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Policy Inputs from the Young UN Policy Lab

prepared by the Young UN



Young UN
Agents for Change

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Methodology and guiding questions

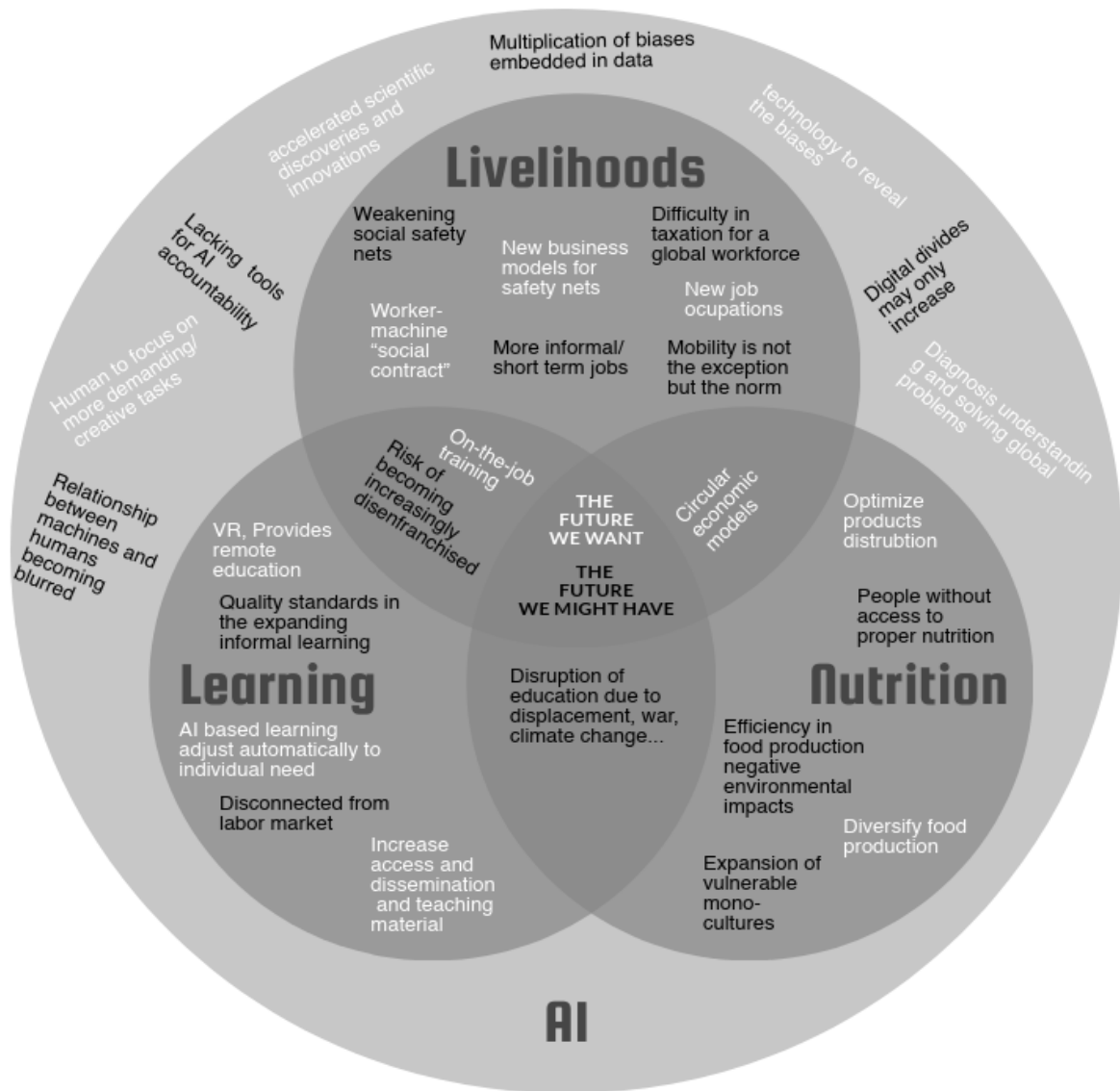
1. Following a pilot in October 2017, the Young UN Policy Lab was launched in February 2018 to provide an input to the April 2018 HLCP meeting on AI, the future of work, education and food. The below set of guiding questions was sent to over 700 members across 80 duty stations, requesting joint or individual inputs. Two workshops were held in New York as well as other moments of reflection in other duty stations. In March, inputs were synthesised before a zero draft was shared for a round of comments and revisions. The HLCP secretariat was consulted and engaged throughout.
2. The Young UN Policy Lab will continue to serve as a tool for the United Nations to seek innovative ideas from its most valuable resource, its employees (See section IVA for more details of how). Young UN remains open to new requests to contribute with ideas and innovative ways to implement the reforms of the Secretary-General and the mandates from Member States.

