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## STUDENT CONTRIBUTION

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# Human Rights-Based Approach to Science, Technology and Development: A Legal Analysis

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*The nexus between science and human rights are intertwined in many ways. Though the acknowledgment in international law have been available for decades, the right to savor the fruits of scientific advancement and its applicability has gained just small recognition of the human rights from the international community. A human rights-based approach to science, technology, and development endeavors a concern for human rights at the heart of the international community facing with critical global challenges. Thus, the paper initially discusses the relevant international human rights instruments including laws, regulations, declarations, conventions and provides a thorough analysis. The doctrinal and qualitative study of the paper presents human rights approaches in order to show insight on the ethical implications of new technologies and investigate how policy can compete with briskly advancing science. The paper also recommends the international community to promote regulatory processes that can help in blocking the disputes by securing an equilibrium between human rights and science.*

### Keywords

Human rights, Science, ICT, Technologies, Digitalization, International law

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## I. Introduction

Science and human rights are inextricably linked in many ways. Although it is acknowledged for decades in international law, the right to rip off gains from scientific advancement and its utilization has gained minuscule recognition from the human rights and scientific communities. It would be difficult today to find any academic discussion or proper forum that address the core relation between science and human rights.<sup>1</sup> Nonetheless, this does not particularly suggest that the idea is deficit of focus or substance.

A human rights-based approach to science, technology, and development endeavors a concern essentially on how the international community interlaces with critical global-scale challenges.<sup>2</sup> Regarding science and technology, this approach demands scientists to push their knowledge further in understanding “how their work bridges with human rights and demands” that they endeavor to confirm and secure human rights by the knowledge they generate. Thus, people oriented with scientific discoveries or technological advancement must have a clear idea regarding international human rights instruments including laws, regulations, declarations and conventions.

The aim of this research is to enlighten the international human rights instruments in order to pave a clear understanding of how science and human rights are correlated within several different aspects. The paper will initially discuss the core international human rights instruments. It will then analyze how those human rights are related to the scientific and technological advancement; examines how technology can be used to ensure and validate the applications and violations of human rights; discusses the importance of sustainable development of technology for a better society; and concludes with the discussion of “right to scientific advancement.” It also recommends the international community to promote regulatory processes that can avert the disputes and confirm a proper balance between human rights and science.

<sup>1</sup> F. VARELA ET AL., *THE EMBODIED MIND: COGNITIVE SCIENCE AND HUMAN EXPERIENCE* 13 (2017).

<sup>2</sup> T. EVANS (ED.), *HUMAN RIGHTS FIFTY YEARS ON: A REAPPRAISAL* 105 (1998).

## II. Human Rights Instruments relating to Science and Technology

In general, international human rights instruments consist of treaties and other international documents for the international protection of human rights.<sup>3</sup> They can be classified into two categories: declarations and conventions. The former, adopted by organizations such as the UN General Assembly, does not have actual binding force, but is working for a normative ground as soft law.<sup>4</sup> The latter is a group of binding legal means under international law. Scientists have defended the freedom to engage in scientific inquiry and to report their findings without interference by the Universal Declaration of Human Rights (“UDHR”).<sup>5</sup> So, it can be inferred that the advantages of scientific improvement should be freed from impediments by social groups and shared openly with corporate entities or states.

On top of everything, there is a rights-focused approach in dealing with science. It attempts to generate the provisions for equal cooperation in the worldwide science community and reasonable passage to scientific goods and information. Other than the UDHR, two more international human right instruments are also very important which ensures the advancement, safe usage and application of science and technology. It is known as UNESCO Recommendation on the Status of Scientific Researchers 1994 and the UNESCO Declaration on the Use of Scientific Knowledge 1999.<sup>6</sup>

All progressions in scientific and technological knowledge should guarantee welfare for global inhabitants. They would request member countries to develop the required policies, protocols and strategies keeping in mind to control and obtain this goal, which of these are confirmed by the UNESCO Proposition on the Status of Scientific Researchers 1974 (hereinafter UNESCO Proposition).<sup>7</sup> Scientific and technological innovations should be brought together in order to ensure that the human rights are secured with priority. As per the Declaration of the UNESCO on the Use of Scientific Knowledge 1999 (hereinafter UNESCO Declaration), scientific

<sup>3</sup> T. Meron, *On a Hierarchy of International Human Rights*, 80 AM. J. INT’L L. 1-23 (1986).

<sup>4</sup> P.-M. Dupuy, *Soft law and the international law of the environment*, 12 MICH. J. INT’L L. 420 (1990), available at <http://heinonline.org/HOL/LandingPage?handle=hein.journals/mjil12&div=20&id=&page=> (last visited on Apr. 24, 2018).

<sup>5</sup> UDHR art. 27(1).

<sup>6</sup> M. Osborn, *Status and prospects of women in science in Europe*, 263 SCI. 1389-91 (1994), available at <http://www.jstor.org/stable/2883307> (last visited on Apr. 24, 2018).

<sup>7</sup> UNESCO Proposition art. 4. For details, see S. Teufel & M. Moens, *Summarizing Scientific Articles: Experiments with Relevance and Rhetorical Status*, 28 COMPUTATIONAL LINGUISTICS 409-45 (2002).

applications and science itself are vital for growth. The government as well as private sector from every level should render extra help in building up an evenly distributed and sufficient scientific and technological capacity by proper education and research programs as an essential base for social, cultural, economic, and environmentally reliable development (societal advancement).<sup>8</sup> In general, the international human-rights instruments as a means of protection against the abuse of science and technology can be categorized by the following divisions.

