

General Assembly 3

Addressing the role of Artificial Intelligence (AI)
in sustainable development



Forum	General Assembly 3
Issue:	Addressing the role of Artificial Intelligence (AI) in sustainable development
Student Officer:	Yuhan (Charles) Lin
Position:	Deputy Chair

Introduction

As technological advancements develop and revolutionise the world around us, so too does the rise of artificial intelligence (AI) become increasingly more common and prevalent. In the past half a century, we have witnessed an unprecedented amount of innovative integration of technology and AI into every aspect of our lives, from the way we work to the way we interact and communicate with each other. Because of the highly significant role of AI in our daily lives, according to PricewaterhouseCoopers (PwC) research, the global economic growth that AI will provide will reach a total of \$15.7 trillion by 2030. The total industry spending on AI will also increase from \$86.9 billion in 2022 to approximately \$407.0 billion by 2027, according to MarketsandMarkets analysis.

In the pursuit of a more sustainable world, the United Nations created 17 Sustainable Development Goals (SDGs) in 2015, which deems to ‘provide a shared blueprint for peace and prosperity for people and the planet’. This framework serves to guide global efforts towards improving social, economic and environmental well-being while outlining the most important issues such as to ‘improve health and education, reduce inequality and spur economic growth’ to be achieved by 2030. With the implementation of technology, AI will play a crucial role in quickening our pace to achieve the aforementioned SDGs, through methods such as offering innovative solutions by identifying patterns, making predictions on upcoming periods by handling vast amounts of data and accelerating us towards sustainable development. It is useful to note the direct or indirect impact that AI has on the majority of the SDGs, prevalently on quality education (SDG 4), decent work and economic growth (SDG 8) and sustainable cities (SDG 11) because these SDGs can be the most benefitted from the incorporation of AI in our modern society.

However, although the application of AI can enhance both the effectiveness and efficiency environmentally, socially and economically to strive towards sustainable development, there are



certainly many issues that must be addressed and comprehended. Concerns relating to both the ethical and environmental aspects prevail through the usage of AIs. This includes privacy issues and issues regarding the fundamentals of the construction of AIs. Therefore, to effectively and fully utilise the transformative potential of AI to reach its maximum ability, capacity and efficiency, while also acknowledging the fundamental rights of individuals - such as maintaining the highest level of security to safeguard individual's rights towards privacy; thus, appropriate measures and regulatory frameworks must be considered by all delegates.

Definition of Key Terms

Artificial Intelligence (AI)

Artificial intelligence may be defined as 'the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings' according to Copeland. AI may possess characteristics of humans, such as the ability to logically reason or to discover meaning from experience, but the utilisation of AI may enhance the efficiency, effectiveness and productivity when completing a given task.

Sustainable development

Sustainable development is when the current generation is able to meet their needs without jeopardising future generations from meeting their own needs.

Sustainable development goals (SDGs)

The SDGs are 17 goals created by the UN in 2015, targeted to be reached and succeeded by 2030, addressing the most important global challenges and these goals can be split into mainly three development strands: economic, social and environmental development. A list of these SDGs can be found in Appendix I, as the number of the SDGs will be continuously referred to throughout the report.

Algorithmic bias

Algorithmic bias occurs when an AI uses its encoded programs to make unfair decisions and subjective outcomes, and this can be targeted at certain groups or people, leading to discriminatory



practices. Being one of the major issues in the development of AI, this type of bias stems from the ‘reliance on flawed information that reflect historical inequalities’, according to Nicol Turner Lee, or incomplete data.

Job displacement

The workers or people that have lost their jobs involuntarily may be defined as their jobs being displaced. This may be due to several reasons and in this issue specifically, it concerns the loss of jobs due to the replacement of AIs, presenting another issue with the increase of usage of AIs.

Data privacy

Data privacy can be defined as the managing, collecting, storing and transferring of personal data under regulation and law. This involves the safeguarding of data in secure frameworks which also protects individuals’ rights to privacy.

Machine learning (ML)

Machine learning can be defined as when a program or artificial intelligence has ‘the capability to imitate intelligent human behaviour’ and improve its performance from experience without being explicitly programmed to do so, according to Brown. This phenomenon occurs in instances such as application suggestions and recommendations.