Guiding questions to the network

- A1.** What aspects/trends are missing in the attached HLCP Watching Brief? Which megatrends, and interlinkages, will require particular attention?
- B1.** What important dimensions will shape the future of food, education, work, and artificial intelligence (as a cross-cutting issue)? What are the socio-economic implications of frontier technologies across these four issue areas? (See HLCP Background for more information)
- B2.** What do these developments mean for the UN and the achievement of the SDGs?
- B3.** What kind of policies/programmes (or new ways of thinking or doing business) can the UN put in place to be fit for the future? What new modalities could be useful to better address the interlinkages between global trends and challenges, and how can we adjust our daily work so we are not left behind (for example: have you had experience with foresight techniques or similar methods)
- C1.** What is the role of youth across all of the above?

I. Frontier technologies - How Young UN sees it

THE WORLD [2030] and beyond



3. In the coming years, the megatrends which are becoming apparent today will be amplified. Rapid technological advancement, Artificial Intelligence (AI) development, climate change, and migration will continue unabated, yet in each case, there is an opportunity to address these challenges by focusing on the drivers of change. Frontier technologies, especially big data and AI, have the potential to make or break the world order. The technology revolution could be a game changer in terms of SDG achievement, and transform our global institutions, or it could entrench injustice, poverty and increase inequality. It is therefore critical to harness frontier technologies for public good, including through a people-centred and inclusive approach and guided by ethical, human rights and gender equality standards.
4. Frontier technologies are likely to produce societal, economic, and political transformations that we cannot yet fully comprehend. Almost every existing occupation can and will be partly subject to automation at some point in the future. The jobs most prone to automation include routine activities like data collection and processing. But AI's role in the workplace will deepen with time through machine learning and predictive modelling, building its predictive analysis capabilities and decision-making functions. AI will not become a new industry; it will penetrate and permanently alter every industry in unforeseen ways. AI will reshape employment across advanced and developing economies alike, yet the future of work will be but one small part of a much larger story. The maxim "what is simple for us is hard for even the most sophisticated AI; conversely, AI often can do easily what we regard as difficult." This suggests that the policy response needs to determine when and where AI should and should not be deployed.
5. What is different about the coming revolution is that unlike in previous creative-destruction cycles, tasks executed in traditionally middle-class jobs are being automated. The effect is the potential decimation of the middle-class income, regardless of education and skills. This could displace large amounts of labor, for instance in paralegal work, accounting, and back-office transaction processing. In some industries, employment levels are not condemned to terminal decline, as workers may perform new tasks (such as moderation, resolution, ethics). Managing the process ahead will involve reinvesting productivity gains to create new innovations, jobs, and industries, and driving economic growth as older, less productive jobs are replaced with more advanced occupations. AI can be an aid in diagnosing, understanding and/or solving global challenges with large multiplier effects and spillovers into other sectors (e.g. accelerated scientific discoveries and innovation, migration).
6. The four areas identified by the HLCP for "deep dive" analyses, AI, the future of work, education and learning, and nutrition and food are therefore intrinsically interlinked and centre on the **"world we want" in 2030 and beyond** (see visual on p. 3). As it already cuts across many aspects of daily life, this paper views the future of work, learning and nutrition through the lens of AI. In a bright future, policy makers, the private sector academia, tech communities and civil society will have tapped into the potential of frontier technologies to create **sustainable livelihoods**, in which decent occupations are accompanied by new business models for social safety nets. By replacing the current "take, make and waste" linear model with a regenerative circular one inspired by nature, circular economic models and the scaling up of reuse systems throughout the world

economy will lead to higher resource productivity. Through the creation of new processes, closed-loop systems and new industries using the recovered resources, circular economic models can generate not only more sustainable production patterns, but also job opportunities in a “greener economy”.

