding the rights of data subjects. A prominent example is the right to be forgotten, i.e., one’s right to request a data controller to delete his/her personal data. A key characteristic of brain data is that they are potentially re-identifiable and elude conscious control. Therefore, even if a person is initially able to have their data deleted, the data controller or others might use those data to derivatively reconnect them to the person concerned. Most importantly, in the case of brain data involving ‘unconscious’ information, the data controller might be able to retain data the individual is not aware of. Finally, data deletion by consumer BCI companies may be difficult to obtain due the impact that such erasure would have on the accuracy of predictive models.

Thirdly, the GDPR allows derogations to the rights of data subjects if data (including the special categories of data listed in Article 9 (1) GDPR) is processed for research or statistical purposes. Those research exemptions also apply to research conducted by private companies, as pointed out by Recital 159 to the GDPR, which names “privately funded research” as part of the science privileged by the GDPR. This implies that processing of brain data by both public and private actors (e.g., government agencies or consumer neurotechnology companies), may rely on derogations from the main GDPR rules. Nevertheless, it is unclear under which conditions the research exemption for the purpose limitation principle defined in Article 5 (1) (b) GDPR applies to brain data collected in the consumer context.

Further, brain data may undermine another principle of data protection law, namely purpose limitation. By default, any personal data (including health data) can only be collected for specific purposes that need to be specified at the time when consent is given by the data subject or other legal basis is drawn on, that means ahead of starting data collection and processing. However, the exact specification of purposes is very difficult for brain data because current technology cannot pre-emptively discern purpose-specific data from the myriads of brain signals. Tools for selective filtering such as the Brain-Computer Interface Anonymizer are in early stages of development. The GDPR allows framing purposes in a broader manner in specific cases. Nevertheless, data security measures that intend to balance risks for the rights and interests of the data subject and the interests in the data processing are difficult to define in case processing purposes are framed in a broader manner, such as based on broad consent for scientific research (recital 33 GDPR) or based on the processing for scientific research purposes, Art. 9(2)(j) GDPR in conjunction with Art. 89(1) GDPR. Last but not least, the GDPR introduces the fiction that secondary processing for scientific research purposes is compatible with the initial purpose (Art. 5(1)(b) GDPR). Arguably, commercial scientific research, as any other research, underlies transparency obligations that are higher if for-profit benefits are gained based on research conducted with the data.

Finally, safeguards provided by data protection law may not adequately scale to group-level data. This lack of adequate scaling raises a twofold group-privacy risk: first, third parties can make inferences about a group of data subjects based on one or multiple features inherent in the brain data and shared by all individuals in the group (e.g., slower reaction time to cognitive tests). Second, individuals could be unwittingly identified through their brain data, however anonymized, as part of a hitherto unsuspected group (e.g., people showing prodromal signatures of cognitive decline) and subsequently discriminated against.

To complicate things, brain data generated from consumer neurotechnologies may not constitute ‘health data’ hence are subject to lower protections compared to data from clinical applications because the application of these devices does not fall under medical device regulation regimes.

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.
2. 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?

**II. Private actors and other stakeholders with experience or expertise in the subject-matter, such as medical and technical communities, and academic institutions** (specific questions)

1. What specific characteristics would you emphasise as unique and distinctive of neurotechnologies?

At least two:

First, the establishment of a direct interface with the brain: Neurotechnologies establish a direct interface with the human brain, allowing for bidirectional communication between the brain and external devices. This direct interaction distinguishes them from conventional technologies that rely on peripheral interfaces. By intervening directly into the brain, neurotechnologies intervene directly into the core processing unit of mental faculties (e.g. memory, reasoning, emotions, perception etc.) and behavior, i.e. into the essence of what we are.

Second, the processing of neural data. Brain data are ethically unique since they (i) are mostly elusive to conscious control, hence cannot always be intentionally secluded; (ii) encode mental information (such as information about thoughts and feelings) whose decoding ; (iii) compromise the ability of data subjects to exercise their rights to access, edit and delete their own data; (iv) are not in read-only format but can be modified real-time using neurostimulation/neuromodulation, hence enabling a direct influence on cognition, behavior, and mood; and (v) generate a risk of “neurodiscrimination”, i.e., discrimination based on a person's neural signatures (indicating, for example, a dementia predisposition), or mental health, personality traits, cognitive performance, intentions and emotional states.

