UNESCO/IRCAI - SDG Innovation Framework

Introduction and background

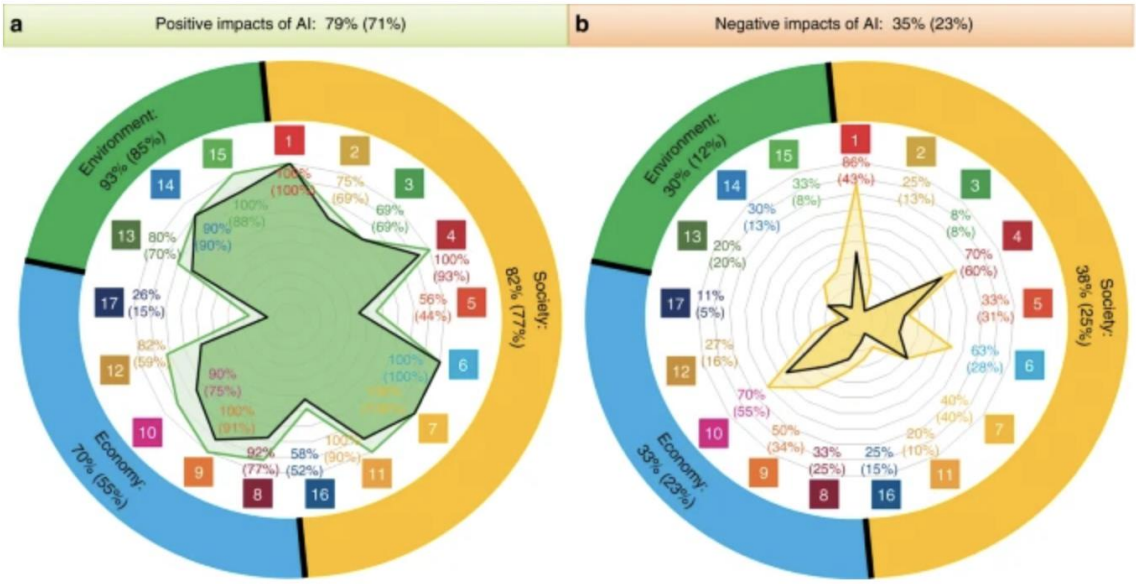
The emergence of artificial intelligence (AI) is widely recognized as a technological advancement that will impact virtually all aspects of collective human life both in the short and long term including global productivity, equality and inclusion, and environmental outcomes[3]. Although there is solid agreement around the very many benefits AI can have, the reality is that AI can have both positive[1] and negative[2] implications.

When looking at the connection between AI and SDGs, for instance, there is a growing literature showing that, on the one hand, AI can influence positively the ability to meet SDGs (sources..not just nature..) but, on the other hand, it can also be an inhibitor of some of the SDG targets. As an illustration of that, AI technology might have a very high energy requirement and carbon footprint when considering that cryptocurrency applications such as Bitcoin are globally using as much electricity as some nations' electrical demand (SDG?). Also, regarding the SDG 5 on gender equality, there is some evidence that non-trained algorithms behind news articles might inadvertently learn and reproduce the societal biases against women and girls as they are embedded in current languages.

The diagram below shows how AI can influence positively and negatively the achievement of the SDGs.

[1] Jean, N. et al. Combining satellite imagery and machine learning to predict poverty. Science (80-.) 353, 790–794 (2016).

[2] Courtland, R. Bias detectives: the researchers striving to make algorithms fair. Nature 558, 357–360 (2018).



The use of AI will continue to have revolutionary impacts on the world, as is the case with all other technological advancements, and these impacts may oftentimes reflect shortcomings that already exist in the global economy and social structures.

Indeed, as AI is becoming more sophisticated, it is also becoming more susceptible to social risks and biases. For instance, large language models have the growing potential to solve increasingly complex problems, such as those addressed by the SDGs, but these models are also more likely to reflect biases embedded in their training data. For example, a 280-billion-parameter AI language model developed in 2021 shows a 29% increase in elicited toxicity compared to the state-of-the-art model from 2018 (the 2022 AI Index Report). This implies that AI applications can very well improve SDG outcomes while not being fully aligned with AI ethics guidelines and international human rights standards.

In this sense, if the objective is to use AI to promote the achievement of Sustainable Development Goals, then this technology must consistently seek to internalize its own ethical costs. Ethical AI, which includes algorithmic fairness and transparency, has become a mainstream topic not only in academia[3] but also in policy discussions among governments worldwide. It is in this context that

[3] Research on fairness and transparency in AI has exploded since 2014, with a fivefold increase in related publications at ethics-related conferences

UNESCO reached an historic achievement by adopting the first-ever global agreement on the ethics of AI[4].

It is also important to note that while AI is increasingly important in the public and private sectors, its use is not always used with the purpose of promoting social good. For example, while private investment in AI in 2021 totaled around $93.5 billion - more than double the total private investment in 2020[5] - there is little evidence that this investment is actually productive for the advancement of SDGs.