Ethics

Ethics is the study of moral principles, values and judgements and can be regarded as of extreme importance when evaluating what is right or wrong and good or bad. One of the most important contexts is the process of decision-making in AIs, which requires fair and unbiased algorithms that can guide AIs in making decisions to meet established ethical standards.

Less economically developed countries (LEDCs)/Least developed countries (LDCs)

Less economically developed countries or least developed countries includes a total of 47 countries: 33 in Africa, 14 in Asia and 1 in Latin America. According to the UN, they can be characterised to be ‘confronting severe structural impediments to sustainable development’ and are vulnerable to ‘economic and environmental shocks’. These countries benefit the least from the usage of AIs and their societies and become even more marginalised during the development of AIs.

General Overview

As previously mentioned, the use of AI in the strive towards sustainable development can quicken and revolutionise the efficiency and effectiveness towards reaching the SDGs by 2030. The use of AI in enabling handling, managing and understanding large data sets may be considered to be one of the most useful applications of AI, offering immense potential in all three strands of the SDGs (social, economic and environmental). Socially, AI can attempt to reach SDGs 1, 3, 4 and 10; economically, SDGs 8, 9 and 11 can be improved; and environmentally, SDGs 11, 13 and 15 can be upgraded. The potential of AI in providing innovative solutions towards complex situations offered by the SDGs is vast. However, with the plethora of positive possibilities of the deployment of AI in improving sustainability, both ethical and environmental implications of its usage must be considered. Ethical issues related to job displacement, algorithmic bias and privacy issues must be considered. In addition, the lack of accountability, regulations and legal framework, risks regarding machine learning, high concentration of power amongst non-governmental organisations (NGOs) and the possibility to increase the number of marginalized communities in especially less economically developed countries (LEDCs). Further, environmental issues include the use of non-sustainable energy sources and the contribution of carbon footprint to the development of AIs.

Therefore, while it is important to differentiate and recognise the three sectors of sustainability that AIs can enhance and amplify, leading to a more sustainable world; it is also of no less significance to also distinguish, understand and evaluate the measures that must be taken in

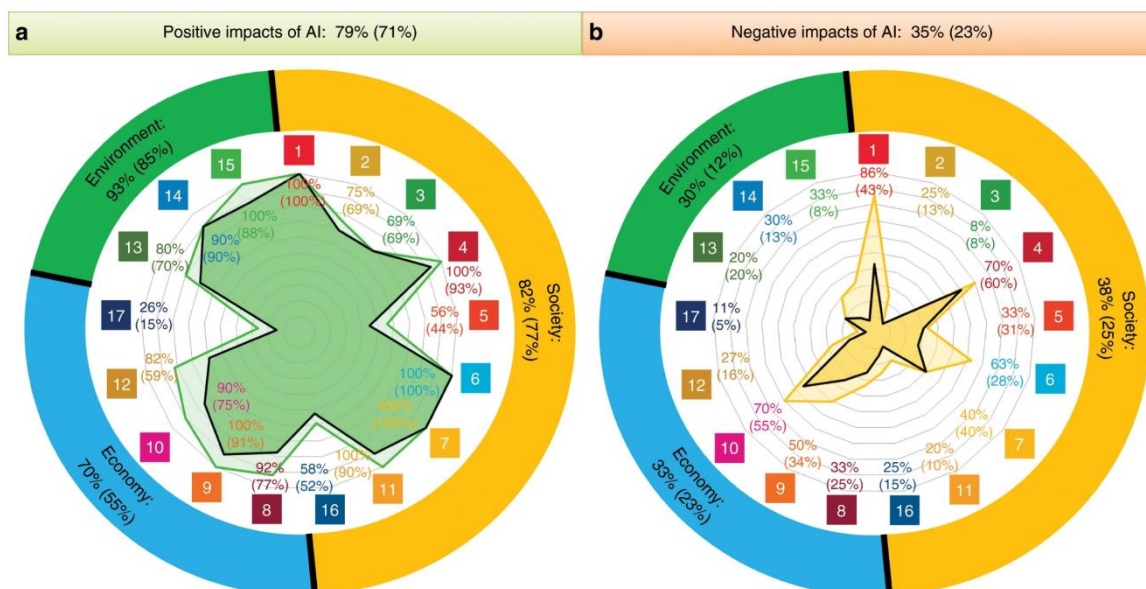


Figure 1: A diagram showing the positive and negative impacts of AI on SDGs ("Summary of Positive and Negative Impact of AI on the Various SDGs", Nature News, <https://www.nature.com/articles/s41467-019-14108-y/figures/1>)

order to maintain a robust and safe usage of AIs, while especially emphasising the preservation of ethics and the fundamental human rights.