### A. Instruments of a General Character

The provisions contained in the International Covenants on Economic, Social, and Cultural Rights (“ICESC”),<sup>9</sup> as well as on Civil and Political Rights (“ICCPR”),<sup>10</sup> adopted on December 16, 1966, have emphasized on the rights which identified general protection of each and every human individuals.<sup>11</sup> Those rights to life, physical and spiritual integrity, privacy, freedom of opinion and expression and information are the basic protective measures that international human rights instruments have already ensured.

ICCPR protects the right to life (Article 6), the right to physical and spiritual integrity (Article 7), the right to privacy (Article 17), and the right to information (Article 19). Article 7 stipulates: “No one shall be subjected without his free consent to medical or scientific experimentation.”<sup>12</sup> Article 19 adds details about various forms of communication for receiving and conveying information. It implies that freedom of expression should be adapted to the conditions posed by the advances in communication technology. As the right to freedom of expression that everyone shall have, this article enumerates the freedom to seek, receive and impart information of every possible form and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of choices.

<sup>8</sup> UNESCO Declaration art. 33. For details, see G. Aikenhead & O. Jegede, *Cross-cultural Science Education: A cognitive explanation of a cultural phenomenon*, 36 J. RES. IN SCI. TEACHING (1999), available at [https://www.usask.ca/education/documents/profiles/aikenhead/cross\\_culture.pdf](https://www.usask.ca/education/documents/profiles/aikenhead/cross_culture.pdf) (last visited Apr. 24, 2018).

<sup>9</sup> International Covenant on Economic, Social and Cultural Rights, 993 U.N.T.S. 3, adopted on Dec. 16, 1966; entered into force on Jan. 3, 1976, available at <http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx> (last visited on Apr. 24, 2018).

<sup>10</sup> International Covenant on Civil and Political Rights, 999 U.N.T.S. 171, adopted on Dec. 19, 1966; entered into force on Mar. 23, 1976, available at <http://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx> (last visited on Apr. 24, 2018).

<sup>11</sup> R. SMITH, INTERNATIONAL HUMAN RIGHTS LAW 37 (2017).

<sup>12</sup> *Id.*

## B. Instruments of a Specific Character

Other than the general protection, the human rights instruments provide specific grounds for protecting the rights related with science, technology and development. The Convention on the Prevention and Punishment of the Crime of Genocide (hereinafter Genocide Convention), adopted by the UN General Assembly on December 9, 1948, protects, in Article 11(d), the right to life against the abuse of science and technology.<sup>13</sup> The problems relating to the right to life posed by recent developments in gene technology have inspired many international and national research projects on this matter.<sup>14</sup> Although the Council of Europe, as well as the UNESCO, have ongoing research programs on the impacts of gene technology on human rights. This has not yet reached the stage of a normative instrument being drafted.<sup>15</sup>

In the case of the right to physical and spiritual integrity, the existing instruments do not specifically refer to medical, scientific, or biological techniques that can ensure the protection of human body and minds. It is a matter of consciousness that these protections are incorporated by any international instruments. However, the legal protection can be ensured through the Declaration on the Protection of All Persons from Being Subjected to Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (December 9, 1975).<sup>16</sup> In addition, the Code of Conduct for Law Enforcement Officials (December 17, 1979), as well as the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (December 10, 1984) protect the right of physical and spiritual integrity by providing specific provisions against torture.<sup>17</sup>

Recently, national legislations have been elaborated in many Western and Asian countries on the “right to privacy and personal data protection.” Although it has been a point of contention for legal researchers, no specific normative instrument has been drawn up to protect these rights under the UN system. However, regional organizations such as EU, OECD, ASEAN and APEC have put a lot concerns to develop legal instruments to protect the right to privacy, especially in respect of the handling of personal data.<sup>18</sup> The UNESCO has also encouraged various research in

<sup>13</sup> Genocide Convention art. 11(d). For details, see C. TAMS ET AL., CONVENTION ON THE PREVENTION AND PUNISHMENT OF THE CRIME OF GENOCIDE: A COMMENTARY 32 (2014).

<sup>14</sup> *Id.*

<sup>15</sup> *Id.* at 35.

<sup>16</sup> A. CLAPHAM, HUMAN RIGHTS: A VERY SHORT INTRODUCTION 5 (2015).

<sup>17</sup> *Id.*

<sup>18</sup> S. GUTWIRTH ET AL., DATA PROTECTION ON THE MOVE: CURRENT DEVELOPMENTS IN ICT AND PRIVACY/DATA PROTECTION

comparative legislation concerning data protection.<sup>19</sup>

Other than the personal data protection, the right to information has also gained attention in the international community. At times, it is rather a call for managing the conflict between the right to privacy and the right to information. In 1947, the UN established a Sub-Commission on Freedom of Information and the Press.<sup>20</sup> However, no normative instrument has been elaborated by the UN on the right to information, with the exception of the Convention on the International Right of Correction (December 16, 1952).<sup>21</sup> This Convention assures the contracting state to exercise the right of correction against other contracting states. In their territories, a news dispatch capable of damaging the state's prestige or dignity or its relations with other states has been published or disseminated.

Significant developments have been observed in the national laws ensuring the access to information or documents held by the administration or the institutions carrying out public missions such as the Freedom of Information Act (US in 1966, amended in 1976; Denmark in 1970; Norway in 1970; the Netherlands in 1978; France in 1978; Canada in 1982; Australia in 1982; New Zealand in 1982).<sup>22</sup> In comparison with these developments in national laws, no attempt has been made to elaborate an international instrument to protect this "right to know" *vis-à-vis* public or semi-public institutions.<sup>23</sup>

If considering the effects of scientific and technological progress on human rights in terms of both the positive and negative effects, such information should be protected with due reasoning. Protective measures that ensure a state's integrity is necessary while dealing with such sensitive data. In this regard, the right to knowledge could become a curse for an individual.<sup>24</sup> During World War II, for example, millions of people were sent to concentration camps and eventually to gas chambers for information disclosure on people's ethnicity and race. At the national level, however, information related to the effects of industrial waste on water, the side-effects of medical products on human bodies, or the content of pollution from power plants or uranium recycling plants can be requested by law.<sup>25</sup>

476 (2016).