In this context, the International Research Centre in Artificial Intelligence in collaboration with UNESCO (IRCAI) developed in 2021 the IRCAI Global Top 100 challenge, an international call for solutions that mobilize current AI technologies to address and achieve the 17 United Nations Sustainable Development Goals. The main purpose of this call was to highlight the interconnection between SDGs and AI by showcasing one hundred outstanding AI initiatives that promote SDGs from around the world and utilize them as a basis for innovative research.

The structure of this short document is as follows: the first section is an overview of the purpose and methodology of this assessment; the second section is an analysis of the original framework and a presentation of the revised framework; the third section discusses the competition evaluation process; and the fourth section includes recommendations for making use of the framework beyond the Top 100 Challenge.

Brief methodology

The assessment included 3 phases:

1) Initial desk review: The objective of this phase was primarily to formulate a plan-of-action for fine tuning the approach, methodology, and content of the SDG Innovation Framework so as to better align the evaluation of AI initiatives with SDGs. This phase started with the analysis of both the previously-established framework and the process for selecting the most promising initiatives[6]. The desk

[4] AI technologies can be of great service to humanity but also raise fundamental ethical concerns, for instance regarding the biases they can embed and exacerbate, potentially resulting in inequality, exclusion and a threat to cultural, social and ecological diversity and social or economic divides; the need for transparency and understandability of the workings of algorithms and the data with which they have been trained; and their potential impact on human dignity, human rights, gender Equality, privacy, freedom of expression, access to information, social, economic, political and cultural processes, scientific and engineering practices, animal welfare, and the environment and ecosystems,

[5] AI index 2022

[6] It is important to mention that the consultant focused his attention not just on the criteria but also on the evaluation metrics and how the selection process could be improved.

review also includes an evaluation of background material and a literature review[7] on:

- Interconnections between SDGs and AI - the benefits and the risks;
- Trends behind the development of the AI technology;
- Good practices on the startup competition and hackathons to inform the development of the framework (i.e. good practices for selecting criteria[8]);
- Evaluation good practices, to inform the development of the evaluation metrics and rating system.

Finally, the assessment phase was also used to identify the data collection tools, and more specifically, the key informant interviews (KIIs) and Focus groups. It was proposed to include a team of experts on AI, development issues/SDGs, and startup competitions (for the KIIs); in addition to selected companies that were showcased during the 2021 edition. The assessment phase was conducted by the consultant in close collaboration with IRCAI and UNESCO. At the end of the assessment, the consultant developed their first proposal for the revised framework to be used during the 2nd phase of the mission.

2) Data collection and analysis/consultation process: This phase was devoted to developing the revised framework. The consultant undertook a series of consultations with KIIs[9] and Focus Groups using a series of questions that he had developed during the first phase of creating the draft revised framework. It should be noted that a more in-depth process for developing the framework (i.e. using an online questionnaire) was not possible due to time constraints, but could be undertaken in future iterations of the framework.

3) Validation of the framework: Finally, the consultant held a workshop to gather final feedback on the revised framework to inform the final version. The consultant also proposed a series of recommendations on how to make the best use of the revised framework.

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[7] Where the following sources of information were considered as acceptable evidence: published work on real-world applications (given the quality variation depending on the venue, we ensured that the publications considered in the analysis were of sufficient quality); published evidence on controlled/laboratory scenarios (given the quality variation depending on the venue, we ensured that the publications con- sidered in the analysis were of sufficient quality); reports from accredited organizations (for instance: UN or government bodies); and documented commercial- stage applications. On the other hand, the following sources of information were not considered as acceptable evidence: educated conjectures, real-world applica- tions without peer-reviewed research; media, public beliefs or other sources of information.

[8] IBM Hyper Protect Accelerator with 100 startups i
https://www.techstars.com/accelerators
https://www.linkedin.com/pulse/early-stage-startup-investor-selection-criteria-okimoto-mba-m-s-/
https://www.ycombinator.com/rfs/
https://republic.com/learn/investors/how-we-select-startups

[9] See annex for the list of people consulted during the process.

The SDG-AI framework

Establishing a new framework for AI innovation in pursuing SDGs

The consultant created a robust framework for evaluating AI initiatives that pursue SDGs, following a desk review and discussion with key stakeholders, with UNESCO and IRCAI's original framework as a reference[10].

The new framework was created with a commitment to several considerations:

- *Importance of 'ethical AI'* - There is a growing interest and attention to what has been defined as 'ethical and responsible AI'. The IRCAI 2021 report highlights that 'relatively few [selected initiatives] provided a positive and substantive account of how their models and applications aligned with notions such as data privacy, transparency, explainability or accountability, and fewer still seemed cognizant of the value trade-offs and ethical risks associated with their applications'. Therefore, the SDG Innovation Framework should take into account specific, internationally-recognized components of ethical AI technology, beyond the original question of whether or not an initiative is "human rights based, ethical and equitable"[11].

