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The Contribution of Artificial Intelligence (AI) to Addressing the Global Goals for Sustainable Development

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ABSTRACT

The increasing prevalence of Artificial Intelligence (AI) across various industries necessitates an assessment of its impact on achieving the Sustainable Development Goals (SDGs). Studies indicate that AI has the potential to support 134 targets across all goals through professional, consensus-based data collection strategies. However, it may also hinder progress toward 59 targets, presenting a complex interplay between benefits and challenges. Key concerns include gaps in safety, transparency, and ethical standards, which arise when regulatory frameworks fail to keep pace with the rapid advancement of AI technologies. These issues highlight the need for robust governance and oversight mechanisms to address potential risks. Additionally, overlooked components in the study, such as social equity, environmental justice, and accessibility, are critical for ensuring AI-based solutions contribute effectively to sustainable growth. This research emphasizes the importance of aligning AI applications with global regulatory and ethical standards to maximize positive outcomes while mitigating adverse effects. By fostering collaboration among policymakers, industry leaders, and researchers, AI can become a transformative tool for achieving SDGs. Future efforts should prioritize addressing regulatory gaps and ensuring that AI-driven innovation remains inclusive, transparent, and aligned with the core principles of sustainability.

1. Introduction

AI is influencing an ever-expanding range of sectors. For instance, it is predicted that AI would impact inclusivity and equality [1], as well as global economic growth [2], in the medium and long run, environmental results [3] and a number of other domains. AI is said to have both beneficial and harmful effects on sustainable development. Nevertheless, as of now, no published study has methodically evaluated how AI might affect every facet of sustainable development, which is outlined in the present investigation as the 169 internationally agreed-upon targets and the 17 SDGs found in the 2030 Strategy for Sustainability Growth [4]. We come to the conclusion that this is a significant research gap because AI may affect our capacity to achieve all of the SDGs. This article outlines and examines the implications of how AI could either support or impede the implementation of the 2030 Roadmap of Action for Sustainability's 169 objectives and Seventeen goals. Relationships were defined by the techniques presented at the conclusion of the study, which can be summed up as an expert elicitation process based on consensus and informed by earlier research aiming at mapping the relationships between the SDGs [5-7]. Figure 1 presents an overview of the findings, including the Supplementary Data includes an extensive description of each of the SDGs and targets in addition to the specific outcomes of this study.

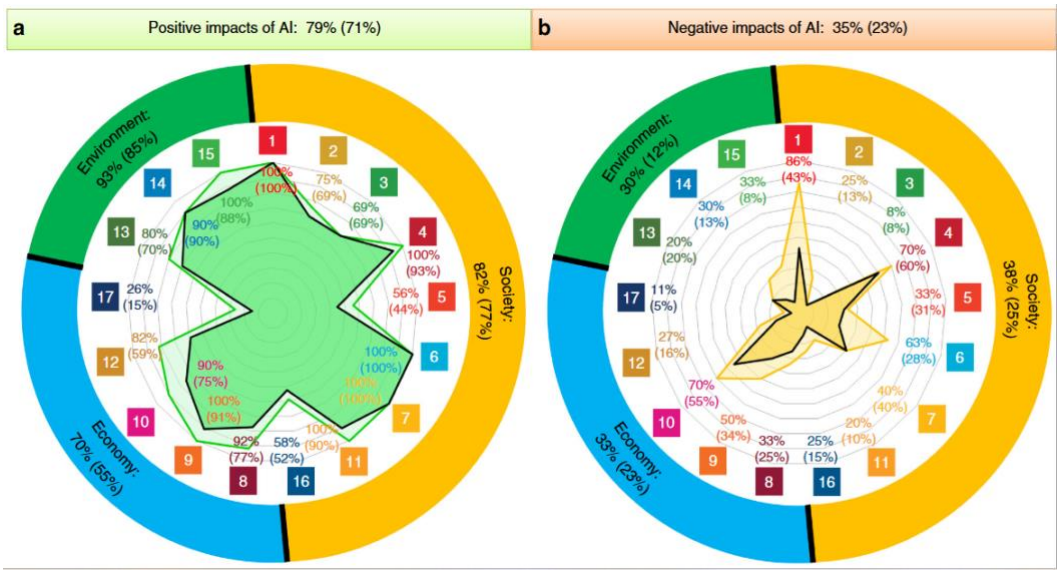

Figure 1 An overview of AI's effects on the different SDGs.