<sup>19</sup> *Id.*

<sup>20</sup> J. SYMONIDES, HUMAN RIGHTS: INTERNATIONAL PROTECTION, MONITORING ENFORCEMENT 339 (2017).

<sup>21</sup> N. Petersen, *The International Court of Justice and the Judicial Politics of Identifying Customary International Law*, 28 EUR. J. INT'L L. 357-85 (2017).

<sup>22</sup> P. HALLBERG & J. VIRKKUNEN, FREEDOM OF SPEECH AND INFORMATION IN GLOBAL PERSPECTIVE 21 (2017).

<sup>23</sup> *Id.*

<sup>24</sup> G. FUSTER, EMERGENCE OF PERSONAL DATA PROTECTION AS A FUNDAMENTAL RIGHT OF THE EU 37 (2014).

<sup>25</sup> M. Prakash & G. Singaravel, *An Approach for Prevention of Privacy Breach and Information Leakage in Sensitive*

Within the Council of Europe, attempts have been made in drawing up a Convention on mass media based on Article 10 of the European Convention on Human Rights 1950 (“ECHR”), which stipulates: “Everyone has the right to freedom of expression. This right shall include freedom to hold opinions and to receive and impart information and ideas without interference by public authority and regardless of frontiers...”<sup>26</sup> It is often confused that freedom of expression is a defense to defamation or innuendo, but it is not. A person may have freedom to express their beliefs, but can nevertheless abuse emotions of others in any form of innuendo.

At the Colloquium organized in Sevilla in November 1986, which examined this right in connection with the restrictions, “necessary in a democratic society” contained in paragraph 2 of Article 10, the participants (international law experts, regulators and legal practitioners) argued that such a new formula could be interpreted as the right to know or the right to have access to information, which is not explicitly recognized in the text of the ECHR, could be included in the right to freedom of expression, if affirmed in the case law of the Convention.<sup>27</sup> The public right to receive information and the duty of the mass media to contribute to it, was affirmed by the ECHR in the *Sunday Times* case.<sup>28</sup> This case is of particular interest, because it has the impacts of scientific progress on human rights and concerns the harmful side-effects of medicine (thalidomide).<sup>29</sup> In this case, Article 10 of the ECHR was interpreted to include the right of the public to ‘know’ the effects of pharmaceutical products and the obligation of mass media in diffusing such information.<sup>30</sup> Everyone has the right to know what might affect him/her once the products will work (*e.g.*, a professional painter should know the consequences of inhaling lead; a software developer should know the consequences of seeing long hours in front of computer screen, etc.). Therefore, mass media and communications should also promote such legal instruments in order to create awareness among everyone.

*Data Mining*, 45 COMPUTERS & ELECTRICAL ENGINEERING 134-40 (2015).

<sup>26</sup> L. KIESTRA, THE IMPACT OF THE EUROPEAN CONVENTION ON HUMAN RIGHTS ON PRIVATE INTERNATIONAL LAW 27-48 (2014).

<sup>27</sup> Hiroko Yamane, Impacts of Scientific and Technological Progress on Human Rights: Normative Response of the International Community, pt. 3 (International Response), available at <http://archive.unu.edu/unupress/unupbooks/uu06he/uu06he0c.htm> (last visited on Apr. 24, 2018).

<sup>28</sup> *Sunday Times v. United Kingdom* (No 6538/74), 30 Eur. Ct. H.R. (ser. A), 2 E.H.R.R. 245, 26 April 1979, available at [http://www.hrcr.org/safrica/limitations/sunday\\_times\\_uk.html](http://www.hrcr.org/safrica/limitations/sunday_times_uk.html) (last visited on Apr. 24, 2018).

<sup>29</sup> *Supra* note 25.

<sup>30</sup> *Id.*

### C. Instruments to Assure Positive Uses of Scientific and Technological Progress

ICESC refers vaguely to the obligation of the state to use scientific and technologic progress for welfare.<sup>31</sup> For example, to achieve the full realization of the right to work, Article 6 of ICESC stipulates that the state should take steps including technical and vocational guidance and training programs, policies and techniques to achieve steady economic, social and cultural development.<sup>32</sup> This is conducted along with full and productive employment under the conditions safeguarding fundamental political and economic freedoms to the individual.<sup>33</sup> The state should also take the following steps:

1. To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources. [Article 11, para. 2(a)]<sup>34</sup>
2. [To ensure the] improvement of all aspects of environmental and industrial hygiene in order to realize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health. [Article 12, para. 2(b)]<sup>35</sup>

Article 15, Paragraph 1(b) of ICESC also assures that individual has the right to enjoy the benefits of scientific progress and its applications.<sup>36</sup> The UNESCO Recommendation on the Status of Scientific Researchers 1974 combines the freedom of researchers with the implications of science and technology for the global questions such as development and international peace.<sup>37</sup> This Recommendation particularly recalls Article 27 of the UDHR, which provides that everyone has the right to participate freely in the cultural life of the community and to share any scientific

<sup>31</sup> H. Lambert, *The International Covenant on Economic, Social and Cultural Rights: A Perspective and Its Development*, 72 INT'L AFF. 176-7 (1996).

<sup>32</sup> ICESC art. 6(2).