- *Business profitability and incentives for the private sector around social impact* - as mentioned in the introduction of this paper, while there is strong private sector investment in AI, there is not always an incentive to invest in AI for the benefit of achieving SDGs. Hence, there is a clear need to develop sustainable business models for the AI solutions addressing SDGs, so that they might be profitable enough to generate interest from the private sector.
  By the same token, a review of the current framework shows that this could have very good business potential, especially if it is translated to more languages.'

[10] See annex 1 for a complete list of the criteria used in the original framework to select initiatives to be showcased on IRCAI's website.

[11] How does a creator determine and prove that the application of their AI technology is human rights based? We don't know if "human rights based" refers to safeguarding, lawfulness, general philosophy, or something else.
    - On a similar note, whether or not an AI technology is ethical and equitable in its application is hard to define and measure, and therefore must be very difficult to demonstrate in the submission and evaluation processes.

The questions and expectations contained in the "Trustworthiness of AI solution" category are difficult to understand without context, and they don't use language that is clearly relevant for AI and other digital technologies.
The "Inclusiveness of solution" category could be written in a way that more clearly links the proposals with the overall mission of the SDG's.

- *Diversity and inclusiveness* - Research demonstrates that diversity and inclusiveness are important in AI-based solutions for two complementary reasons. First, studies show that 'many initiatives have struggled to collect representative input to inform their activities,' and that 'this lack of inclusiveness points to a lack of capacity by initiatives, stakeholders and governments to involve a wider group in the technological transition and, hence, to co-shape innovative solutions for addressing the opportunities and the risks'. Second, this lack of inclusiveness risks undermining the effectiveness and credibility of many Responsible AI initiatives, as well as their ability to scale;

- *Coherent and transparent rating and evaluation metrics* - Although the 2021 selection process is useful, there is room for improvement[12]. It is of the utmost importance that the evaluation metrics be quite strong and clear, for both the reviewers and for the companies that apply. The goal should be to make the selection process as objective and comprehensible as possible;

- *Clearly-defined terminology* - this study defines key terminology around the SDG-AI framework with the possibility of adding a glossary. The analysis of the original framework shows that some terms are used interchangeably yet without clarification. For instance, the documents regarding the 2021 top100 competition use the terms 'proposal,' 'solution,' 'innovation', 'company,' and 'idea' to refer to the 100 initiatives showcased and displayed on their website. Similarly, it is also important to define what AI specifically means, given that there is no internationally agreed definition for this technology, and that AI is in some cases used as a synonym for digital solutions in general.

  Therefore, this study proposes the following definitions:

  AI: This study defines 'Artificial Intelligence systems' as technological systems that have the capacity to process information in a way that resembles intelligent behavior, and typically includes aspects of reasoning, learning, perception, prediction, planning or control.

  Initiatives: This study recommends using the word 'initiative' to refer to those showcased on the Top100 Competition website. In this context, an initiative is an attempt by a team (or multiple teams) within an organization to use technology (AI) to create products or services that promote SDGs.

[12] questionnaires ...does not match exactly the evaluation metrics..

- *Clarity around the selection process and the support provided to the initiatives:* this study recommends better laying out and displaying what the evaluation metrics are, and how they are used in the selection process. As a complement to that, it would be appropriate to highlight the support that IRCAI and UNESCO could potentially provide to the teams working on those initiatives, in order to improve, scale up, or connect the initiatives. This point is important because it speaks to the long-term objective of what the competition intends to do.
  Indeed, an analysis of the background documentation shows that the main objective of the competition (and purpose of the framework) is not just to showcase the initiatives but moreover to develop a knowledge exchange and capacity-building platform. This point should be discussed and made clear in the website/application process (see the recommendation section).

Building on those considerations and the desk review, this study proposes that the main question underpinning the framework be the following:

'how to create a system for identifying solutions??proofs of concept that intend to develop sustainable business models by leveraging Technology (AI) to Achieve United Nations SDGs effectively, efficiently, inclusively and responsibly'