Figure 1 shows the verified proof of AI's ability to either (a) enable or (b) impede every of the seventeen SDGs. The numbers inside the colored squares correspond to each of the SDGs (see Supporting Data). The figures at the top of the graph reflect the percentages of all objectives potentially might get influenced by AI, while the numbers in the middle section show the percentages within each SDG. The outcomes for the three main groups—Society, Economy, and Environment—are also shown in the outer circle of the picture. The inner shaded region and those enclosed in brackets represent the outcomes that are reached while whatever kind evidence being presented is taken into consideration. For the purposes of this study, artificial intelligence (AI) was defined as any software technology that possessed a minimum of any of the following types of abilities: awareness, choice-making, forecasting, effortless extraction of information and recognition of patterns compared to information, interpersonal interaction, and logical reasoning. However, there is currently no universally accepted definition of AI. This perspective covers a wide range of subfields, among them machine learning.

2. Methodology

This study utilized a systematic literature review combined with expert elicitation to evaluate the impact of Artificial Intelligence (AI) on the 17 Sustainable Development Goals (SDGs) and their 169 targets. The methodology involved the following steps:

a. Literature Collection**:** Relevant studies were sourced from peer-reviewed journals, organizational reports, and documented applications of AI using databases such as PubMed, Scopus, and IEEE Xplore. Only studies published within the last 10 years were included.
b. Categorization**:** The SDGs were grouped into three categories—Society, Economy, and Environment—to streamline the analysis process.
c. Expert Review**:** Contributors with expertise in AI and sustainability conducted an initial review of the literature, identifying the potential enabling or hindering roles of AI for each SDG target.
d. Validation and Refinement**:** The findings were validated through iterative discussions among reviewers to ensure consistency and eliminate bias.
e. Exclusion Criteria**:** Speculative sources or anecdotal evidence were excluded to maintain the reliability and accuracy of the results.
f. Visualization**:** Results were visualized using charts and tables, highlighting the areas where AI significantly supports or impedes SDG targets.

3. Result

a. Substantiated links connecting AI with the SDGs

According to our analysis of pertinent data, AI may help achieve 134 (or 79%) of the SDGs. These gains would typically come from technical advancements that make it possible to get around some of the current obstacles. However, the advancement of AI can have a detrimental effect on 59 targets. The three fundamental elements of sustainable development—society, economy, and environment—are the basis for our division of

the SDGs into three categories for the purposes of this study [8]. We are able to present a broad picture of AI's sphere of influence thanks to this classification. As mentioned in the Methods part of the paper, we also give the results of weighting the appropriateness of the evidence across every reference to evaluate an inter-linkage in relation to the proportion of targets analyzed in Fig. 1.

b. The effects of AI on society

AI has the potential to yield benefits for sixty-seven goals (82%) in the Society group (Fig. 2). AI could help achieve all of the goals in SDG one (eradicating poverty), SDG 4 (high-quality education), SDG six (sanitation and water quality), Goal 7 (reliable and affordable energy), and SDG eleven (city sustainability), for instance, by supporting the population's access to nutrition, healthcare, water, and power. For instance, by encouraging the growth of resource-efficient smart cities and circular economies, it can also act as the cornerstone for low-carbon systems [9]. Considering implications within Goals seven, eleven, and thirteen on climate action, artificial intelligence (AI) can, for instance, provide intelligent and low-carbon communities including a multitude of integrated innovations including electro electric cars and intelligent home appliances which may enable response to demand in the power sector [10, 11]. Through allowing intelligent power systems that partially match electricity demand to periods while the sunlight appears and the wind is blowing, AI can also aid in the integration of variable renewable energy [11]. Fewer goals (thirty-one targets, 38%) within the societal category may be negatively damaged with AI compared to those that may benefit from it. However, their consideration is crucial. Many of these are related to the potential applications of AI-enabled technological developments in countries with different cultural norms and income levels.