7. Food production has been made more efficient through progress in bioengineering and other frontier technologies in a sustainable manner. The latter has improved food distribution and **nutritional** value enabling everyone to live up to her/his full potential. This potential is further enhanced through universal access to **quality learning**. AI applications and virtual reality tools can support teachers in adjusting learning material to the individual learner’s needs from early childhood to on-the-job training. Creativity, interdisciplinarity and intercultural communication have been recognized and are valued as key skills to thrive in societies in which geographic and interdisciplinary mobility is not the exception but the norm.
8. If the opportunity of addressing policy priorities for a technology-fueled future of work, education and learning, nutrition and food is missed, the world we might have will be characterised by more job insecurity, a continuous rise of the “working poor”, difficulties in raising taxation for a global workforce and consequently the weakening of social safety nets. Efficiencies in food production will be traded against environmental concerns, further exacerbating the loss of biodiversity through monocultures and the adverse effects of climate change. Without proper access to nutrition from an early stage, generations will be left behind in acquiring the skills required to navigate an ever more complex and interconnected world. Continuing megatrends such as protracted crises and natural disasters further disrupt learning, with critical consequences for the transition to the labour market. Unemployment and precarious employment, in turn, are likely to result in alienation and loss of identity with the risk of eroding the social fabric of societies. Those at the “losing end” of globalization and digitalization are at risk of becoming increasingly disenfranchised and prone to political populism - a phenomenon that is already visible today, and most likely to become more amplified in the future if the necessary investments to promote greater social and economic inclusion are missed. Growing instability and fragmentation will be the defining features of a “future we might have”, in which the divide between technology ‘have’ and ‘have nots’ will become increasingly acute.
9. In addition to their wide-ranging societal impact, frontier technologies carry significant implications for the UN. Section IV of this note highlights how frontier technologies can boost efficiency, expand the evidence base for UN’s work and increase the impact of the UN. At the same time frontier technologies can raise formidable challenges, as they can give rise to powerful non-state entities that might undermine UN’s relevance, and at the same time open up new avenues that might contest the efficacy of the UN, if UN employees are not adequately trained to harness these technologies. In light of these opportunities and challenges, there is need for urgent changes within the UN. Starting with greater engagement, involvement and consultation of young professionals, other measures could further include to: promote buy-in and support from top management; expand alliances and facilitate greater and easier collaboration with the private sector, research institutes and academia at the forefront of frontier technologies; increase

the risk appetite and cultivate a culture of innovation within the UN; establish training and continued learning mechanisms in frontier technologies, including on foresight, and promote peer-to-peer learning; make UN policies and structure friendlier to adoption of and experimentation with frontier technologies; and embed technical experts within substantive areas.

II. Policy factors for HLCP consideration in the “deep dive” analysis

10. Policy approaches to learning, skills development, training, employment, and income distribution should all now assume a post-AI perspective. This may require new forms of proprietary rights, new modes of governance, and new business models, with evolved legal, ethical, intellectual property rights, amongst others. The following section collates ideas discussed and received from Young UN members, for the consideration of the HLCP.
 - A. New models of international agreements and frameworks
11. Technological change will likely continue to erode the power of States and multilateralism. Private citizens, multinational corporations, and civil society are adapting to the new world in ways defined by themselves. The concept of sovereignty has been in constant flux and in a globalized world, an operating system premised solely on respect for sovereignty has become increasingly inadequate for transboundary challenges. What goes on inside a country can no longer be the concern of that country alone. This reality calls for an updated concept of “sovereign obligations”, the notion that sovereign states have not just rights but also obligations to others, not just in relation to frontier technologies, but across a wide spectrum of global challenges. As a longer-term prospect, an expanded set of norms and arrangements should form a newly agreed-upon basis for statehood. In the short and medium term, the UN should continue to pursue other innovative models for international agreements, such as i) global goal setting as demonstrated through the 2030 Agenda and the SDGs at its core, and; ii) the Paris agreement, with self-assessed targets. These two models reflect the nature of the present reality; states are increasingly taking a minimalist perspective of multilateralism and are reluctant to cede power to the greater good. This quandary will continue to pose challenge for the international system to respond to frontier and other transboundary issues. The UN should continue to stimulate global thinking on innovations in international agreements, frameworks and instruments, which over time could evolve into a more in-depth reflection on the role of the system in global governance.
12. Member States tend to agree on constraining the proliferation of weapons of mass destruction by limiting countries’ access to the relevant technology and material, though the consensus often breaks down once proliferation has occurred. In the same vein, cyberspace is characterized by both cooperation and conflict. Building on lessons learnt from existing treaty mechanisms, the goal in this area, and others, should be to create international frameworks that encourage benign uses of cyberspace and discourage destructive uses. This requires us to define and characterize what a benign use is, which will be challenging given regionally-based interpretations.

13. The traditional treaty model will likely be an inadequate mechanism to change the direction of the key players in the field of AI (technology corporates, weapons manufacturers, etc) as they are primarily operating in the private sector. This may involve establishment of frameworks for holding those in charge of AI applications accountable. A rating system for AI or the creation of a “Global Compact for AI” may provide for more flexible international arrangements than traditional forms of intergovernmental norm-setting. Beyond this, we should also consider the policy response in scenarios where there is a post-deployment realization that a frontier technology needs to be rolled back.
14. Radical changes to UN governance structures could also go a long way to aligning mechanisms to systems thinking. ‘Changes to working methods’ and ‘Executive Board mergers’ are unlikely to be sufficient to adapt to the new ways of working and thinking required to address systemic frontier challenges. The right voices are needed in the discussion and this would involve significantly upgrading the science-academic-business-policy interface. What is needed is an “AI industrial complex”: Universities, businesses, governments, and the UN developing ethical standards or “codes of conduct” in a multi-stakeholder setting. In this regard, The UN may need to strengthen central capacity to analyze, plan and respond to megatrends, and develop strategies for the system as a whole; this will allow the UN to take an intellectual and normative leadership role at the global level as well as build key strategic partnerships.