<sup>33</sup> B. Neimark & S. Vermeylen, *A Human Right to Science?: Precarious Labor and Basic Rights in Science and Bioprospecting*, 107 ANNALS OF THE AMERICAN ASSOCIATION OF GEOGRAPHERS 167-82 (2016).

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> H. Ten. Have, *The Activities of UNESCO in the Area of Ethics*, 16 KENNEDY INST. ETHICS J. 333-51 (2006), available at <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SHS/pdf/KIEJ-2006.pdf> (last visited on Apr. 24, 2018).



advancement and its benefits.

However, different legal provisions of the international instruments provide obligation for the states to encourage conditions in which scientific researchers can work in a spirit of intellectual freedom to pursue, expound and defend the scientific truth as they see it. The UDHR also enumerates provisions to contribute positively and constructively to the fabric of science, culture, and education in their own country. In addition, the UDHR contains provisions to achieve the national goals to enhance the living standard of their fellow citizens.<sup>37</sup> Furthermore, all of these provisions were adopted in order to achieve the ideals and objectives of the UN.

The Proclamation of Tehran, adopted by the International Conference on Human Rights on May 13, 1968 introduced the distinct categories of developed and developing countries with regard to human rights.<sup>38</sup> However, it is also important to understand that while recent scientific discoveries and technological advances have opened vast prospects for economic social and cultural progress, such developments may nevertheless endanger the rights and freedoms of individuals and thus will require continuous attention.<sup>39</sup>

The Declaration on the Use of Scientific and Technological Progress in the Interests of Peace and for the Benefit of Mankind, adopted by the UN General Assembly on November 10, 1975, takes into consideration: “While scientific and technological developments provide ever-increasing opportunities to better the conditions of life of peoples and nations, in a number of instances they can give rise to social problems. This include threaten to human rights and fundamental freedom of individual.”<sup>40</sup> This Declaration indicates that the major preoccupation of the UN in dealing with the impact of science and technology on human rights has turned to economic development and that, in order to achieve this goal, extensive emphasis has been placed on the economic and social functions of the state, both internally and externally.<sup>41</sup>

This tendency towards the identification of connection between human rights and development coincide with the ongoing effort of the international community to

<sup>38</sup> R. Burke, *From Individual Rights to National Development: The First UN International Conference on Human Rights, Tehran, 1968*, 19 J. WORLD HIST. 275-96 (2008).

<sup>39</sup> Y. DONDEERS & V. VOLODIN, HUMAN RIGHTS IN EDUCATION, SCIENCE, AND CULTURE: LEGAL DEVELOPMENTS AND CHALLENGES 111(2008).

<sup>40</sup> A. Chapman, *Towards an Understanding of the Right to Enjoy the Benefits of Scientific Progress and Its Applications*, 8 J. HUM. RTS. 1-36 (2009).

<sup>41</sup> UN Declaration on the Use of Scientific and Technological Progress in the Interests of Peace and for the Benefit of Mankind 1975, arts. 5, 7 & 8, available at <http://www.ohchr.org/EN/ProfessionalInterest/Pages/ScientificAndTechnologicalProgress.aspx> (last visited on Apr. 24, 2018).

establish a new international economic order. The Declaration on the Establishment of a New International Economic Order, adopted by the General Assembly on May 1, 1974, proclaims:

our united determination to work urgently for the establishment of a new international economic order based on equity, sovereign equality, interdependence, common interest, and co-operation among all states, irrespective of their economic and social systems, which shall correct inequalities and redress existing injustices, make it possible to eliminate the widening gap between the developed and the developing countries...<sup>42</sup>

Article 4(p) of the Declaration lays down the principle of giving to the developing countries access to modern science achievements and technology, promoting the transfer of technology, the creation of indigenous technology for the benefit of the developing countries in forms and in accordance with procedures which are suited to their economies.<sup>43</sup>

The overriding concern with development gives new rights to the state. The Charter of Economic Rights and Duties of States adopted by the General Assembly in the same year grants the state the right, *inter alia*, to regulate and supervise the activities of transnational corporations within its national jurisdiction (Article 2, Paragraph 2(b)).<sup>44</sup> Moreover, the Charter was adopted in order to acquire benefits from the scientific and technological advances for its economic and social development (Article 13, Paragraph 1).<sup>45</sup>

The UN Conference on Science and Technology for Development (“UNCSTD”), held in Vienna in 1979, adopted the same line of idea, in a declaration encouraging future programs to be conducted for exploring alternative technologies and better use of science and technology for development.<sup>46</sup> The implementation of human rights requires appropriate social conditions in all aspects of society, bearing in mind that a state with social anarchy could be a misleading example when considering human rights’ implementation as well as development in technological aspects.

<sup>42</sup> U.N. Doc. A/RES/S-6/3201 (May 1, 1974), available at <http://www.un-documents.net/s6r3201.htm> (last visited on Apr. 24, 2018). See also *General Assembly Declaration on the Establishment of a New International Economic Order*, 68 AM. J. INT’L L. 798-801 (1974).

<sup>43</sup> *Id.*

<sup>44</sup> U.N. Doc. A/RES/29/3281 (Dec. 12, 1974), available at <http://www.un-documents.net/a29r3281.htm> (last visited on Mar. 19, 2018).

<sup>45</sup> *Id.* For details, see generally M. BULAJIĆ ET AL., THE CHARTER OF ECONOMIC RIGHTS AND DUTIES OF STATES: TEN YEARS OF IMPLEMENTATION (1986).