Potentials of AI

The potential of AIs is vast, and these possibilities mainly are composed of three categories, the effect of AI on our global and local society, economy and environment.

Socially, AIs can be split into three branches: natural language processing (NLP), computer vision and speech recognition. All three of these features include machine learning (ML), meaning that over time, these systems can process more and more data and become more and more viable and useful for humans. First, NLPs can analyse text messages and human language, making them especially useful for protection purposes. According to Inbenta Team, NLPs can detect spam in emails, classify emails and detect fraud. On a personal scale, because NLPs are specific to the detection of language used by humans, they have the capability to separate junk or spam emails by searching for linguistics that characterises phishing emails – normally emails that are generic and use bad grammar. On a broader scale, the use of NLPs can catch fraud in insurance systems according to Rajasekera. Furthermore, according to Rajasekera, computer vision can identify contents, so that ‘computers [can] “see” images and videos’. This allows a range of applications to be possible, including autonomous vehicles, face recognition, medical imaging and industrial quality control. The use of computer vision increases the efficiency of ‘smart’ cities, improving traffic and reducing crime rates. Ultimately, speech recognition is the algorithm that helps AIs understand human sounds. There are also vast applications of this, including the facilitation of education and literacy programs, especially for regions of lower literacy rates, accessibility for individuals with disabilities and impairments, and assistance with healthcare systems, enabling more effective medical transcriptions and personalised healthcare. All three of these algorithms help to strive for sustainable development for society, through especially SDGs 1,3,4 and 10.

Furthermore, economically, AIs can increase efficiency and productivity in both local and global firms and industries. Globally, it is estimated that the use of AI could ‘double annual global economic growth rates’, according to Szczepański. This could happen through an increase in labour productivity due to the increase in efficiency and innovative technology of AIs. This could also happen due to the use of ML because AIs can solve problems and become self-learning machines. It is shown that by 2030, ‘the accelerating development and take-up of AI’ will boost the global GDP by



14% according to PwC. It is estimated that both North America and China will likely experience the largest increase in GDP, by 26.1% and 14.5% by 2030, respectively. On a more

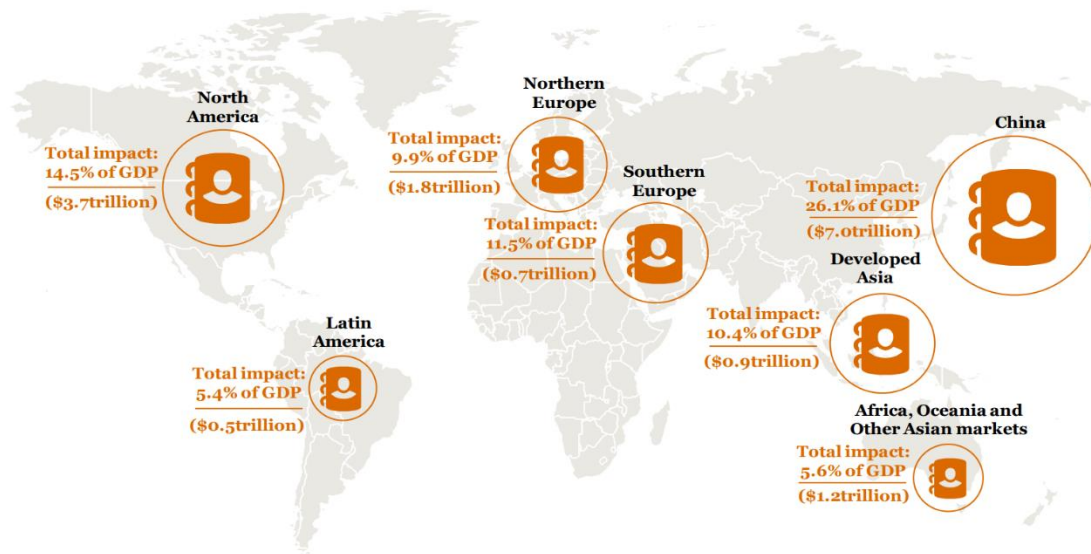


Figure 2: A chart showing the geographic impact of the development of AI on the respective GDP predicted in 2030
 ("Economic impact of AI by geographical region", PwC, <https://www.pwc.co.uk/economic-services/assets/macroeconomic-impact-of-ai-technical-report-feb-18.pdf>)