Revised SDG/AI framework

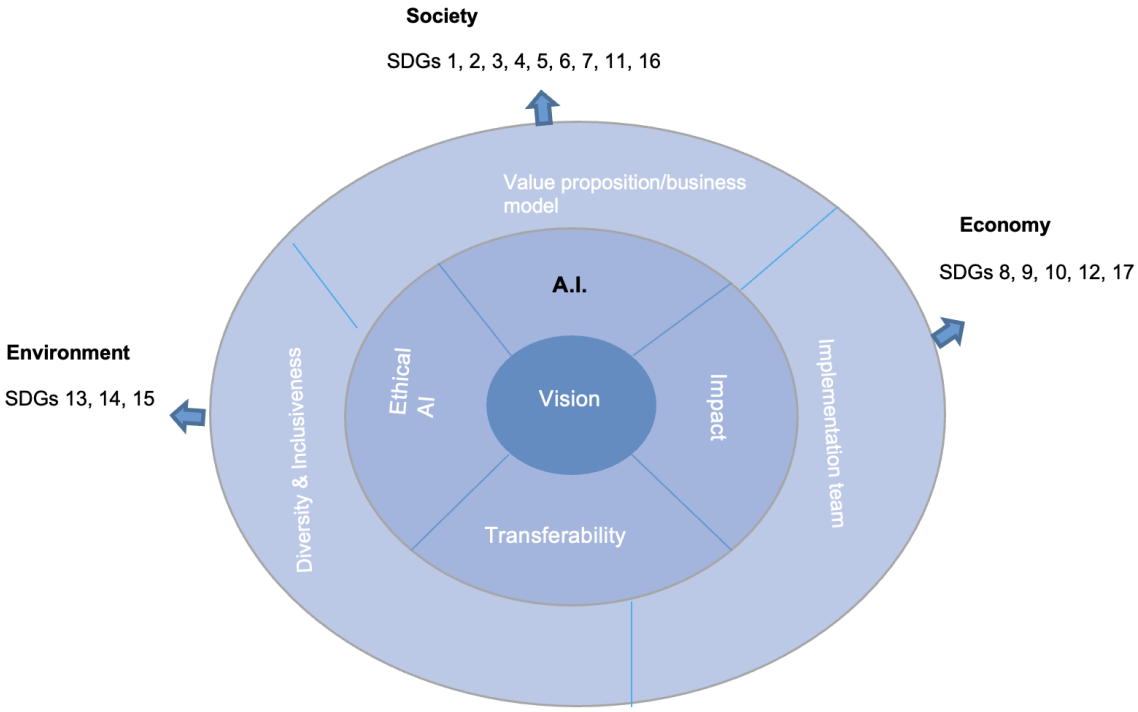
The framework is composed of a set of criteria that reflect the considerations made above, so as to make the framework as comprehensive and solid as possible.

The proposed 8 criteria for the revised framework are the following:

1. Vision/purpose in addressing SDGs;
2. AI integration/adoption;
3. Impact/measurement;
4. Transferability (scaling up);
5. Ethical and Human Rights-based AI ;
6. Business model/revenue model;
7. Implementation/team;
8. Diversity and Inclusiveness?.

The diagram below shows the linkages between these criteria and the SDGs[13]. The criteria could be divided into 2 sub-groups with the possibility of using an evaluation funnel or weighting system (see section on the recommendations). For example, 5 criteria (Vision, A.I., Impact, Transferability and Ethical AI) being assigned a different weight than the other 3 (Business Model, Implementation Team, and Diversity & Inclusiveness). The reason for such a weighting system would be to strike a balance between developing a rigorous and comprehensive framework, and facilitating the work of the reviewers.

Diagram TO BE COMPLETED



The tables below present the main criteria, the underpinning questions and the related evaluation metrics. Indeed, for each criterion identified, the framework includes corresponding indicators that drive the assessment of the criteria. Also, the tables introduce a scoring system that reviewers can use to assess the initiatives on the basis of the identified criteria. The proposed scoring system is as follows[14]:

[13] also SDG categories
For the purposes of this study, we divide the SDGs into three categories, according to the three pillars of sustainable development: Society, Economy, and Environment

[14] This proposal builds on the previous framework, however, it merges 2 dimstnins together (outstanding, excellent)

- 1-2= early stage;
- 3 = promising;
- 4-5=outstanding.

Criterion 1: Vision		
The initiative's vision gives it direction and ongoing dedication toward achieving a problem related to one or more SDG's.		
Question	Indicators	Score (1-5)
<u>Consistence with SDGs</u>: To what extent does the initiative's solution address one or more SDG's?	• The problem identified and addressed by the initiative is *directly* related to one or more SDGs. • The initiative employs a clear technical solution that uses AI to empower the general public and relevant stakeholders in addressing the related SDG(s).	
<u>Relevance:</u> To what extent do the initiative objectives and design respond to user community needs, policies, and priorities?	• The initiative design was informed by clear and rigorous research on the cultural, political, and economic circumstances of the user community and country. • The research that informed the initiative design involved consultation with potential users.	
	Total score - category	

Criterion 2: AI Integration/Adoption		
The AI system should be mature, technologically sophisticated, and appropriate for the problem it addresses.		
Question	Indicators	Score (1-5)

Maturity: Has the AI system been in development and use for long enough that its initial faults or problems have been addressed?	• The AI system has been rigorously tested and designed with attention to all relevant technical details by certified technical experts with diverse skills and perspectives. • The initiative team acknowledges and accounts for potential contradictions and trade-offs in its system design and operator directions.	
Quality: Is the value of the AI technology sufficient to carry out its tasks with efficiency and durability?	[TO BE COMPLETED]	
Appropriateness: Is the AI system appropriate for the problem it aims to address?	• The initiative is complementary to existing policies, initiatives, and other interventions for achieving SDG's that exist in the user communities.	
	Total score - category	