Massive computational capabilities which are merely available through massive processing facilities could prove required in artificial intelligence study findings, and product design. The energy requirements and carbon impact of these plants are considerable [12]. For example, cryptocurrency apps like Bitcoin consume the same amount of electricity worldwide as the electrical demand of some countries [11], which jeopardizes progress toward both SDG 13 on climate change mitigation and SDG 7 on the economy. Information and communications technology (ICT) demand may account for up to 20% of the world's total electricity consumption by 2030, up from about 1% at the moment, according to some estimates [13]. Thus, green growth in ICT technology is crucial [14]. Reducing the rate of growth in electricity demand will involve using more renewable energy in ICTs and more effective cooling technologies for data centers [15]. AI model development must use human expertise alongside to using more energy-efficient and renewable data centers. Aside from the fact that training AI models uses a lot more energy than the human brain, another factor that may drastically lower the related consumption of energy is the fact that the model's accessible knowledge requires no effort to be learned through data-intensive training.

The 2030 Agenda could be expedited by AI; nevertheless it possesses an opportunity to worsen inequality, which could obstruct the achievement of SDGs 1, 4, and 5. This contradiction is reflected in Target 1.1 since AI may utilize satellite imagery to pinpoint areas of poverty and promote international action [5]. But it might also lead to additional requirements for any job, which would exacerbate the discrepancies that currently exist [15] and make this objective impossible to achieve. Another major drawback of AI-based breakthroughs is that they are sometimes influenced by the needs and values of the nations producing them.

Figure 2 Comprehensive analysis of AI's effects on the 2030 goals in a social area

I may incite nationalism, hatred of minorities, and sway election results if big data and AI technology are applied in areas without democratic oversight, openness, or ethical examination [16]. The phrase "big nudging" has come to refer to the practice of leveraging AI and big data to manipulate decisions by taking advantage of psychological flaws, which can lead to issues like undermining human rights, democratic ideals, and societal cohesion [17]. Recently, AI has been applied to create citizen scores—a social behavior control mechanism [18]. This kind of score is an obvious illustration of how AI misuse threatens human rights, as one of its main issues is that citizens are not informed about the kinds of data that are examined or the potential effects on their life. It's also critical to recognize the uneven distribution of AI technology. For example, Small farmers could lack access to advanced AI-enhanced farming equipment, which would put them at a disadvantage compared to larger businesses in more developed economies [19]. This will impede the achievement of some SDG 2 targets related to ending hunger.

The lack of research examining the potential impacts of AI technologies such as image recognition, intelligent algorithms, and machine learning on prejudice against women and minorities is another serious shortcoming with regard to SDG 5 for gender equality. The biases against women that are embedded in today's languages, for instance, will be inadvertently detected and reproduced by algorithms that are mindlessly trained on news articles. It has been discovered that word embeddings, a common method in language processing, can amplify pre-existing gender preconceptions [2]. The absence of sexual orientation, ethnic, and cultural variety in the AI workplace is a major problem, in conjunction with an absence of richness in datasets [20]. Diversity, one of the fundamental principles of inventiveness and social resilience, will be essential in a community wherein the development of AI would inevitably bring about changes [21]. Societal resilience is also promoted by decentralization, which is the application of AI technology customized to the particular needs and cultural environment of different areas.

c. The Effects of AI on Economic

AI's technological advantages could make it easier to achieve many of the SDGs under the Economics category. Out of all the SDGs, the study concluded that AI has beneficial impacts on 42 milestones (seventy percent) while having negative consequences on 20 objectives (thirty three%), as shown in Fig. 1. The literature also indicates some negative effects, primarily connected to growing inequality [22–25], despite [1] reporting a net beneficial effect of AI-enabled technology associated with higher productivity. In the framework of the Economic Development group of SDGs, the recently established inequalities [26] could substantially widen the economic gap because they have an important effect on SDGs 8, 9, and 10. This is because future markets may rely extensively on analysis of data and these resources may not be equally accessible in middle-income and low-income nations. AI can worsen inequality both inside and between countries. [24] Technology disproportionately benefits the educated by replacing low-skilled positions with ones that need higher levels of education.