<sup>46</sup> K. CRANE, GUIDEBOOK FOR SUPPORTING ECONOMIC DEVELOPMENT IN STABILITY OPERATIONS 109 (2009), available at [https://www.rand.org/content/dam/rand/pubs/technical\\_reports/2009/RAND\\_TR633.pdf](https://www.rand.org/content/dam/rand/pubs/technical_reports/2009/RAND_TR633.pdf) (last visited on Apr. 24, 2018).

It is therefore natural that the conditions allowing for the implementation of the individual right to benefit from scientific and technological progress, as well as the right to an adequate standard of living, include not only the change of national social conditions, but also the entire world order.<sup>47</sup>

## D. Recent Developments

Recent international conferences expressed concern regarding scientific progress in genomics, robotics, neuroscience, reproductive health technology and other fields of biomedicine and the life sciences.<sup>48</sup> Today's scientific development such as artificial inoculation in vitro fertilization, parthenogenesis, choice of sex of offspring, cloning, manipulation of the DNA molecule would interfere with the human rights issues. The advances in the relevant scientific fields raise complex challenges for human rights of contemporary world, which can only be addressed with the cooperation of medical specialists, geneticists, cell biologists, neuroscientists and others in the scientific community in dialogue with human rights experts.<sup>49</sup>

Air and water pollution is harmful to human health. Meanwhile, the international legal instruments are also promoting the technologies that mitigate harmful emissions and allow people to adapt in ways that protect them from harm.<sup>50</sup> Such legal instruments contribute to realizing the new rights associated with the climate change and environmental degradation. In its latest resolutions on human rights and climate change, the Human Rights Council emphasized:

... the adverse effect of climate change-related impacts have a range of implications, both direct and indirect, for the effective enjoyment of human rights, including, inter alia, the right to life, the right to adequate food, the right to the highest attainable standard of health, the right to adequate housing, the right to self-determination and the right to safe drinking water and sanitation, and recalling that in no case may a people be deprived of its own means of subsistence.<sup>51</sup>

Once the international debate on human rights opens up all these divisive questions

<sup>47</sup> *Supra* note 27.

<sup>48</sup> S. Marks, *Human Rights and the Challenges of Science and Technology*, 20 *SCI. & ENGINEERING ETHICS* 869-75 (2014).

<sup>49</sup> See *Book Review: The medical profession and human rights: handbook for a changing agenda/ British Medical Association*, 19 *NETH. Q. HUM. RTS.* 374-5 (2001).

<sup>50</sup> D. Bell, *Climate change and human rights*, 4 *WILEY INTERDISCIPLINARY REV.: CLIMATE CHANGE* 159-70 (2013).

<sup>51</sup> H.R.C. Res. 29/19, U.N. Doc. A/HRC/29/19 (July 2, 2015), available at [http://www.ohchr.org/EN/HRBodies/HRC/RegularSessions/Session29/Documents/A\\_HRC\\_29\\_19\\_en.doc](http://www.ohchr.org/EN/HRBodies/HRC/RegularSessions/Session29/Documents/A_HRC_29_19_en.doc) (last visited on Apr. 24, 2018). See generally C. WOLD ET AL., *CLIMATE CHANGE AND THE LAW* (2013).

concerning the relationship between the state and the individual, more efforts seem to be required for superficially conceptual compromises rather than effective ways of implementing human rights. If merely claiming the rights of all kinds together we may just encounter the impossibility of achieving real progress in devising remedies.<sup>52</sup>

One of the possible solutions to this impasse would be to specify the areas for implementing different categories of human rights and to dissociate them from the general issues of economic development, such as transfer of technology, exploitation of natural resources, etc. This could also result in other beneficial aspects that are explicitly linked with general human rights as aforementioned. The latter areas concern primarily with the social and economic functions of the state, private enterprise, the economy, and the dispute settlement between private enterprise and the state. These problems could perhaps be better solved if they were dealt with in a more proper context.<sup>53</sup>

### III. Intersection of Human Rights and Technology: Opportunities and Challenges

Technology is so foundational that it scratches all the surface in every sector. It is intertwined everywhere in the modern-day's human rights journey.<sup>54</sup> With the support from myriad of technological tools, great opportunities persist to improve human rights efforts. Simultaneously, however, a thriving call is there to warrant the security and safety of human rights defenders, activists, and laymen in this the world of globalized surveillance.

#### A. Opportunities

The concepts of human rights are continuously changing and adapting new forms of understanding as human lives transforming themselves in online digital world. "The same rights that people have offline must also be protected online."<sup>55</sup> Latest technologies have attained their own place in society and are regularly applied by individuals in performing most of their works. In order to enjoy their protection

<sup>52</sup> M. Scheinin, *The art and science of interpretation in human rights law*, in RESEARCH METHODS IN HUMAN RIGHTS: A HANDBOOK 17-37 (B. Adreadssen et al. eds., 2017).

<sup>53</sup> J. MILETZKI & N. BROTEN, DEVELOPMENT AS FREEDOM 34 (2017).

<sup>54</sup> D. FORSYTHE, HUMAN RIGHTS IN INTERNATIONAL RELATIONS 72 (2017).

<sup>55</sup> J. LIDICOAT & A. DORIA, HUMAN RIGHTS AND INTERNET PROTOCOLS: COMPARING PROCESSES AND PRINCIPLES 10 (2015).

entirely, the frameworks, understandings, functions of different tools and factors to preserve and uphold human rights need to be defined, reviewed, refined and modified.<sup>56</sup>

For instance, technology has supported individuals for entire human rights. In the case of freedom of expression, the result is possibly most compelling. Technology has empowered individuals to use their liberty “to seek, receive and allow information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print” on an exceptional level by employing a complete range of latest types of communication.<sup>57</sup> Starting from a blog to a crowd-funding expedition, people are frequently allowed to distribute information in different ways.