Criterion 3: Impact/Measurement		
The initiative team must not only establish a clear roadmap to achieving its objectives, but it also must measure the AI system's impact and monitor its behavior at every step of the design process and life cycle.		
Question	Indicators	Score (1-5)
SDG - M&E framework and impact: To what extent does the proposal contain verifiable indicators for progress toward	• The initiative includes a clear and comprehensive framework for measuring progress toward achieving its goals (related to SDGs). • The initiatives includes documentation showing evidence of results (outputs, outcomes and impact)	

meeting its SDG-related objectives?	• The initiative includes recurring, rigorous assessments that consider all diverse segments of the user population.	
AI - M&E framework and impact: To what extent does the proposal contain verifiable indicators for measuring the effectiveness of AI solutions to address the SDGs?	• The initiative includes a clear and comprehensive framework for measuring development of the AI solutions and its contribution to its goals (SDGs) • The initiatives includes documentation showing evidence of the development of the AI solution	
	Total score - category	

Criterion 4: Transferability		
For the initiative to create a legacy of lasting change, it must be transferable so that organisations and individuals can extend its reach to users outside of the initiative's initial scope.		
Question	Indicators	Score (1-5)
Transferability: How feasibly could the AI system be applied to other initiatives in different contexts?	[TO BE COMPLETED]	
Scalability: To what extent can the initiative be scaled up to be used in new user communities and	[TO BE COMPLETED]	

across different areas of the SDG's?		
<u>Knowledge-Sharing:</u> To what extent does the initiative participate in networking and knowledge-sharing for stakeholders who may be interested in extending and diversifying the intervention's reach?	• The proposal is accessible to the public and other stakeholders on knowledge-sharing platforms, and the proposal's impact assessments are easily available to the public for further research, promotion, and education. • The initiative team is active in the AI ecosystem, maintaining productive relationships with researchers, organisations, and influential individuals whose work aligns with the initiative's objectives and approach.	
	Total score - category	

Criterion 5: Ethics		
Considering that even the most well-intentioned AI initiatives carry the capacity for significant negative consequnces, it is critical that AI systems are designed and implemented in a way that is inclusive, accessible, and sensitive to potential harm with built-in accountability for system designers and operators. Therefore, AI initiatives that are considered to be ethical contain clear indicators for fairness, transparency, accountability, and damage control.		
Question	Indicators	Score (1-5)
<u>Fairness:</u> To what extent does the initiative ensure that the AI system does not create discriminatory or unjust impacts for different demographic and geographic groups?	• Data used to train the AI system is diverse and refers to a number of sources to minimise bias • The initiative team is diverse, representing a range of communities and perspectives • The initiative has had direct communication with its user community to consider the cultural and socioeconomic context • The initiative includes opportunities for public participation whenever	

	possible to ensure that user community needs and concerns are acknowledged and respected	
<u>Transparency</u> To what extent is the internal operation of the AI system transparent to a wide range of stakeholders?	• The initiative has made the AI system's algorithms available to certification agencies • The AI system has built-in mechanisms for explaining its actions to users and operators	
<u>Accountability</u> To what extent does the initiative provide clarity around the manufacture and deployment of the AI system for the public to establish responsibility and accountability?	• The initiative team has established a clear and robust system for registration and record-keeping, so that all of the AI system's decisions and behavior can be traced back to human oversight • The initiative team has created documented policies to govern how the AI system should be operated • The initiative has integrated safeguards against the incompetent operation of the AI system	
<u>Damage Control</u> (?) To what extent does the initiative minimise risk for potential damage to the environment, public health, and human rights?	• The initiative accrues its materials from sources that ensure minimal impact to ecosystems and local communities • The initiative includes a system or stakeholder partnership for minimising waste at all stages of the AI technology life cycle through recycling and refurbishment • The initiative includes comprehensive, recurring assessments of the AI system's beneficial and harmful impacts to become aware of and address negative externalities	
	Total score - category	

Criterion 6: Business/Revenue Model		
For its long-term success, the initiative should be a viable and promising business model.		
Question	Indicators	Score (1-5)
Market Status: Is there a strong market demand for the initiative in the user country and communities?	• There is a clear need for and interest in the proposal's objectives in user communities, as exhibited in research and stakeholder consultation. • The initiative has demonstrated commitment from partners and investors.	
Profitability: To what extent does the proposal demonstrate profitability?	• The initiative has identified key revenue streams. • The proposal includes clear marketing strategies and goals. • The proposal has a demonstrable advantage over competitors. • The proposal can be scaled with efficiency and cost-effectiveness. • The proposal has demonstrated its ability to incentivise private investment in AI technology that is aligned with SDG's.	
Sustainability: To what extent are the net benefits of the initiative intervention likely to continue?	• The initiative's application contributes to an area for with clear potential for economic growth and development in its user communities.	
	Total score - category	

Criterion 7: Implementation/Team		
Even if the initiative holds promise across all dimensions, if not implemented in an appropriate and meaningful way, it may fail to reach its potential.		
Question	Indicators	Score (1-5)
Team Preparedness: To what extent are the team members prepared to successfully implement their initiative?	• The initiative's team has a deep understanding of their industry and a strong network of helpful contacts. • Team members have a diverse and complementary set of skills, capacities, backgrounds, and personality qualities.	
Leadership: To what extent do the team members display strong leadership qualities?	• Team leaders have a strong track record in successfully executing ambitious initiatives as initiative managers, advisors, and/or institutional leaders. • Team leaders exhibit strong leadership qualities, such as charisma, diligence, adaptability, an understanding of their team's dynamic, and the ability to recognise key opportunities.	
Contextual Awareness: To what extent is the initiative team active in the AI system's user community?	• The initiative's team has consulted with public leaders and users in the host community, and has a demonstrated commitment to ongoing communication. • Members of the initiative team have a deep comprehension of and familiarity with the user community's characteristics and circumstances.	
	Total score - category	