In the US, incomes for graduate students have increased by approximately 25% since the mid-1970s. Furthermore, the Google, Apple, and Facebook boasted 30 times higher stock market value and nine times fewer employees. An evaluation of the reported benefits and drawbacks on the several SDG targets included in the Economics category is presented in Figure 3. Trade-offs cannot be ignored, even though the identified connections within the Global Economic group are primarily beneficial. AI, for example, has a negative impact on social media activity by displaying material to users which was tailored to their preexisting notions. Given relation to the goal 10 on decreased inequalities, this has an impact on social cohesion and repercussions. AI has the potential to reduce inequality by identifying the causes of inequality and conflict [22]. This is so that it is possible to utilize simulations in finding out how virtual societies cope with changes. However, there is an inherent risk when using AI to evaluate and predict human behavior because of the inherent bias in the data. Using AI to target online job advertisements automatically has been found to provide a number of discriminating issues [22]. The study by [25] highlights the need to modify the data compilation process in particular customize different AI-based algorithms used in decision-making processes in order to avoid such biases.

Figure 3 Comprehensive analysis of AI's effects on the SDGs under the Economics area

d. The Effects of AI on Environment

Figure 4 examines the final set of SDGs, which is related to the environment. This collection of three SDGs (SDGs thirteen, fourteen and fifteen) addresses life below water, life on land, and climate action. The study found 25 targets (93%) within the Environmental class that AI helps to enable. One advantage of AI may be its capacity to evaluate vastly interconnected datasets and develop concerted efforts to safeguard our planet. There are indications that advancements in AI will help us better understand how climate change is occurring and model its possible effects, especially in relation to Goal 13 on climate action. In order to fight climate change, AI will also support ecologically friendly energy systems that heavily integrate sources of renewable energy [10, 11].

AI techniques for automatic oil spill identification can help accomplish objective 14.1 which call for a considerable reduction in maritime pollution of all types [31]. Target 15.3, which asks for halting desertification and repairing degraded land and soil, is another illustration. Ref. [29] claims that objective-oriented methods and neural networks can be utilized to enhance the categorization of vegetation cover types based on satellite photos, with the potential to handle a significant number of images in a comparatively short amount of time. With the aim of preventing additional reversing trends through determining the main drivers, these AI algorithms assist in spotting trends in desertification over broad geographic regions. Nevertheless, as was already mentioned, AI applications' high energy requirements could make it more difficult to achieve Goal thirteen on tackling climate change, especially if non carbon neutral sources of energy are used. Furthermore, even though there are numerous examples of how AI is being used to enhance tracking of preservation [23], the extent of this improper use has not yet been sufficiently demonstrated, it is feasible that greater availability of ecosystem related AI data would result in over-exploitation of resources.

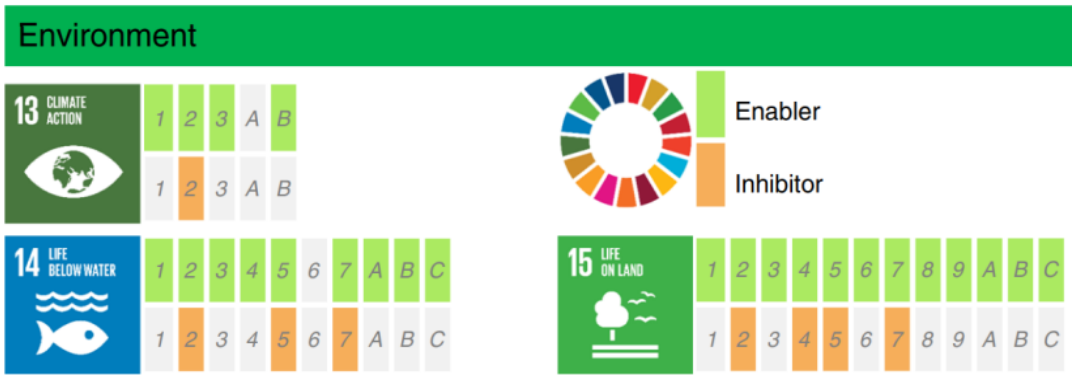

Figure 4 Comprehensive analysis of AI's effects on the SDGs in the environmental area

e. Study Imperfections on AI's Contribution to Sustainable Development

The more AI applications are used to enable the SDGs—from self-driving cars to AI-powered healthcare systems [34] and smart electrical grids [10]—the more crucial it is to fund AI safety research to maintain these useful and robust systems and keep hackers and malfunctions at bay. A critical area of study for a secure incorporation of AI recognizes that systemic flaws in AI technology can lead to disasters. For example, the adoption of artificial intelligence in the banking industry raises such concerns, according to a recent global