B. Data ownership and data bias

15. Ninety percent of all data available today has been produced during the last two years. While availability of data is cherished as the foundation for sound policy making, critical questions arise in terms of their reliability, transparency, and accessibility. These questions, if left unexplored, may hinder the fulfillment of digital dividends from the data revolution. The extent to which vulnerable groups and the poorest are involved in decision-making processes and whether their voices are systematically heard will determine whether these dividends are justly distributed. New information technologies may empower large corporations, leaving many voiceless and less informed.
16. This main concern draws attention to data standards that corporations and private companies should abide by as the main drivers of big data. AI relies on the passive availability and analysis of large sets of data, online and offline, to distinguish patterns of behavior that can be used to guide machine behavior and cognition. Empowering “*we the people*” in the age of AI may require each individual – not major companies – to own the data they create. Such a fundamental shift will require not just new economic models, but also new forms of governance and legal frameworks. Change will likely be strongly resisted by those benefiting from the status quo. Besides ownership, another rising concern is related to potential biases perpetuated by machine learning algorithms that simply replicate prejudices and discriminatory human decisions as well as underlying perceptions and assumptions. When we consider that an estimated 60 percent of internet data is produced by bots, this may create inherent selection bias, and further bias is spread through a lack of representation due to accessibility of and geographic concentration of digital technologies, and risks reinforcing stereotypes in decision making and policy design. Data bias is also expected to rise to the fore. To a large extent, machine learning algorithms learn from previous decisions made by humans, which is why the resulting models replicate some of our biases. Managing how private

companies and non-state entities respond to this challenge will likely become a legal issue under many legal systems.

17. There may be a need for standards-based regulation for companies and state entities alike to continuously reflect on the data generation, analysis and dissemination practices in the age of AI. Governments may increasingly consider enforcement options through review, stress tests, and check-ups that models and algorithms must pass. They could become viewed in a similar way to health and safety standards. The UN could usefully provide guidance on the rights of people to view and restrict views of their proprietary data. Without such an intervention, we may see de facto standards defined by existing gatekeepers to health, banking, and legal data that define a person's status in society.

C. Transparency and quality assurance for real news

18. All advanced economies have experienced profound sectoral shifts in employment, first out of agriculture and more recently manufacturing, even as overall employment grew. That said, a consensus among technology experts and economists seems to be emerging that the coming technology revolution will be more disruptive than the past. Furthermore, the unemployment created is likely to fuel populism and/or protectionism around the world. "Deep learning" AI (AI that learns based on large datasets) will have ever-increasing potency as these algorithms and bots move into our newsfeeds and election campaigns. Related to this, there may be a need for countries to establish new sets of laws placing social media companies halfway between traditional platforms and publishers. With the advance of AI, fabrication of credible audio/video makes the generation of fake news with "credible" source a reality (e.g. deepfake). The world will increasingly look up to the UN as an independent third party, to provide a way to establish what is true and verify veracity of news and data. This could be in the form of maintaining an 'official history' of events, neutral fact-checking and establishing authentic local news system in local languages.

D. Worker-machine "social contract"

19. The worker-machine dynamic is becoming more complex and finding a just equilibrium will require nuanced policy interventions. Policies must focus on the partnership between robot and human; rather than rivalry, we should be thinking in terms of "collaborative robots" or "augmented humanity". Already around the world, manufacturers are employing a mix of humans and robots, through a chain-of-command that allows human workers to step in if power outages or equipment failures knock the machines offline. In spite of the displacement of labour, AI and automation could have other positive impacts for workers, for example, higher labour productivity as machines augment human capacity, and this could have a spillover effect of raising investment in capital goods and providing stimulus to the economy. Yet, if not managed well, this trend risks exacerbating existing inequalities and will deepen the technological divide. Research currently suggests that lower-skilled workers are more prone to automation while higher-skilled workers will be able to reap the benefits of augmentation.

20. Faced with the scale of the challenges, policy makers might be tempted to try to slow the pace and scope of adoption in an attempt to preserve the status quo. Although slower adoption might limit the scale of workforce transitions, it would curtail the contributions that these technologies make to business dynamism and economic growth. We should embrace these technologies but also address the workforce transitions and challenges they bring, specifically with regulatory frameworks and social safety nets.

E. Investment plan for frontier technologies, especially the Global South

21. Skills most likely to be in demand will be those that involve applying expertise, creativity, interacting with stakeholders, or managing people. Those that are likely to be phased out involve processing and/or collecting data, or physical work. To minimize the risk of this transition, advanced economies will likely need to focus on measures that help those who are displaced, through education and training programs, income support and social safety nets, including wage insurance, lifetime retraining loans, and portable health and pension benefits. Likewise, developing economies will need to make important structural changes and will likely be required to progressively strengthen social institutions.
22. Developing countries may need what amounts to a holistic investment plan to address frontier technologies, involving sustained investment, new training models, programs to ease worker transitions, income support, and collaboration between the public and private sectors. The early adoption of frontier technologies could also support more efficient public administration, energy distribution, manufacturing, transportation, and finance, among many other areas.