local scale, AIs have also improved the production lines of firms. Routine tasks such as transportation systems may be replaced by the use of autonomous vehicles, and the manufacturing process may be replaced by AIs rather quickly. The use of robots and machinery can enable the workforce to perform jobs at a higher quality and more efficiently; therefore, AIs will streamline the productivity of firms and increase the rate of economic growth. Moreover, AI tools can help and support small and medium-sized enterprises (SMEs), increasing the amount of innovation and entrepreneurship, allowing more start-ups of businesses through the enhancement of 'efficiency of public administration, courts and tax authorities' and improving 'SMEs' access to finance', according to OECDiLibrary. By searching through large data sets, AIs can also identify economically-vulnerable populations in LDCs and facilitate people in need with social welfare programs provided by the government. Lastly, AIs can augment the contribution and development of smart cities. This can be recognised through the optimisation of transportation systems, urban planning through the analysis of Internet of Things (IoT) devices, and increasing the social well-being of cities. Overall, economically, the use of AI can benefit the population in both a local and global perspective, enhancing the SDGs of 1, 8, 9, 11 and 17.

Environmentally, one of the major issues is the development and effects of climate change. One way is through the conservation of biodiversity, as the use of AI can monitor species and habitat

and their variations. Through the monitoring of habitats, endangered species can be quickly detected and illegal activities such as deforestation can also be recognised and sanctioned. Analysis of datasets through satellite imagery can further inform conservation efforts on the environmental changes occurring. According to Vinuesa, the use of satellite imageries can also allow AIs can communicate their understanding of types of vegetation, allowing humans to detect 'desertification trends over large areas.' Through evaluation of patterns, AIs can recognise and predict future weather changes, which can then be communicated to vulnerable areas especially in LDCs to recommend appropriate measures to be taken to reduce the negative impact of the extreme weather. Another major issue is the fact that the world revolves around the use of energy sources, thus it becomes increasingly important on the subject of climate change. Through the use of AI, the energy consumption of buildings, industries and transportation systems can be optimised by the understanding of energy usage patterns, thus reducing the total greenhouse gas emissions. Lastly, sustainable food production can also be achieved through the use of AIs in agriculture. AI can monitor crop health, optimise fertiliser use and detect signs of diseases on crops. This can thus increase agricultural productivity and reduces the total amount of waste. This increase in food production alleviates the probability of extreme hunger in LDCs. Overall, the use of AIs on environmental development can increase the efficiency towards SDGs 1, 2, 7, 11, 13, 14 and 15.

Ultimately, as shown, the positive impact of the use of AI is plentiful and the numbers of SDGs that AIs can enhance is immense. Through the use of AIs, not only will the world be benefitted environmentally, which is further elevated by the greater social well-being of the global population, increasing wealth and economic stability while reducing crime rate and greenhouse gas emissions. However, these three factors are not the only implications of the implementation of AIs, because the presence of considerations both ethically and environmentally may pose threats towards the global community.

Important considerations of AI

One major implication of the US of AI is ethical considerations related to the fundamental creation of the algorithms. Because AIs are all initially coded by humans, humans themselves always have biases which are passed onto the algorithms and AIs. This leads to the creation of algorithmic bias, forming either intended or unintended discriminatory outcomes for certain groups of people. This is normally caused by an incomplete dataset or an unfair input by developers, and thus require representative datasets instead to mitigate this bias. Furthermore, important decision-making



processes require a significant amount of attention. Although AIs have diverse usages, they will always be required to decide all subject matters; therefore, AIs also are responsible for several moral decisions such as those related to criminal justice. Because making no erroneous decisions is challenging, harm could be caused by AI when systems fail to make moral or ethical judgements. These incidents can then cause confusions on who is accountable and liable for this failure. With AIs being owned by privately run companies, accountability might be severely difficult to track down due to the lack of transparency to safeguard personal information and data, therefore introducing several legal elements in this process. In addition, the privacy of the data itself might also be another concern. Because the increase in AI relies on the collection and storage of large amounts of data, this may include personal data to increase AI's efficiency in processes such as analysis and recommendation. Since these data are personal, a major risk is the revealing, sharing or theft of this data, violating the fundamental individual's right to privacy.