economic forum paper [35]. Raising awareness of the dangers posed by potential AI system breakdowns is crucial in light of society's growing reliance on this technology. Moreover, even though we were able to locate a large number of papers indicating that AI may be able to facilitate the achievement of several goals of the Sustainable Development and measurements, a large portion of these studies were carried out in controlled laboratory settings using small datasets [28, 31]. Therefore, extrapolating this data to assess the effects in reality frequently remains difficult. This is especially true when assessing AI's effects on larger temporal and spatial scales. We recognize that controlled experiments to assess the effects of AI may portray a snapshot scenario in which AI instruments are customized for that particular setting. However, because society is ever-evolving, so too are the standards for AI, creating a feedback loop in which AI and society interact.

The literature currently in publication also addresses society's adaptability to changes brought forth by AI. Thus, before using AI on a broad scale, new approaches must be used to guarantee that the effects of emerging technologies are evaluated from the perspectives of sustainability, ethics, and efficiency. Given the significant risk involved in an AI system failure, research targeted at determining the causes of those failures and developing combined human-machine analysis tools are, thus, an essential phase towards accountable AI technology. Even if there is a greater amount of published information showing AI facilitating rather than impeding these goals, there are two key factors that need to be taken into account. First, the AI scientific community and industry are likely to be biased toward releasing favorable results due to self-interest. Second, longer-term research is needed to identify the negative elements of AI, and there aren't many well-established evaluation techniques available to achieve this. A bias in favor of releasing findings that are good is especially noticeable with the SDGs that relate to the Environmental class.

Target 14.5 on the preservation of coastal and marine regions is a notable illustration of this bias, as machine-learning algorithms can offer optimal solutions given a wide range of factors for the optimal selection of sites for incorporation in conservation networks [36]. Nevertheless, considering the unidentified variables that might be involved, more investigation would be required to evaluate the long-term effects associated with these algorithms on equality and fairness [6], even if the answers seem ideal from a mathematical standpoint (which was provided a range of chosen parameters). As for the second reason mentioned above, it's likely that funding will go to the AI initiatives that have the best chance of making the most money. Without oversight, it is anticipated that AI research will focus on applications where financing and business interests are present. This could lead to a rise in inequality. As a result, if the anticipated economic impact of AI-based technologies is low, there is a chance that they won't be given priority even though they have the ability to accomplish several SDGs. In addition, it is critical to support the creation of projects aimed at evaluating the communal, legal, ethical, and environmental effects of emerging AI technology.

Enhanced algorithmic learning approaches for the prediction of specific events are at the center of substantive research and the application of AI technology to SDGs. This is the case for applications like anticipating the behavior of recidivist offenders or predicting extreme weather events. It is anticipated that this research will enable response and planning for a variety of situations. However, as was previously said, there is a scientific deficit in practical implementations of such systems, such as by governments. Organizations face several obstacles when implementing AI systems into their decision-making processes. These include the requirement to establish cybersecurity protocols and safeguard citizen privacy and data. Regarding the topics of tracking, communication, data storage, surveillance, and automation of procedures without strict ethical guidelines, both elements have an impact on human rights [37]. In order to guarantee the usability and viability of AI technology for governments, it would be imperative to address these shortcomings. Such is additionally a requirement for comprehending the potential long-term effects of AI while controlling its use to lessen any potential bias that AI may have [6].

Additionally, our data shows that applications of AI have lately been skewed toward SDG concerns that mostly affect the countries where the majority of AI researchers reside and work. Rich countries, for example, are home to many of the systems that use AI in agriculture, such as those that automate harvest or enhance its timing. Only a few instances of AI technology being used to address SDG-related problems in countries without robust AI research were found in our literature search. Likewise, if AI technologies are created for technologically advanced situations, they may exacerbate problems in less developed nations. This discovery could lead to significant advancements in AI technology, which would exacerbate inequality within and between nations and undermine the Sustainable Development Goals. We encourage researchers to focus on developing AI solutions that target particular problems in developing nations. The organizations that do this type of work should ensure that the approaches are not simply ripped from high-tech nations. They must be developed with a thorough understanding of the pertinent field in order to increase the likelihood of adoption and success.