F. Rethinking traditional income models

23. Given that i) the marginal cost of deploying AI is close to zero, ii) automation favours multinational companies, and iii) just a few technology companies are controlling vast amounts of data, we are likely to see that growing income and wealth inequality within and between countries will remain a primary challenge in the digital age. Possible remedies include a tax on robots that will redress the externalities to robotization (South Korea is already experimenting in this area), thus justifying government intervention, and taxing digital companies based on their revenues (e.g. in the country where an advertisement is shown online). Such interventions may stifle innovation but may be seen as popular as they will be seen to be protecting jobs and, at least at the present time, have broader support than “Universal Basic Income” (UBI), and will face less corporate resistance than the implementation of progressive taxation. A corollary to UBI that may be worthy of consideration is the lesser-known Universal Basic Dividend (UBD), where money is not raised from taxation, but rather the universal income is financed from a dividend from the returns on all capital; a “public” percentage of companies’ profits, especially for companies that commercialise technology developed from public funding.
24. Other innovative models such as a financial transactions tax or airline tax levies (e.g. following the existing UNITAID model) have also shown much promise, and the UN can provide a platform for exchange of best practices. Supranational financing models could also form the funding basis in the context of addressing global development challenges, particularly those that relate to global

public goods. Financing will be critical for the long-term involvement of the UN in addressing global development challenges, with resources currently channelled mostly through international financial institutions and global funds, the UN development system's (UNDS) role in some instances becomes that of an implementing partner. However, if global challenges are increasingly financed through supranational resources, the UN governance and trust fund arrangements are more likely to be used. This is thus a strategic issue for the long-term future of the UNDS. Related to this, the UN may need to rethink its business model and the role of the system in development cooperation generally. There is a rapid growth in direct cash transfer mechanism which may gradually enjoy increasing public support when it comes to targeting poor people in developing countries. The UN should prioritise understanding how such technological advances along with changes in public preferences in donor countries (e.g. preference for greater use of direct cash transfer mechanisms rather than complex bureaucratic structures) could impact the role of the UN in development cooperation, and begin a strategic discussion on the implications of such changes.

G. Values, norms and ethics for the post-human era

25. The wide-scale application of frontier technologies could open up the need for creating consensus around codes of ethics, anticipatory regulations, 'universal values', norms and basic principles to be followed in the application of frontier technologies. For example, the application of AI in autonomous vehicles will raise several ethical questions around who to save in the event of collision of two autonomous cars. Countries have already realised the need for such consensus building and 'closing' the normative gaps. For instance, Japan initiated discussions on basic rules on AI research and development at the G7 ministers meeting. If no actions are taken, these values, ethics and principles will likely be determined by private entities and a few dominant governments through processes that may not be very inclusive. All this suggests that the wide-scale application of frontier technologies could open up new areas of work and new mandates for the UN, such as an inclusive multi-stakeholder platform (building on lessons learned from existing mechanisms such as the Internet Governance Forum), where consensus can be built around the core principles, values and ethics that underpin the development of frontier technologies.

H. From education to learning

26. One of the most central tasks for policy makers will be to ensure that young people have the skills to be 'fit for the future' and excel in an AI-dominated marketplace, and that those already in the workforce can adapt to new requirements. We should be preparing people for an AI future by teaching skills that will be most relevant to the future. This means not only technical skills and specialised training, but also understanding of ethics and human rights, as well as the ability to combine such skills with creativity. At the same time, they need the kind of education that allows them to think broadly and to make unusual and unexpected connections across many fields. Given the fast pace of technological progress, people already in the workforce need to be given the opportunity for continuous learning, in order to be able to combine their experience with the most up-to-date technical skills relevant to their jobs.

27. Universities as well as secondary and technical/vocational schools would be better placed offering courses that focussed on systems thinking skill sets¹. They will need an intimate familiarity with computers – from basic programming to neural networks – to understand how machines controlling productivity and analytic processes function. They will also need experience in psychology for a better understanding of how a computer functions different to themselves, as well as an understanding of how societies function, and even basic physiological needs of mammals. The data revolution will also present new and novel employment opportunities for data scientists and security specialists. Organizations of all sizes face a security skills shortage that is expected to reach 1.8 million jobs by 2022, as millions more devices and data become connected. These data specialists will need to be trained in AI and statistics, so they are able to remediate threats with speed, accuracy and while quickly eliminating false positives.