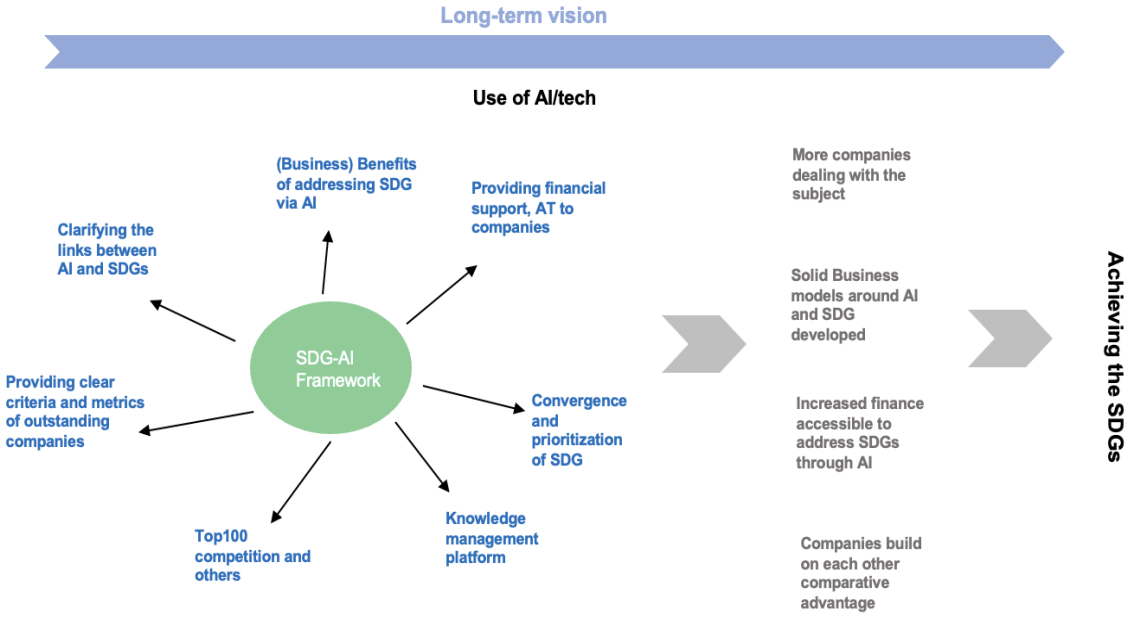
Criterion 8: Diversity and Inclusiveness??		
the initiative should help shape and spread good D&I practices, including a strategy that helps gauge the extent to which segments of society or geographies are currently underrepresented or excluded in the Responsible AI ecosystem.		
Question	Indicators	Score (1-5)
TBC		
	Total score - category	

Recommendations

As explained above, the objective of this study is not only to propose a revised framework for identifying promising initiatives integrating AI and addressing SDGs for the top100 competition but also to suggest other ways to make use of this framework effectively.

0. Overall, the main purpose of the framework should not just be to showcase/identify the most promising initiatives but also to contribute developing a 'system' for more effectively and responsibility addressing the SDG via A

The use of the framework should be seen in the context of contributing to the overall 'system of addressing SDGs'. In this sense, the main question would be how to accelerate the achievement of the SDGs also through the use of AI, and how to encourage companies to do so.



With this consideration in mind, the study suggests the following recommendations[15]:

1. The foundation for using the framework would be to identify and showcase initiatives that address SDGs through AI that could, however, also exchange information and create synergies among themselves (knowledge);
2. The framework should be used as a basis of illustrating what an outstanding initiative addressing the SDGs by integrating AI looks like - this will provide a good reference for other initiatives to do the same;
3. The competition around the framework, such as the top100, should be used to better understand the needs and the type of support companies/initiatives need for integrating AI in addressing SDGs;
4. Creating awareness around the connection between SDGs and AI should be considered a priority for similar competitions;
5. An important reflection should be placed on the incentives and benefits for companies to participate in the competition but also for private sector to invest in them;
6. Considering the possibility to prioritize SDGs and have companies converge on some of them;

1. *Using the framework as a way to showcase initiatives but also to build a knowledge management platform*

[15] Those recommendations touch upon both the framework and the top100 competition (its process and objectives)

This study suggests that there is great value in undertaking the top100 competition and showcasing good examples of initiatives that have integrated AI to address the SDGs.
It would be, however, important to think about how companies get a great value out of this type of competition. A first element of reflection would be to think about how to make the competition a knowledge management platform - the idea would be that the companies would interact among themselves and build on each other's comparative advantage. For instance, 2 companies could be working on similar solutions or trying to address the same SDG and could benefit from exchanging knowledge (see also recommendations 6). For this to happen, IRCAI/UNESCO should build a community around the top100 competition to create incentives and spaces for companies to discuss.

