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Background: Inputs are drawn from discussions at the launch of the programme ‘AI for SDGs’ organized by AI Policy Labs in partnership with Albert Hirschman Centre on Democracy, Graduate Institute Geneva on 15th December 2020. Details are available at www.aipolicylabs.org. Discussion was joined by **Nikhil Seth**, Assistant Secretary General, United Nations | Executive Director, UNITAR; **Ambassador Ruchi Ghanashyam**, Former High Commissioner of India to the UK, South Africa and Ghana & Former Minister, Permanent mission of India to the United Nations; **Kali Taylor**, Advisor SDG Lab, UN Geneva | Policy Advisor, Geneva 2030 ecosystem; **Ambassador Amandeep Gill**, Director, I-DAIR | Former Executive Director of the Secretariat of the UN Secretary-General's High-Level Panel on Digital Cooperation; **Birgitte Andersen**, CEO & Co-Creator Big Innovation Centre (Founding Secretariat, UK All-Party Parliamentary Groups on Artificial Intelligent & Blockchain); **Uday Nagaraju**, Founder & Director, AI Policy Labs | Co-founder & Executive President, Global Policy Insights; **Jérôme Duberry**, Research Associate & Lecturer, Graduate Institute of International and Development Studies, Geneva | Lead Researcher SNF project Augmented Democracy, UNIGE, CCDSEE, GSI; **Swati Agarwal**, Head of Programmes& Partnerships, AI Policy Labs | Programmes& Research Manager, Global Policy Insights)

Viewing AI from the Prism of SDG Principles

In the last 17 years, the global population has tripled from 2.55 billion in 1950, to 7.8 billion in 2020. During the same period, the per capita income of the global citizens has grown five folds. The wealth as in GDP has increased 21 folds. One may infer that we are indeed living in an increasingly unequal world. And COVID-19 has exacerbated these inequalities, even further. The SDG agenda conjoined to the Paris Agreement on climate change are the most profound articulation of human hopes, human aspirations, human dreams and human fears. They were built and agreed with a robust engagement of various actors in society, business, academia, civil society and governments. And what was created over five years ago have passed the test of time. They remain as relevant today as at the euphoric moment when 170 heads of state and government signed up on them in 2015. The principles enshrined in the SDGs are even more relevant as we grapple with the governance of AI.

When one thinks through the applications of AI for accelerating and achieving the SDGs these very principles at the heart of SDGs must be applied to the application of AI. These principles include the universality and relevance to all countries; integrated approaches to economic, social and environmental issues; and the hope of creating peaceful and just societies. The overall mission of the SDGs was to end poverty in all its forms, everywhere; to reduce inequality of all kinds; to end corruption and improve institutions. With the overall thrust on safeguarding our planet for the present and future generations all these were captured in a set of 17 goals, 169 targets and 240 indicators. Studies have shown that AI could facilitate at least 134 goals (79%) of all SDGs, usually through technological improvements, which could overcome some of the current limitations.

Therefore, to address the question of how AI applications must be developed, applied and deployed, the very format in which the SDGs have been created are a very useful guide as the principles for analyzing the role of AI in promoting them. Some key questions while deliberating the application of AI therefore must be to understand:

1. Are the applications of artificial intelligence increasing inequality?
2. Are they benefiting the poorest?
3. What is the impact on employment livelihoods and decent work?
4. What is the impact on gender inequalities?
5. What are the impacts on institutions of governance?
6. Is the way in which the AI development and use is being governed, the right way?
7. What is the impact of the application on environmental sustainability?

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Therefore, the prism, when one looks at applying AI to achieve SDGs acceleration is through the prism of these principles that are highlighted. Being 5 years down the road since the SDGs were adopted, not much has been achieved – 80 million people have been pushed back into extreme poverty, human rights abuses have increased especially of women, and child hunger has gotten worse. It is extremely imperative to explore and address, how are the application of AI is going to change this situation and change it fast.

Several ‘successful’ examples of AI applications have been witnessed across the globe and some SDGs have demonstrated higher potential in AI application while some others can be viewed as derivative.