III. Frontier issues identified that are not on the HLCP watching brief

A. Digital identity

28. Legal identity is critical to access services, yet new options to ensure this will have to be explored in a world where people are more and more on the move. Moreover, in many places people still lack officially-recognized identity. Countries and entities of the UN system are exploring options for digital identification, i.e. electronically storing attributes and credentials that identify a person, for which blockchain technology could also be useful. If managed and secured properly, digital identification provides the opportunity to leapfrog paper-based systems. However, even within the UN system different entities use different digital identification systems. The UN, therefore, could play a role in setting technical standards to ensure the interoperability between digital identification systems.
29. Furthermore, this raises the broader question about the meaning of “identity” in an increasingly digitized world which is likely to become more acute. The connection to social media will also likely raise a flash point. Fortunately, the loss of individual control over privacy is not inevitable - it is possible to engineer a more responsible digital identity future - but this will require a paradigm shift in the way we collect, store, and share our data and digital identity (see Section IIB).

B. Sustainable energy consumption, technology transfer, dissemination and closing the frontier-technology divide

30. A technology-fueled future will require huge amounts of energy. As citizens of developing countries come “online” the thirst for energy will be exponential. The challenge for policy makers will therefore be ensuring that demand is met without jeopardizing sustainable development, i.e. through renewable energy. Such a task will require a new infrastructure for energy production,

¹ The philosophy of solving problems based on the entire system it belongs in. Currently, training gives specific skill sets that helps an area of the production process. With systems thinking, the industry fits into the larger environment, how it affects air quality, how does it affect the community that surrounds it, does it create social mobility, are people trained in that country/state for it, the water systems, the accessibility s, etc. Currently, each of these areas are addressed by independent entities hence causing more communication gaps. When more people are trained with systems in mind, this problem gets easier to handle and less canvassing is needed because there will be inherent understanding and intrinsic motivation to solve the problem as a whole and not just in parts.

storage capacity and distribution at a global scale, the likes of which has not be seen before. At the same time, improvements in energy efficiency will be key and may be fostered through international standards and guidelines.

31. Far-reaching technology diffusion is central to the efforts of leveraging new technologies for achieving sustainable development. Even though new technologies have tremendous potential for improving societal wellbeing, the existing technological gap between and within countries means that the current technological revolution will have differentiated impacts across populations. In particular, one should guard against the fallacious thinking that as firms and economies are increasingly linked, that technologies (such as social media platforms and Internet of Things) will narrow the technological divide. In reality, the scope and speed of technology diffusion depends on a range of factors, including the technical capacity of firms and countries to absorb new technology (which in turn depends on the level of talents and historical path of technology adoption, etc). Access to technology information, access to financing, the ability to mitigate risks associated with the actual benefits and costs of the new technology, availability of complementary infrastructures, and how conducive formal and informal, national and international institutional arrangements are in facilitating technology transfer are paramount.
32. Given the significant divergence of the above factors across firms and countries, it is clear the technological divide would persist. In fact, it could get worse. As technological advancement goes hand in hand with development, the technological divide would eventually translate into further gaps in development conditions. It would in turn lead to even wider division in the ability of firms and countries to access and utilize new technologies.

C. New economic models and democratization of production

33. New economic models based on sustainable development principles have the potential to unlock unprecedented opportunities. One such promising model is the circular economy. By developing large-scale recycling, remanufacturing and reuse systems throughout the world economy and creation of reverse logistics networks, new processes and new industries using the recovered resources, promoting a circular economic approach will not only reduce the environmental impact of future economic activity, but also generate innovative income opportunities, especially for young people. However, producing in a more environmental-friendly way such as monetising waste will need new skills – above all innovativeness - to design products and services in a truly circular way.
34. Such skills are not (yet) sufficiently taught and promoted in today's education systems and programmes. For example, `green awareness` needs to be part of education curricula from early age; the focus should be further on transforming young people into `ready-to-learn` workforce that is quickly able to learn and adapt to change, rather than only focusing on specific skills. Young people have to be taught green skills, "environmental awareness and solidarity" defined to be the knowledge, abilities, values and attitudes needed to live in, develop and support a society that reduces the impact of human activity on the environment. The circular economy can also promote and facilitate the emergence and growth of social enterprises. Future "green entrepreneurs" need to be given both the creative space to be innovative, and the coaching and seed funding needed to test their ideas and bring them to fruition.