Information technology has transformed human communication patterns. Some of these developments are so natural that we take the benefits of technology for granted today. Encompassing the globe, for instance, millions of migrants stay connected with their families and transfer remittances back to home using the online tools. Technology allows people to display their distinct individualities. It further enables collective mobilizations and empowers minorities.

Usually, human rights and science heavily depend on each other. For instance, scientists rely on human rights to safeguard their individual scientific freedom, which consecutively allows them to better welfare and human rights by their work. Human rights approaches can bring about insights on the ethical meaning of new technologies and investigate how policy can compete with increasingly evolving science.<sup>58</sup>

Moreover, science and technology stimulate the development and fulfillment of human rights. This stretches to information and communication technologies (“ICTs”) as instruments that conceivably promote gateway toward scientific knowledge. For instance, ICTs are fast moving democratic practice for social networks and e-government.<sup>59</sup> Nevertheless, the application of ICT instruments can also be reduced by under-development or censorship, thereby leading to digital divisions that cause new sorts of separation. This shows how human rights approaches can uphold demands for effective and fair application of technologies like ICTs.

The use of technologies such as satellite imagery, geo-spatial, and geographic

<sup>56</sup> S. Moyn, *Do human rights treaties make enough of a difference?*, THE CAMBRIDGE COMPANION TO HUMAN RIGHTS LAW 329-47 (C. Gearty ed., 2012).

<sup>57</sup> ICCPR art. 19. *See generally* J. PENNEY, INTERNET ACCESS RIGHTS: A BRIEF HISTORY AND INTELLECTUAL ORIGINS (2011).

<sup>58</sup> D. PINK, A WHOLE NEW MIND: WHY RIGHT-BRAINERS WILL RULE THE FUTURE 166 (2006).

<sup>59</sup> J. Bertot et al., *Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies*, 27 GOV'T INFORMATION Q. 264-71 (2010).

positioning systems is another way to combine science and technology with human rights issues. Such amalgam could identify and track human-rights infringements.<sup>60</sup> They offer access to remote parts of the world, providing both new information and a powerful way of communicating it for advocacy, policy debates or litigation. For example, the “Science for Human Rights Project” has been created by the Amnesty International,<sup>61</sup> in order to access conflict zones and gather visual evidence with geo-spatial technologies. “Eyes on Syria”<sup>62</sup> which is the recent work of the Amnesty International in Syria shows the magnitude of these technologies that can track tortures, property destructions, and unlawful executions with great precision. When tackling human rights violations under international law, this approach could have a huge influence. As a result, the progress of scientific technologies can be utilized to secure human rights through various means.

The continuous search for extensive global sustainability is closely bounded to the rights-based approaches to science, technology, and development. Human rights approach to public policy can have a bearing on many domains of science, technology, development, covering housing, surveillance, energy production, climate change, access to fresh water, biological warfare, deforestation, public health, and gender issues. Furthermore, they are at the center of discussions on forming a ‘green’ global economy.<sup>63</sup> The UNESCO’s note to Rio+20, “From Green Economies to Green Societies” looked for reconstructing traditional knowledge on the future of sustainability.<sup>64</sup> It argues that as economies are rooted in the society, obtaining sustainable development demands more than green investments and low-carbon technologies.<sup>65</sup> This initiative entails human rights-based policies that consider not only economic but also social, scientific, and educational attention. Human rights-based approaches should not be used simply as a fancy moral aspect to policy or scientific and technological innovation. They can form the very heart of sustainable futures.

<sup>60</sup> M. Gould et al., *Next-generation digital earth: A position paper from the vespucci initiative for the advancement of geographic information science*, 3 INT’L J. SPATIAL DATA INFRASTRUCTURES RES. 146-67 (2008).

<sup>61</sup> D. Cingranelli & D. Richards, *The Cingranelli and Richards (CIRI) human rights data project*, 32 HUM. RTS. Q. 401-24 (2010).

<sup>62</sup> I. THUESEN, WHAT THEY ALSO DISCOVERED 8 (2016).

<sup>63</sup> P. CARSTENS ET AL., EYES ON SYRIA 6-8 (2016).

<sup>64</sup> UNESCO, FROM GREEN ECONOMIES TO GREEN SOCIETIES: UNESCO’S COMMITMENT TO SUSTAINABLE DEVELOPMENT, available at <https://www.slideshare.net/undesa/from-green-economies-to-green-societies-by-unesco> (last visited Apr. 24, 2018).

<sup>65</sup> I. Gagnidze, *The Role of International Educational Programs for Sustainable Development*, Systems Thinking for a Sustainable Economy, Business Systems Laboratory-2nd International Symposium (2014), available at <http://bslab-symposium.net/Roma%202014/2nd.International.Symposium.Rome.2014.htm> (last visited on Apr. 24, 2018).

## B. Challenges

According to Feenberg and McCarthy, technologies are “biased but ambivalent,”<sup>66</sup> regardless of what effects these technologies have or how they are applied. If human rights are to be entirely preserved using technology, the outcomes will biases on human life, and their association with social, economic, and political means have to be explained.<sup>67</sup>

In many cases, new technologies would have further revealed people to new kind of human rights violations.<sup>68</sup> Since today’s freedom of expression are often limited by the censoring of online content by governments, the transformation of such rights as freedom of expression and right to privacy to the digital world is pretty much evident. Science and technology can bring about severe damage to the ecological and social systems upon which life depends.<sup>69</sup> For example, in order to undermine justice and liberty military technologies can be utilized. Moreover, current technologies, such as geo-engineering or nanotechnology, may even raise doubt what it purports to be human.<sup>70</sup>