1. **Hunger & Sustainable Agriculture:** AI has great applications for sustainable agriculture. Development of precision agriculture, especially smart agriculture in water stressed regions applied for healthier crops, pest control, monitoring data for farmers improving tasks, and for the entire food supply chain are few instances. The combination of artificial intelligence identification technology and intelligent robot technology can be widely used in agricultural planting, farming, picking and other scenarios, greatly improving agricultural production efficiency, while reducing pesticide and fertilizer consumption. Smart wearable products are mainly used in animal husbandry, which can collect individual information of livestock and poultry in real time, identify the health and feeding status of livestock and poultry through machine learning technology, so as to obtain corresponding treatment in time.
2. **Health & Treatment:** In health on the diagnostics and on treatment, AI has tremendous applications as it is helping in making accurate diagnosis. AI helps doctors monitor the details of whether there are infection symptoms, make quick diagnoses, and help patients get to the hospital at a critical moment. To take few examples, more than 400 million people worldwide afflicted with diabetes could in theory be helped by an AI enabled wearable device that can already detect potential early signs of diabetes, through heart rate sensor data. AI could also analyze mobile phone images to distinguish between a benign skin lesion and melanoma, potentially helping millions of rural dwellers who have no easy access to dermatologists. Such applications may potentially help developing countries more where the ratio of healthcare professionals to patients is very low. AI can also be used in public places to track the use of mask, control the distance between people and broadcast health advice to a wide audience.
3. **Education:** AI can individualize education and thereby help distressed students which is called a special education. Additionally, most of the administrative duties and levels can be automated for a quick turnaround of results by bringing in process transformation. AI can help solve the problem of uneven distribution of educational resources. Natural language, computer vision, and deep learning can help teachers answer routine questions from students or serve as teaching assistants, allowing them to spend more time on more valuable aspects of teaching.
4. **Economic Growth:** Economic growth which is another objective of SDGs can be attained through the productivity enhancement. It is estimated that the widespread applications of AI could raise GDP growth by 1.5% annually. And by 2030, there would be an additional 13 trillion dollars of GDP globally, because of wider AI applications. From sales and manufacturing to distribution, AI connects consumers, improves experience, and helps companies re-examine their manufacturing processes and production lines, and optimize them accordingly to reduce costs and waste of resources. Unmanned deliveries using deep learning technology deliver the last mile of the retail business chain, avoiding obstacles and dealing with the absence of the consignee.
5. **Smart Cities & Energy:** AI can be crucial to attain safer cities, for improved delivery of services of public amenities, applications in smarter energy use, the applications in smarter water use – which also comes under the rubric of sustainable consumption and production. In 2018, IBM’s DeepMind began to apply machine learning algorithms to Google’s wind power capacity in the central United States, enough to power medium-sized cities. Using weather forecasts and a neural network of turbine historical data, it could reasonably predict wind energy output up to 36 hours in advance. Compared with the baseline scenario, in less than a year, DeepMind's machine learning algorithm increased the value of its wind energy by about 20%. When there is a demand/supply gap, AI can achieve more efficient distribution, and this can save other power consumption for future use.

6. **Disaster risk reduction(DRR) & Climate Change(CC):** In the case of DRR and CC, examples abound UNOSAT satellite division of the UNITAR is providing and delivering imagery analysis to governments and other humanitarian actors by introducing AI in emergency mapping services - this optimizes the response time, reduces the loss of life, and the loss of structural damage for the benefit of local populations. Images received from the European Space Agency are automatically downloaded, rectified, and processed to output disaster maps with limited human intervention, to achieve response is in real time. AI geospatial mapping systems are also helping in natural resource management. These provide clear images for policy-makers to support addressing inequalities over the access and use of land, and through better management of land and applications in agriculture, forestry and fishing. They can help develop transparent and accountable institutions. AI capabilities are being used in various ways to further societal goals.

Confronting the Potential Challenges of AI applications

While several applications of AI exist and have been experimented with, there is an ever-present danger that the benefits of AI will not automatically go to equally within and between countries. AI models could extract and apply human biases from data, potentially exacerbating inequality and doing the opposite of promoting fairness. Intelligent recommendation system, for example, may show obvious deviations from men and women and races of different skin color due to data bias.

Currently, AI development largely reflects private interests and governments have a special responsibility for inter-government collaboration. History of AI development and applications points to the pioneering work done in the private sector, especially by the largest companies in the US and China. In the private sector, this has been mainly on account of increasing shareholder value, greater presence, and of retaining strategic technological dominance in the system. Besides, developments in the defence sector and the geostrategic areas, including things like cyber warfare have been the forces pulling the development of AI. These are the forces which have pushed the way in which AI has developed over the last 10-12 years. But the primary impact today has to come from the public goods captured in the SDGs - energy, water hunger, poverty, greater equality, environmental management, the existential crisis we face from climate change etc.