Because there are no current guidelines created by the government or any regulatory bodies, the development, deployment and usage of AI are completely limitless. This becomes an issue especially when the programmed AI are all owned by singular NGOs who can own the majority of this type of technology, while others do not have this access. This allows a monopoly to occur both on the market and for the specific type of technology, creating a significant risk. Without regulations, the NGOs can develop dangerous and anti-humanitarian weapons or viruses, leading to possible cyber-warfare in future. The development of technology and AI has also opened a path towards cybercrimes, which can be seen to be much more prevalent for SMEs, larger businesses and even individual households. This can be seen by the 54 million US citizens affected by cybercrime during the first half of 2022, and the 40% of UK businesses to experience a cyberattack in 2022, with an average of cyberattacks once a week, according to Griffiths.

On the broader societal level, job displacements may occur. Because AI can complete repetitive work more efficiently, those doing pure labour work in industries such as the manufacturing process, will be replaced. This surges unemployment and possibly increases the poverty rate of certain regions in LDCs. While AIs can optimise energy usage and reduce greenhouse gas emissions, 'efforts to achieve SDG 13 on climate change could be undermined by the high-energy needs for AI applications', according to Vinuesa, 'especially if non carbon-neutral energy sources are used.' This environmental consideration may have devastating impacts due to the great number of AI to be developed in the future. Ultimately, SDG 10 on inequality could further be exacerbated, as the employment of AI may be recognised to be merely effective in more economically developed



countries (MEDCs), and less so in LDCs. This increases the wealth disparity between global regions and thus worsens the economic equality within countries and around the world.

Ultimately, one of the most concerning issues with AI is the lack of transparency of some already developed and developing AI. Through both features of ML and deep learning (DL), AI has become advanced enough to create communication systems that cannot be understood by humans but only by the AIs themselves. This can be seen when in 2017, two AI chatbots created by Facebook started communicating with each other, without humans being able to understand the conversations, according to Griffin. With the presence of a lack of transparency and human knowledge and the new algorithms of both ML and DL, it becomes an overwhelming issue when attempting to understand the risks of the development of algorithms in AIs.

Major Parties Involved

United Nations Education, Scientific and Cultural Organisation (UNESCO)

With a specific and strong emphasis on ethics, UNESCO brings ‘international effort to ensure that science and technology develop with strong ethical guardrails’, allowing the usage of AI to be both more sustainable and both more moral and ethical. In November of 2021, UNESCO produced the first-ever document and guide on the ethics of AI, called The Recommendation on the Ethics of Artificial Intelligence, which was acclaimed by 193 Member States at UNESCO’s General Conference and can be found in Appendix II.

Organisation for Economic Cooperation and Development (OECD)

Through analysis and evaluation of the socio-economic impacts of AI technology on governments and local societies, the OECD focuses on the creation of policy frameworks and guidelines which allows the safer adoption of AI’s integration into sustainable development. The OECD AI Policy Observatory (OECD.AI) allows governments to understand different policy initiatives ‘in over 60 countries’, and the OECD Principle on Artificial Intelligence respects the fundamental values and rights of humans, which was approved and incorporated in 2019 in the OECD Council Recommendation on Artificial Intelligence, which can be found in Appendix III.



AI for Good

Hosting annual summits in Geneva, Switzerland, AI for Good has the goal to ‘identify practical applications of AI to advance the SDGs and scale those solutions for global impact’. Organised by the International Telecommunication Union (ITU), this organisation is in partnership with 40 UN Sister Agencies, creating a platform which integrates specifically AI into advancing towards the UN SDGs.

World Economic Forum (WEF)

With multiple current initiatives, the WEF is ‘dedicated to promoting safety and accountability as key principles of AI systems’. With goals including facilitating collaborations through summits and meetings and especially more responsible and careful use of AI applications, the WEF works with various governments to develop standardised guidelines, especially highlighting the importance of fairness, transparency and inclusivity.

United States of America (USA)

Playing one of the most significant roles in the advancement of AI technology, the USA has implemented several aspects of AI into its current society. The US government aims to release more initiatives to support its AI research while also assessing its challenges with AI applications, through the document National Artificial Intelligence Research and Development Strategic Plan, updated recently in 2023. It further emphasises the need for collaboration, while also noting the possible ethical considerations of AI.