2. *Also as a way to show companies the 'how to' integrate AI responsible and effectively for addressing the SDGs*

As a complement to being a knowledge exchange platform, the top100 competition (building on the SDG/AI framework) should illustrate to companies what an outstanding initiative looks like, in terms of addressing SDG through the use of AI for each criterion. For instance, it may be very interesting for companies to understand what a great example of a company that has integrated AI responsibly is .
The assumption is also that if companies have some clear indications on the 'how to' for each criterion they would have more incentives to do so. One suggestion would then be to have a specific example (a great initiative) of what a good example is for each criterion

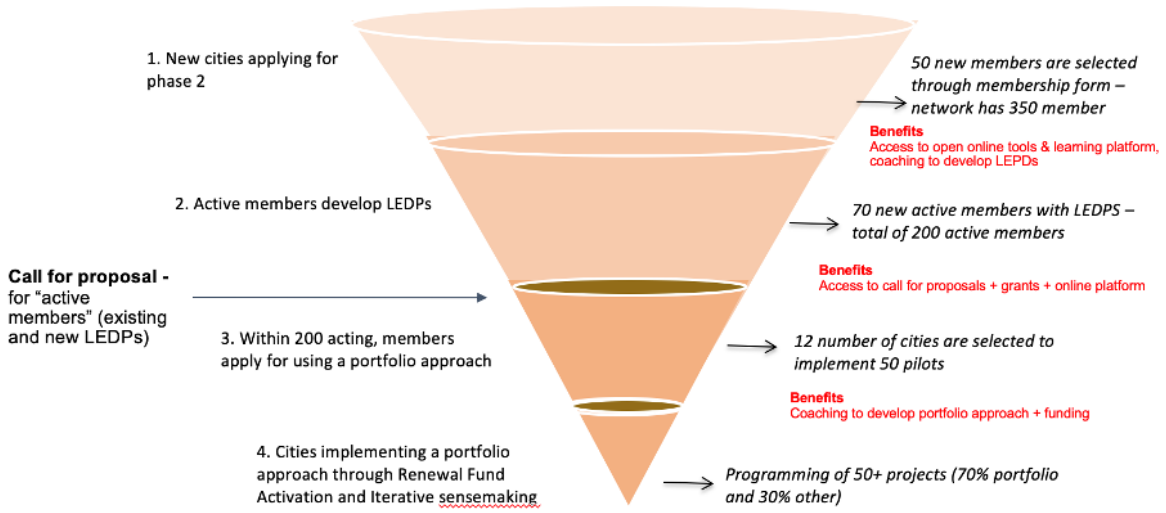
3. *Understanding the needs and the type of support companies/initiatives need for integrating AI in addressing SDGs - structuring the top100 process around that*

One underlying consideration when thinking about the main objective of the competition and the framework (to have more companies integrating AI effectively so as to address SDGs) would be to better understand the needs and type of support companies/initiatives need - whether this is financial support, partnerships, coaching/guidance on the 'how to', network, visibility etc.
In that sense, the top100 competition could slightly revise its selection process (and its objectives) so as to incorporate this consideration of supporting and coaching initiatives.

This study suggests there are 3 possible scenarios for the selection process of the most promising/outstanding initiatives (building on the revised framework), as follows:

1. A competition including one selection for all initiatives with an equal weight/priority for the 8 identified criteria;
2. A competition including one selection for all initiatives yet with criteria having different 'weight';
3. An evaluation filter so as to have multiple selections - for instance, having a preliminary selection with some 'priority criteria' among the ones identified above and a more in-depth evaluation afterwards.

If option 3 is considered then, one could think about ways to incorporate support (financial or coaching) throughout the competition and through the different evaluation filters. The diagram below illustrates an example of a UNDP competition among cities that have to go through a set of selections (based on some identified criteria) to get more access to funding and coaching so as to develop innovative solutions



4. *Creating awareness around and clarifying the connection between SDGs and AI*

One prerequisite to develop an ecosystem around the connection between SDGs and AI and around the framework, is to better explain what this connection is.
This consideration is important as it is still related to the incentives that companies have to either integrate AI to address SDGs or to invest in other companies that do

so. One way to think about that would be to develop some 'tutorials' and videos for the top100 competition that would explain it.

5. *Creating incentives for the private sector to invest in companies in the competition or to address the SDGs through AI*

If the objective is indeed to accelerate the achievement of the SDGs and have a strong impact on those, then the relationship with the private sector becomes central as a way to attract capital to achieve those goals effectively.
The two options would be to either create incentives for private sector companies to invest (such as VCs) in the companies that are participating in the competition or to create incentives for private sector companies to address SDGs while developing AI solutions.

6. Considering the possibility to prioritize SDGs and have companies converge on some of them .

As some recent research has shown[16], the breadth of potential applications of Responsible AI creates a prioritization challenge. While the SDGs provide, in principle, an overarching framework to help orient (and measure) the AI initiatives, some initiatives fail[17] to articulate their activities coherently around the SDG framework or do not liaise with other initiatives and authorities to explore ways to better allocate their efforts.