However, freedom of expression may also have conflict with subjective decisions made by companies and institutions who design computer algorithms to process the information. One of many challenges in the foreseeable future will be securing those mentioned algorithms that are conforming to human rights criteria.<sup>71</sup>

As evidenced, private data can be easily obtained ever by third parties, including companies, governments, or criminals, so that the right to privacy in the digital world would have got into the spotlight in a great deal recently. Disclosures on the government collection and monitoring of the personal data via large corporations have boosted the awareness level amidst the general public and spurred many players to work for transmuting the right to privacy in the online sphere.<sup>72</sup>

Recent technologies have ascertained new challenges in the society, conflicting

<sup>66</sup> D. McCarthy, *Technology and ‘the international’ or: How I learned to stop worrying and love determinism*, 41 MILLENNIUM: J. INT’L STUD. 470-90 (2013), available at <http://journals.sagepub.com/doi/abs/10.1177/0305829813484636?journalCode=mila> (last visited on Apr. 24, 2018).

<sup>67</sup> D. MCCARTHY, POWER, INFORMATION TECHNOLOGY, AND INTERNATIONAL RELATIONS THEORY: THE POWER AND POLITICS OF US FOREIGN POLICY AND INTERNET 110 (2015).

<sup>68</sup> J. LIPSCHULTZ, FREE EXPRESSION IN THE AGE OF THE INTERNET SOCIAL AND LEGAL BOUNDARIES 291 (2018).

<sup>69</sup> O. Green et al., *Barriers and Bridges to the Integration of Social-ecological Resilience and Law*, 13 FRONTIERS IN ECOLOGY & ENVTR. 332-37 (2015).

<sup>70</sup> K. BRACMORT, GEOENGINEERING: GOVERNANCE AND TECHNOLOGY POLICY 5 (2013).

<sup>71</sup> N. NUNO & G. DE. ANDRADE ET AL., NEW TECHNOLOGIES AND HUMAN RIGHTS CHALLENGES TO REGULATION 244 (2016).

<sup>72</sup> K. Martin, *Understanding Privacy Online: Development of a Social Contract Approach to Privacy*, 137 J. BUS. ETHICS 551-69 (2015).

with both transactional traffic and content data. Personal data is moving continuously and its specificity will be jeopardized. Personal data protection has been formally identified as a human right and such a move has been implemented by the Charter of Fundamental Rights of the European Union.<sup>73</sup> As a matter of fact, it says that everyone has the right to protect his/her personal data.<sup>74</sup> These data need to be treated justly for particular purposes and under the permission of the concerned person or some other authority by law. Everyone possesses the right of having the data which has been collected as regard him or her, as well as the right to have it rectified. Compliance with these rules shall be subject to control by an independent authority.<sup>75</sup>

In addition to the personal data protection, the right to science and its benefits are not yet central to the development ethics.<sup>76</sup> This is partly because development ethicists prefer a language of principles, considered appropriate for capacity building.<sup>77</sup> But a bigger issue is whether and how a human rights-based approach should realize development ethics. Whose rights then does the term refer to? Can the focus on individuals be adapted to the realities of development work at the community level? To answer these questions, legal analysis should also enlighten the term “right to science” or “right to scientific advancement” to ensure the establishment of core human right instruments.

While expressing the concerns about threats to human rights resulting from developments in science and technology, the UN recognized the ambitious human right plan for everyone to benefit from scientific and technological advances. Even though covered by both ICESCR<sup>78</sup> and UDHR, such human right rarely acquired much of consideration from the UN bodies, States, and scholars.<sup>79</sup>

As a matter of fact, the function of science in human society-its advantages and

<sup>73</sup> A. Menéndez, *Chartering Europe: Legal Status and Policy Implications of the Charter of Fundamental Rights of the European Union*, 40 J. COMMON MKT. STUD. 471-90 (2002).

<sup>74</sup> EU Charter of Fundamental Rights, art. 8.

<sup>75</sup> C. Geiger, *Intellectual property shall be protected!?: Article 17 (2) of the Charter of Fundamental Rights of the European Union: a mysterious provision with an unclear scope*, 31 EUR. INTELL. PROP. REV. 113-7 (2009), available at [https://www.researchgate.net/publication/43234343\\_Intellectual\\_Property\\_shall\\_be\\_protected\\_Article\\_17\\_2\\_of\\_the\\_Charter\\_of\\_Fundamental\\_Rights\\_of\\_the\\_European\\_Union\\_a\\_Mysterious\\_Provision\\_with\\_an\\_Unclear\\_Scope](https://www.researchgate.net/publication/43234343_Intellectual_Property_shall_be_protected_Article_17_2_of_the_Charter_of_Fundamental_Rights_of_the_European_Union_a_Mysterious_Provision_with_an_Unclear_Scope) (last visited on Apr. 24, 2018).

<sup>76</sup> D. GASPER, *THE ETHICS OF DEVELOPMENT: FROM ECONOMISM TO HUMAN DEVELOPMENT* 176 (2007).

<sup>77</sup> D. GASPER, *DEVELOPMENT ETHICS* 12 (2010).

<sup>78</sup> M. CRAVEN, *THE INTERNATIONAL COVENANT ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS: A PERSPECTIVE ON ITS DEVELOPMENT* 274 (1995).

<sup>79</sup> E. Waltz, *Universalizing human rights: The role of small states in the construction of the universal declaration of human rights*, 23 HUM. RTS. Q. 44-72 (2001).



invisible threats - has been argued in numerous international meetings. However, they are rarely given any opportunities for a place in human rights forum. Recently, science and technology have been often invoked for solving socio-economic question. In this course, however, there are not a few human rights violations. Therefore, the human right based on the scientific advancement would be a good solution to bolster the nexus between human rights and science.<sup>80</sup>

Furthermore, since each “Sustainable Development Goal”<sup>81</sup> is set to guard human rights, global interconnectedness and technological innovations should be applied to realize Agenda 2030,<sup>82</sup> the question may arise on how the current technologies and their development can contribute to guarantee and protect human rights within the framework of Agenda 2030 for Sustainable Development.