35. In the long run, circular economic models can benefit from new production technologies such as 3D printing which could further allow more efficient use of physical resources and faster diffusion of the best designs and boosting living standards. If goods are printed rather than delivered, transport costs could be significantly reduced. On the flip-side, the home-production of previously restricted items, such as weapons, or replicated keys, is a challenge that will need to be managed by governments and the international system, in close collaboration with the private sector. We should focus on accelerating transition to a circular economy in a timescale consistent with the response to climate change, water scarcity and other global challenges. Smart regulation can reward private-sector leadership and align incentives along the supply chain – for example, to deliver a step-change in remanufacturing rates.
36. In a similar vein, digital platform-based business models and companies operating according to these models are often major drivers of innovation and set standards for the global digital transformations taking place. For example, the sharing economy brings people together through technology to exchange or rent access to goods and services, so entrepreneurs are building this economy by leveraging emerging digital technologies to meet customer needs in new and disruptive ways. The ramifications of this for developing countries are profound, as previously restricted markets are opened up to potentially vibrant competition. The downsides could include the loss of central control which can reduce revenue-raising abilities and allow firms to skirt regulation. While the platform economy may increase competition at the individual and micro-level, it tends to yield “winner-takes-it-all” situations at the macro-level, in which all transactions are concluded through a single platform that is then able to reap most of the financial and data benefits. Such a situation is of concern for equality within and between countries, and appropriate competition and taxation policies need to be adopted to avoid negative consequences.
37. UN policy makers should focus on ensuring that the transition to circular and platform economic models happens in a way that responds to global challenges without exacerbating inequality. Smart regulation can reward public-private-sector leadership and align incentives along the production and supply chain, including by promoting access to more democratic production technologies such as 3D printing.

IV. Doing things differently at the UN

38. Across the spectrum there is widespread recognition that the UN needs to change significantly to be fit to deal with twenty-first century challenges and support SDG implementation. Volatility and unpredictability characterise the world in which we are living and the UN must be agile and able to adapt: in a *proactive* rather than a *reactive* way. Ideas on how to do this - from stronger engagement of young professionals and their skillsets, to using new technologies for mandate delivery and other internal changes - are set out below.

non-technical hackathons to gather economists or social scientists or political scientists to "design/build" prototype papers, methodologies, and/or draft policies that can then feed into a "Frontier Hackathon" to see how frontier technology could support the UN's core substantive areas of work.

B. Use of new technologies to enhance mandate delivery

43. The application of frontier technologies opens up a plethora of possibilities for the UN, a few of which are discussed in this section along with some challenges that can potentially accompany these developments.
44. **Boost efficiency:** Frontier technologies will likely impact several of UN's core areas of work including humanitarian work, peacekeeping missions, capacity building, implementation of developmental projects, research and policy advice. The application of frontier technologies can result in a huge drop in cost of business and boost efficiency of UN work. For example, AI can make the process of administrative support and logistical arrangements more efficient and less time consuming in future. AI and machine learning can be deployed to compile documents and draft talking points that would be required for periodic inter-governmental meetings and meetings of senior managers. In the field of humanitarian work, usage of drones to deliver vaccines and relief supplies and identification of victims of natural hazards or conflicts could facilitate more efficient operations. Perhaps in the future, robots and drones (already tested by some of the current PKOs) can be used in peacekeeping missions, minimizing risk to peacekeepers and allow for easier and faster deployment during times of crisis. However, this requires addressing critical ethical and accountability concerns. Also, AI and machine learning can help in cutting redundancy by evaluating and analyzing business processes within the UN, and assist with more efficient allocation of resources. AI can also help with predictive resource allocation and create more efficient handling of a situation by proposing a human-machine ratio for each through predictive risk analysis.
45. **Expand the evidence base for UN's work:** Frontier technologies can help in making UN's work, especially its projects, more evidenced-based through creation of more data sources and facilitate direct information gathering from people (one potential avenue is the reprofiling of the UN Global Pulse). Examples include big data analyses, data generated by drones to understand urgent needs after disasters or monitor chronic issues such as droughts, or use of blockchain to trace sustainability of global supply chains and consumption patterns. Further, one of the main challenges that UN's work currently confronts is that it is not able to link its work with actual impact on the ground with empirical evidence. The new big data sources (for example, tweets or PokemonGo data) and computational and analytical advances promoted by frontier technologies can help in drawing more causal linkages between UN's work and actual impact. Furthermore, the data generated can also facilitate impact evaluation of the policies adopted by governments and strengthen the policy advice capability of the UN.
46. **Increase impact:** Frontier technologies such as virtual reality (VR) can make capacity building programs more effective. This is true for both UN's internal capacity building for staff and external capacity building programs aimed at policy makers. For example, many Headquarter-based staffs

do not have the opportunity to go to field duty stations. VR based training can be a game changer in this context to expose the staff to the many realities and experiences in hardship field duty stations. AI could also customize UN's policy advice and training modules and make it more accessible to different audiences. Likewise, with the emergence and access to low-cost connectivity solutions, this would enable the UN to do capacity building projects at a much larger scale for an equivalent budget. Hence, frontier technologies can greatly accentuate the impact and effectiveness of UN's work on many fronts.