In this sense, one option would be for the top100 competition to develop specific challenges on a 1 or more SDGs (or 1 or more indicators within 1 SDG) so as to maximize the efforts and have different companies converge on individual targets

[16] Areas-for-Future-Action-in-the-Responsible-AI-Ecosystem, the future society
[17] Based on the evidence from the first edition of top100 competition as well as other competitions)

Annexes

Existing framework

During the first edition of the programme, the following criteria for the assessment of the solutions was developed:

Excellence and Scientific Quality: Please detail the improvements made by the nominee or the nominees' team or yourself if your applying for the award, and why they have been a success.

- Type of AI: What type of AI is involved, and what is the degree of innovation and what kind of application (in the scientific sense) and how innovative the application is in itself?
- Quality of AI solution and algorithm: To what extent is the research work clear and detailed?
- Describe status of technology: What is the TRL and exposure to conferences and media, including IP protection?

Scaling of impact to SDGs: Please detail how many citizens/communities and/or researchers/businesses this has had or can have a positive impact on, including particular groups where applicable and to what extent. Topics to help with answers:

- Overall view: To what extent does the proposal reply to the overall objectives and scope of the Sustainable Development Goals with AI techniques?
- Measurable progress of the AI solution on specific SDGs: To what extent does the proposal contain objectively verifiable indicators for initiative outcome, notably through the organisation of regular user satisfaction surveys and programme evaluations?
- Clarity of SD components: How does the proposal provide a clear technical solution to the SDGs approaches that make use of AI in the general public and in relevant sectors/domains (research, non-profit, corporates, public bodies, start-up)?
- initiativeion of impact and uptake of the AI solution to Sustainable Development: To what extent is the initiative likely to increase the impact of AI in the field of Development, the use of AI based businesses, solving development problems?
- Global impact: How does the proposal demonstrate an ability to ensure a wide and balanced impact, potentially across a number of UNESCO Member States?
- Global added value: Is the proposal contributing to the development of a vibrant AI for SDGs ecosystem?

Scaling of AI solution: Please detail what proof of concept or implementations can you show now in terms of its efficacy and how the solution can be scaled to provide a global impact ad how realistic that scaling is. Topics to help you with your answers:

- Evidence for impact: What is your evidence for impact and what kind of problems are you facing in terms of scaling up?
- Scalability and sustainability of AI solution: A particular attention will be paid to the ability of the approach to increase scaling and the use of AI in new user communities and application areas across SDGs.
- Customer and end user: To what extent is the initiative likely to support or encourage the emergence and growth of companies developing applications based on AI and Development?
- Network effect: To what extent is the initiative likely to support the emergence of a vibrant AI for SDGs ecosystem across the globe, encouraging exchanges between relevant stakeholders (research centers, universities, small and large companies...)?
- Impact: How many early adopters you have? How big is your user community? How engaged are you with open source and GDPR or equivalent standards?

Human Rights aspect: Please detail the way the solution addresses any of the main human rights and ethical aspects, including trustworthiness, bias, gender equality among others

Topics to help you with your answers:

- Human Rights considerations and implications of AI (both long and short term): Is the application of the AI technologies human rights based, ethical and equitable, especially in the Global South where these technologies are potentially absent, and salient power asymmetries persist?
- Trustworthiness of AI solution: Are all three components, which should be met throughout the system's entire life cycle: (1) it should be lawful, complying with all applicable laws and regulations (2) it should be ethical, ensuring adherence to ethical principles and values and (3) it should be robust, all in place?
- Inclusiveness of solution: To what extent does the proposal contain specific elements of added value, such as innovative approaches, models for good practice, promotion of gender equality, equal opportunities, etc.?

Application form

Vision

▪Tell us about the problem facing your city and how your idea addresses it. Include specific examples and data. (200 word limit)

▪Categorize your solution (select up to 2). Is it primarily focused on (a) Health & Wellbeing, (b) Climate & Environment, (c) Economic Recovery & Inclusive Growth, or (d) Equality & Good Governance? (Multiple choice)

Define the Problem:

▪What is the problem you're trying to address? Include supporting data. (100 word limit)

▪If it is a problem that existed prior to 2020, what, if any, past efforts have the city made to address this problem? (100 word limit)

▪If a past effort was implemented, was it successful? Why or why not? (100 word limit)

▪Which residents in your city are most affected by this problem and why? Please provide an estimate of their population size or percentage of your city this population comprises. (100 word limit)

▪Understanding the problem begins with talking to those that are most affected; please share brief quotes from three individuals (residents or other stakeholders) that demonstrate a need for addressing this specific problem. (300 word limit)

▪Please describe both the quantitative and qualitative data you have used to understand the problem better. Explain briefly and share how this research has helped you refine your understanding. (100 word limit)

▪What is the current and long-term impact of this problem on the residents of your city? How did you quantify this impact? If the problem is not addressed, what will be the consequences? (100 word limit)

Digital Public Good Standard TO BE ADDED