The issues discussed above are the major challenges that must be faced by today’s world in case of defining human rights based on scientific and technological aspects. For ensuring individual’s human rights, new legal instruments are required, which can deliberately deal with the complex issues of technology and human rights.

## IV. Recommendations

The following recommendations can be useful to ensure the issues where human rights intersect with science and technology. These recommendations are not simple to achieve, but they recognize individual human rights are not inconsistent with ongoing scientific innovations. Recommendations are as follows:

- a. The main challenge for the world is to refine the definitions of all human rights in the science and technological context. New technologies have drilled deep inside the current legal environment so that they not only preceded new channels of approaching to conventional human rights, but also composed new rights and freedoms.<sup>83</sup> They are obviously expected to emerge in a constitutional direction and demand additional regulations by governments.

<sup>80</sup> C. Timmermann, *Sharing in or Benefiting from Scientific Advancement?*, 20 SCI. & ENGINEERING ETHICS 111-33 (2013).

<sup>81</sup> R. Kates et al., *What is Sustainable Development? Goals, Indicators, Values, and Practice*, 47 ENVIR. 8-21 (2005).

<sup>82</sup> See United Nations Sustainable Development Agenda, available at <http://www.un.org/sustainabledevelopment/development-agenda> (last visited Apr. 24, 2018).

<sup>83</sup> M. LAND & J. ARONSON, *NEW TECHNOLOGIES FOR HUMAN RIGHTS LAW AND PRACTICE* 26 (2018).

- b. Furthermore, the concurrent human rights structure has to be reexamined to resolve potential negative consequences of technological advancements. As a major global actor, and based on its long engagement to human rights,<sup>84</sup> the global organizations like the UN can play an active role in this way to accustom with current human rights principles to progress in technology.
- c. For better human rights, both the internal and external policies should be adjusted to the digital domain. Since the power exercised across the digital domain is ahead of the territorial jurisdiction of sovereign states, the authority of the countries and world human organizations are not sufficient.<sup>85</sup> Hence, network-oriented and cooperation approach amid the nations are crucial to guarantee enough protection and transition of human rights to the digital domain.
- d. As the right to profit from progress in science and technology may neither be a familiar human right, nor possibly be acknowledged as the most effective in ensuring human dignity, it would be better to remark that its significance is surely rising. Therefore, countries are demanded to accept and follow this right as a component within the set of international human rights norms.<sup>86</sup> Further inspection of the State obligations and normative content of the right with regard to the progress of science and technology may stand as a crux with a view to having this right executed properly and subsequently acquire a universal consent in terms of its usage.<sup>87</sup>
- e. Conceivably for the scientific community, the biggest hurdle is to become a constituency for human rights.<sup>88</sup> A lot of scientists shun such engagement as too 'political',<sup>89</sup> and are consequently in disagreement with scientific beliefs of independent inquiry and impartiality. But such traditions as peer review and precise analysis should be essentially in harmony with the human rights. Certainly, their contributions to human rights are limitless so long as they are applied with scientific integrity. As evidenced through history, human rights cannot be taken as granted; doing that will summon transgressions.<sup>90</sup> Therefore, the scientific community should unite its knowledge and voice to ensure all governments to protect, respect,

<sup>84</sup> D. FORSYTHE, HUMAN RIGHTS IN INTERNATIONAL RELATIONS 277 (2018).

<sup>85</sup> D. Wall & M. Williams, *Policing diversity in the digital age*, 7 CRIMINOLOGY & CRIM. JUSTICE 391-415 (2007).

<sup>86</sup> *Supra* note 67.

<sup>87</sup> G. BROWN, THE UNIVERSAL DECLARATION OF HUMAN RIGHTS IN THE 21ST CENTURY: A LIVING DOCUMENT IN A CHANGING WORLD 65 (2016).

<sup>88</sup> M. SHAPO, UNDERSTANDING THE LAW FOR PHYSICIANS, HEALTHCARE PROFESSIONALS, AND SCIENTISTS: A PRIMER ON THE OPERATIONS OF THE LAW AND THE LEGAL SYSTEM 54 (2018).

<sup>89</sup> L. Rubenstein & M. Younis, *Scientists and Human Rights*, 322 SCI. 1303 (2008).

<sup>90</sup> J. DONNELLY, UNIVERSAL HUMAN RIGHTS IN THEORY AND PRACTICE 77 (2013).

and fulfill human rights.

## V. Conclusion

Recently, it is imperative to clarify the interdependence and indivisibility of human rights and scientific development through digital innovations. In fact, categorizing new technologies into permanent traits would be inappropriate. It happens either when the technology is associated with unsupported democratic virtues or, on the contrary, when digital technologies are perceived as totalitarian tools that put the democracy at risk through control, surveillance and manipulation practices. Nevertheless, as technology cannot be deemed totally neutral, its social, political and economic setting should be also investigated. Since technologies have frequently evolved over the last decades, they have a strong influence on people and society.

In order for human rights approach to be grounded more strongly, human rights should be sensitively responding to the developments of a society. The initial step is to promote regulatory processes with the introduction of digital tools as fast as possible. It will prevent the conflicts and hit the balance between human rights and scientific advancement. Human rights in the digital world will be able to realize people's dignity. Only in this way, the relationship between new technologies and human rights can build a constructive partnership.