47. ***However, numerous challenges will emerge:*** Frontier technologies can also raise several challenges for the UN system, all of which are too numerous to mention. The emergence of new important stakeholders outside the remit of the UN system can weaken the UN system. Frontier technologies can lead to the emergence of new powerful non-state entities. Technology corporates who monopolize some of the frontier technologies is an obvious example. These stakeholders may not be controlled by any single government, and as such they are not yet fully part of UN processes. Consequently, the UN can itself become less influential if adequate reforms are not enacted. Countries might look up to the UN for policy advice to harness frontier technologies in many fields, however, UN employees may not be well-prepared to provide advice on these policy options. Frontier technologies can emerge as an important testing ground for the efficiency and relevance of the UN system.
48. These new opportunities and challenges raised by frontier technologies call for urgent measures by the UN to prepare the system, some of which are highlighted below.

C. Necessary internal changes

49. ***Promote buy-in and support from top management:*** The adoption of frontier technology in the UN's work will depend to a large extent on the buy-in, support and encouragement of the senior management as well as Member States. Acknowledging the relevance of frontier technologies, there should be champions of these technologies at the highest level of UN management, who would be able to continuously raise awareness among peers on the theme and be the voice to create a greater enabling environment for adoption of frontier technologies within the UN.
50. ***Expand alliances, facilitate greater and easier collaboration with the private sector:*** Recent rapid development in frontier technologies is championed by the private sector. Without dynamic and open collaborative policies with the private sector, the UN will not be able to reap benefits from frontier technologies. The UN's current bureaucratic setup and several established practices can be an impediment to such collaborations. Future UN reforms should reflect this aspect and ensure that UN employees are encouraged to find suitable private sector partners to collaborate. The UN should establish an expert roster on frontier technologies and compile a list of centers of excellence (or research centers) of frontier technologies, including research undertaken by the United Nations University. UN employees should be encouraged to consult with these experts and centers on seeking advice on the potential of application of frontier technology in projects, where feasible, that would promote more efficient delivery of the projects.

51. ***Establish training mechanism stream in frontier technologies, including on foresight, and promote peer-to-peer learning:*** The UN should establish an effective training mechanism to equip UN employees with knowledge on how frontier technologies can impact on and be applied to their field of work. As a first step, perhaps have a series of lectures (available on YouTube/podcasts or other easily accessible format) given by experts in the respective fields on what these frontier technologies are and what potential usages could be. They may also be preceded by charettes or design thinking sessions. The UN could compile and circulate a list of interesting videos/podcasts on these matters. However, it is important to systematize these trainings, so that they go beyond one-off webinars or courses. There should be regular broadcasts on frontier technology matters, offering multiple sources for UN employees to keep themselves informed and engage in a continuous learning experience. While a general knowledge of frontier technologies can be useful for a large number of UN employees, a smaller number of UN employees who already work in related functions and have related expertise (e.g. IT, advanced statistics and economic analysis) should also be encouraged and financed to undertake more in-depth continuous learning in frontier technologies and participate in tech-fairs and academic conferences on these subjects. The UN needs to have a critical mass of employees who can apply and leverage the new technologies to effectively harness the development opportunities they present. In this context, foresight should be viewed as a way of thinking rather than a new capacity. Training UN employees in foresight analysis could help them think more strategically on issues such as frontier technologies rather than the current mindset of responding to mandates. This would include systematically gathering the best practices and/or emerging policy practices, from UNCTs that gather country practices, to ensure ideas are crowdsourced from beyond the system. Reorientation of existing resources, upgrading skills, and sharing of resources within the system could address some of the key knowledge and capacity gaps.
52. ***Make UN policies and structures friendlier to adoption and experimentation of frontier technologies:*** UN policies across sectors (including administrative, IT and HR policies) should be reviewed to ensure their compatibility with adoption and experimentation of frontier technologies. Several existing policies often impede adoption of even slightly more advanced technologies, a very simple example being IT policies. To keep pace with these changes, the traditional budgetary architecture of the UN which is centred on fixed roles and hierarchies may need to be replaced with a project approach to work, where temporary task forces and collaborators connect to formulate solutions, before dissolving and reformulating in a new configuration for the next challenge. The workforce can be aligned to primary areas of specialisation, but deployed across organisational and geographical boundaries to form cross-functional teams, depending on emerging needs and technological developments.
53. ***Embed technical experts within substantive areas of work:*** We need to see technical experts as contributors and amplifiers of the substantive work. When substantive subject matter experts have technical experts available, the productive output is qualitatively better and in many cases can be more efficiently produced. In today's UN it is difficult for technical experts to find opportunities to apply their skills to substantive work, largely working on infrastructure problems when they could be making more transformative contributions to substantive work.

The above youth perspectives are presented to be taken into account by the Committee in ongoing and future system-wide “deep-dive” analyses and in the identification of new policy topics that may be taken up by HLCP.

The Committee may also wish to reflect on the proposals on “doing things differently”, including ways to integrate youth inputs more systematically into its work.