f. In the Direction of Sustainable Artificial Intelligence

Artificial intelligence-powered technology has the potential to generate vast wealth, but it may mostly benefit the well-educated and wealthy, leaving others worse off as jobs are lost. As artificial intelligence becomes more economically significant, inequality may worsen due to an unequal allocation of computational and learning materials worldwide. Additionally, the biases included in the data utilized for training the algorithms for AI may intensify with time, ultimately resulting in a rise in discriminating. The use of AI for the production of computation advertising powered by big data, which is disseminated via social media by autonomous AI agents with the intention of swaying public opinion and igniting political polarization, is another related issue. Long-term effects of AI are conceivable (though unstudied) despite the fact that present scientific evidence contradicts technical determinism of such false innovation. This is because there are insufficiently reliable study methodologies. Therefore, a paradigm shift is required to encourage cooperation and restrict the potential for AI to dominate citizen behavior. A system of finance that supports a circular economy and is in line with society objectives and values has been dubbed Finance 4.0. A key component of a paradigm like this would be informational self-determination, in which the person actively controls how AI systems treat their data.

Another issue brought about by the data-intensive nature of AI applications is the tension between the requirement for improved open processing and secure storage of individual data along with the ever-increasing amount of detailed information needed to better AI algorithms. The healthcare industry is one during which this dispute is especially significant. According to the study [27], the vast amount of personal medical data may make it possible to develop incredibly powerful diagnostic and treatment tools, but the various concerns about information ownership and privacy call for careful legislative action. To assess any possible long-term negative consequences, more research is also needed in this area. The scholarly debate over legal standing of robotics [34] is the result of all the problems mentioned above, and it has the potential to give rise to frightening tales of technological authoritarianism. Many of these elements are the outcome of interactions between government responses, human requests, technical advancements, and environmental dynamics and resources. A schematic illustration of these dynamics is shown in Figure 5, with a focus on the part played by technology. The evidence covered above indicates that these interactions are out of balance right now, and the introduction of AI has made things worse. The rapid development of an extensive variety of cutting-edge innovations is having a major impact on both the environment and how people live, necessitating the creation of new government pilot programs.

The issue is that governments and people alike don't appear to have been ready to keep up with the rapid advancements in technology. The absence of suitable regulations to guarantee the long-term sustainability of these novel technologies serves as an example of this fact. We contend that it is imperative to buck this trend. The first step in directing AI's potential toward the greatest good for people and the accomplishment of the SDGs is to put in place appropriate legal and legislative frameworks. Prioritizing regulatory insight over regulatory oversight would ensure that decision-makers are well-versed in the issues surrounding artificial intelligence and can create appropriate policies. Gaining such knowledge is even more important than monitoring as poorly thought out policy will probably be at best ineffectual and at worst harmful.

Although SDG 16's robust, interconnected institutions are necessary to control AI, our research reveals that little is known about how AI may affect these institutions. Positive benefits include, for instance, AI programs designed to enhance fraud detection or evaluate the consequences of specific laws. Another worry is that algorithm bias, especially with regard to minorities, could make data-driven policing strategies more difficult for equal access to the courts. As a result, we think it's critical to create laws pertaining to AI accountability and transparency and to determine the moral guidelines that apply to AI-based technology. Initiatives like the European Union's ethical standards for trusting AI and the IEEE's ethical aligned design are driving this debate [38]. It is worth noting that, although responsible, ethical, and reliable approaches to AI development and application are crucial, this issue is, in a sense, unrelated to the article's goals. Put another way, it is possible for AI applications to enhance SDG outcomes even when they do not fully comply with AI ethics guidelines; for this reason, we advise the fact that AI functions that aim to achieve SDGs be transparent and obvious concerning directing ethical principles, as well as by explicitly stating how they do so.

However, one more issue that complicates the administration of these sorts of regulatory actions is the shortage of interpretation regarding AI, and these currently represent one of the greatest obstacles of research into AI [39]. It should be noted that AI algorithms are trained using records (inputs) from past rulings and legislation, can serve as a "mirror" reflecting prejudices and unjust laws. This offers a chance to potentially find and fix specific mistakes in the current processes. The proliferation of data-driven AI technology and the requirement to protect individual privacy and security are obviously at odds. The massive volume of data

generated by citizens has the potential to be utilized to sway customer sentiment in favor of an item or political cause if it is not properly regulated [29].