1. Have you introduced or are you considering introducing any adjustment to your activities or business model such as incentives, indicators or performance metrics of governance in response to these specific characteristics? Please explain.
2. Has your company/organization undertaken any specific action or measure to mitigate impacts arising from the use of neurotechnologies? Are any of these actions or measures specifically addressed to mitigate human rights risks?
3. Does your company or organization implement the principles for responsible innovation in neurotechnology?[[5]](#footnote-5) Please elaborate.
4. Has your company or organization developed or plans developing (or adopting) an ethical code of conduct or human rights strategy for the development, testing or commercialization of neurotechnologies? Please outline such initiatives and provide a copy of relevant documents, if possible.
5. What national regulation or framework do you consider is needed to avoid a potentially negative human rights impact of neurotechnology?
6. Which regulatory framework such as application of specific, sectorial, national, autoregulation or a combination of them do you believe is best suited to the specific characteristics of neurotechnologies?

**III. International and regional organizations; United Nations agencies, funds and programmes; national human rights institutions; and civil society** (specific questions)

1. Please outline the relevant work that your organization, agency or department has done in relation to neurotechnology and human rights. Please share the main outcomes and recommendations (if applicable).
2. Please describe any measures undertaken aimed at coordinating, collaborating or seeking synergies with the work of other organizations in relation to neurotechnology.
3. What are the main international regulatory and governance gaps that you have identified as regards neurotechnology and human rights?

**IV. Special Procedures of the Human Rights Council** (specific questions)

1. Has your mandate considered the issue of neurotechnology and human rights? If so, please indicate the main outcomes and recommendations and include relevant references and links.
2. What impact of neurotechnology do you foresee in relation to the human rights within your mandate? What actions would you propose or undertake to mitigate any adverse impact or risk? Please highlight the risks attached to this issue and potential opportunities, if relevant.
3. What actions could be undertaken by the Coordination Committee of Special Procedures to address any negative human rights impact arising from neurotechnology?
4. What are the gaps, if any, in the existing international human rights protection framework to address the impact of neurotechnology? How could they be best addressed?
5. How could the current international human rights framework be best used or developed to address the impact, opportunities and challenges of neurotechnology with regard to the promotion and protection of all human rights?

**V. United Nations Treaty Bodies** (specific questions)

1. Has your treaty body considered directly or indirectly the issue of neurotechnology and human rights (while considering individual complaints, examining periodic reports or elaborating general comments)? If so, please indicate the main outcomes and recommendations (include relevant references and links).
2. What impact of neurotechnology on human rights do you foresee from the perspective of your mandate? Please highlight the risks attached to this issue and potential opportunities, if relevant, and indicate what actions would you propose or undertake to mitigate risks.
3. What are the gaps, if any, in the existing international human rights protection framework to address the impact of neurotechnology? How could they be best addressed?
4. How could the current international human rights framework be best used or developed to address the impact, opportunities and challenges of neurotechnology with regard to the promotion and protection of all human rights?

**VI. Office of the United Nations High Commissioner for Human Rights** (specific questions)

1. What work is OHCHR currently carrying out in the field of neurotechnology and human rights? Please provide any relevant information such as links to reports, background material, sections or units involved, etc.
2. What are the gaps, if any, in the existing international human rights protection framework to address the impact of neurotechnology? How could they be best addressed?
3. How could the current international human rights framework be best used or developed to address the impact, opportunities and challenges of neurotechnology with regard to the promotion and protection of all human rights?

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1. OECD, “Recommendation of the Council on OECD Legal Instruments Responsible Innovation in Neurotechnology”, 2019; “Neurotechnology and Society: Strengthening Responsible Innovation in Brain Science”, OECD Policy Papers, November 2017, p. 49. [↑](#footnote-ref-1)
2. UNESCO, **“**Report of the International Bioethics Committee of UNESCO (IBC) on the Ethical Issues of Neurotechnology”, 2021, p.5. [↑](#footnote-ref-2)
3. “Mental privacy” refers to the explicit protection of individuals against the unconsented intrusion by third parties into their mental information (be it infrerred from their neural data or from proxi data indicative of neurological, cognitive and/or affective information) as well as against the unauthorized collection of those data. Ienca, M. and Andorno, R. “Towards new human rights in the age of neuroscience and neurotechnology”, *Life Sciences, Society and Policy*, Vol. 13, n. 5, 2017. [↑](#footnote-ref-3)
4. “Personal brain data” or “neural data” is defined as the data relating to the functioning or structure of the human brain of an identified or identifiable individual that includes unique information about their psicology, health or mental states (OECD, 2019). [↑](#footnote-ref-4)
5. See, for example: OECD, “Recommendation of the Council on OECD Legal Instruments Responsible Innovation in Neurotechnology”, 2019. [↑](#footnote-ref-5)