Timeline of Key Events

Date	Description of event
1950	Publication of ‘Computer Machinery and Intelligence’ by Alan Turing, exploring the idea of the ‘The Turing Test’, evaluating machine’s capacity to think like a human
1964	Development of a NLP computer program called Eliza which interacted with humans through conversations, creation by Joseph Weizenbaum
1970s	A period known as AI winter, characterised by people’s lack of interest in AI, limiting the progress made in the field



1997	Introduction of Deep Blue by IBM, which showed decision-making capabilities of AIs after beating reigning chess world champion, Garry Kasparov
2005	Emergence of ML algorithms which revolutionised AIs by learning through given data
2009	Foundation of the United Nations Global Pulse, which is an initiative to explore the potential of AI capabilities in sustainable development
January 1 st , 2016	The creation of the 17 SDGs to be reached by 2030
June 7 th - 9 th 2017	First global summit of AI for Good
2018	Creation of the OpenAI's AI model GPT, demonstrating the extraordinary NLP and ML capacities with given data

UN involvement, Relevant Resolutions, Treaties and Events

- Report of the High-Level Committee on Programmes at its 34th Session, 26-27 September 2017 (CEB/2017/6)
- Impact of rapid technological change on the achievement of the Sustainable Development Goals, 22 December 2017 (A/RES/72/242)
- Report of the High-Level Committee on Programmes at its 36th Session, 9-10 October 2018 (CEB/2018/6)
- OECD Council Recommendation on Artificial Intelligence, 22 May 2019, (OECD/LEGAL/0449)
- Input to the UNESCO Ad Hoc Expert Group on the Ethics of Artificial Intelligence, 29 July 2020
- AI for Good Annual Global Summit by ITU in Geneva (annually)

Previous Attempts to solve the Issue

Attempts to regulate and control the issue of privacy and personal data have already been made through several attempts. One attempt is through the European Union's General Data Protection Regulation (GDPR), which encouraged the implementation of regulatory frameworks in many countries. However, even though these regulations did address the concern of specific AI applications and data protection in these applications, the rapid development of AI outpaced these



efforts. An evaluation of this can be found in Appendix 4. Therefore, the GDPR produced mixed results in terms of its success, and to avoid producing similar results, delegates should aim for specifically viable and long-term solutions, as suggested below.

Possible Solutions

As aforementioned, the transformative potential of AI is vast, but to efficiently benefit from the implementation of AIs, this issue can be tackled from two different perspectives: the proliferation of AIs socially, economically and environmentally; and, the aim to solve all ethical and environmental considerations.

The majority of the need for proliferation can be recognised to be within many LDCs, and therefore measures to increase AI usage and efficiency should be aimed at these Member States in order to bridge the gap between the technological disparity. The main issue is the lack of knowledge and economic funding that some governments receive for the development of AI. Delegates should consider how more knowledge and applications on AI may be communicated and how funding may be directed specifically towards the SDGs, even in corrupt governments. Another important factor to analyse is where this funding will be originated from.

At the core of all concerns with AIs, a balance between the innovation of AI in enhancing sustainable development must be reached with the protection of private information for public trust and interest. In order to accomplish this, legal and ethical standards and policies must be established. The defining and increased incorporation of these frameworks can solve multiple concerns, but delegates should consider who should have the power to create these regulations to guarantee ethical decisions to be made by AIs. Further, moral guidelines may also aim to increase the transparency of algorithms to ensure the safety of the public and to eliminate biased judgements caused by algorithmic bias. Delegates should also consider how security may be ensured to safeguard personal data and how to balance this safety with control over this data.

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Appendix

Appendix I:

United Nations' Sustainable Development Goals (SDGs)



Appendix II: The Recommendation on the Ethics of Artificial Intelligence by UNESCO:

<https://unesdoc.unesco.org/ark:/48223/pf0000381137>

Appendix III: OECD Council Recommendation on Artificial Intelligence:

<https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449>

Appendix IV: Study on: The impact of General Data Protection Regulation (GDPR) on artificial intelligence:

[https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641530/EPRS_STU\(2020\)641530_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641530/EPRS_STU(2020)641530_EN.pdf)