Besides, due to the lack of effective supervision and ethical restraint mechanism, some enterprises do not pay enough attention to privacy protection, ethics and other issues, resulting in negative influence of technology application, so that some artificial intelligence technologies and practices may have a certain counter-promoting effect on the implementation of the SDGs. **There is an urgent need for a responsible; democratic and socially accountable; ethical including on data security; and transparency in AI based decision making.**

This is crucial to address because AI is bringing about change at a rampant scale. For instance, looking at the impact of AI on productivity— massive increases in productivity will have dramatic consequences on security, safety and on competitiveness. Besides, there will be substantial changes in economic structures – which will reform the future of work –lead to the development of new goods and services – due to which entire industries will either be relocated, transformed or obliterated. This race will raise problems such as defining fair competition rules for instance. Similarly, many more question will arise when we critically analyze the applications of AI and the changes brought about by it in context of each of the 17 SDGs.

8Point Recommendations laid out by the Panel

Therefore, the thrust for AI to accelerate SDGs needs a commitment from all - governments, academia, civil society and businesses. Few recommendations that emerged from the discussions are to:

1. **Educate & Involve Policy Makers:** Regulatory oversight should be preceded by regulatory insight, where policymakers have sufficient understanding of AI challenges to be able to formulate sound policy. Developing such insight is even more urgent than oversight, as policy formulated without understanding is likely to be ineffective at best and counterproductive at worst. It is important to identify how to get governments and stakeholders outside the private sector engaged in the applications of artificial intelligence to bring about the primary focus and get people interested in the potential that AI has for good.

2. **Measure Private Sector Investments:** One needs to understand that investment going into AI is coming from the private sector. Therefore, one it is a good opportunity for the government and policy makers to integrate these applications in the best possible manner to increase quality of local services, and well-being. It is crucial to understand who is doing what, how much investment the private sector is putting into AI application, and what are the potential possibilities for collaboration, such as to avoid wastage of research funds. Therefore, more people in different regions must be made aware about the latest international AI technology trends, including the design, development and use.
3. **International Cooperation for benchmark setting:** International co-operation is essential to develop the popularization of the goods of AI and to mitigate the negative impacts that AI can potentially have. Besides, successful use of AI would require new kinds of benchmarks. And these benchmarks need to go beyond technical accuracy to be able to determine, on real time basis, whether a technological solution is working or not. This will require a mindset shift from the current hierarchy of evidence and the way we approach scientific evidence today. There also needs to be a technology watchdog to ensure compliance of rules, benchmarks and monitoring.
4. **Cross data Infrastructure:** Setting benchmarks for data collection, storage and utilization is important and for getting to the next level, decisive action by governments, NGOs, philanthropists, tech companies and organizations is crucial. It is important the stakeholders that collect large amounts of data are brought together. Data accessibility for instance could be improved if collectors and generators of data by the government or companies grant greater access to those seeking to use the data for public service, while addressing of course privacy concerns.
5. **Matching skill requirements:** Talent shortage may require some conscious acts of altruism by technology companies, and others who employ highly skilled AI talent. There is already an increasing talent shortage in government, companies in developing countries and other areas that need critical skill mapping, identification and accessibility through talent exchanges to improve AI capabilities across nations.
6. **Measures of Ethical Scrutiny:** It is necessary to formulate legislation on AI transparency and accountability, and determine the ethical standards that AI-based technologies should comply with, else it could contribute to unintended and unwanted outcomes like growing inequality, or even political instability. It has also been found that SDG targets could be helped and or hindered by AI, depending on how the technology is applied across countries with different cultural values and wealth. There is a need to encourage the development of applications and push for them to be used at scale in a responsible and thoughtful manner. Ensure that AI applications that target the Sustainable Development Goals are open and clear in terms of guiding ethical principles, and also clearly indicate how they are consistent with SDG principles.
7. **Multi-Stakeholder Engagements:** Engagement of actors across the public and private sectors is extremely important to bring about facilitation and to build the capacity in the global south. Maintaining the diversity of participants not only means different ideas, but also collecting problems and solutions generated in the actual region and social context, so that the technology can be better used in practice. Therefore, engagement of global south in developing, experimenting and implementing AI solutions is imperative because if AI and data work only for a few companies and a few geographies, then there are going to challenges. Leveling the playing field is extremely important for democratizing AI use.
8. **Developing library of cases:** Developing a library of cases and putting specific instances of how AI can actually be used in different fields of work, which will make the concept of AI itself more tangible to policymakers.

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AI Policy Labs is an initiative by Global Policy Insights which aims to explore emerging technologies and assess the impact of intelligent automation, digitalisation and Artificial Intelligence on policymaking, implementation and governance. AI Policy Labs works with a strategic advisory board of policymakers, academia, AI experts, and International leaders to look at governance, ethics, and models of utilising AI for social good. Visit www.aipolicylabs.org for more details.

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