Technologies of AI that improve society welfare might not necessarily be advantageous to each person on their own [14]. The inherent conflict between the interests of the collective and the individual is relevant to the application of AI, but it is not a problem that should be resolved by the utilization of AI it's self. This has constantly been a problem for humanity, and it cannot be resolved simply because all relevant parties must participate in any solution that calls for the involvement of all relevant parties. The difficulty of human values and the dynamic nature of context suggest that there is no one ethical theory that applies to all circumstances and is always true. As a result, a just one set of practical ethical fundamentals with AI could not be recommended owing to the excessive level of complexity in our societies. The possible complexity of human-AI interactions must also be acknowledged, as is the increasing demand for ethically grounded legislation and certification procedures for AI systems. This is true for practically all uses of artificial intelligence, but it's especially crucial for those like self-navigating weapons that might have catastrophic effects on humanity if they are not controlled. Concerning the latter, groups of specialists in robots and AI are already organizing to demand regulation and restrictions on their use. In addition, organizations like the Tomorrow's Way of Existence Institute are examining and compiling global policy actions and consensus principles in order to track advancements towards AI that is conducive to sustainable development.

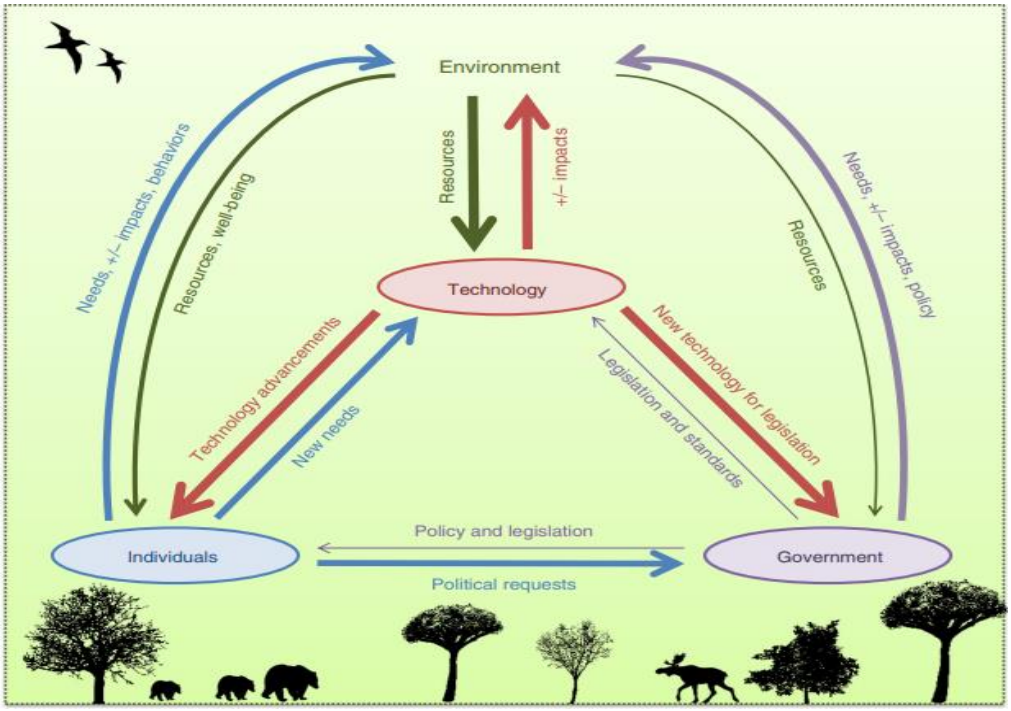

Figure 5 AI's relationship with society

g. The approaches of study

This section explains the methodology used to get the outcomes that are reported in the current study and displayed within the supplemental Data. For each of the 169 objectives included in the 17 SDGs, the objective was to provide a response to the question, "Is existing publishing evidence of AI operating to be a facilitator or a limiting factor for this particular target?" In order to achieve this, we carried out a consensus-based expertise elicitation procedure, drawing on prior research on the mapping of SDG inter-linkages [5, 6] as well as authors in [40, 41].

The authors of the study were experts in the elicitation process and came from a wide range of academic fields, covering engineering, the sciences of nature, and the sciences of society. The authors carried out an expert-driven review of literature to support the conclusions made regarding the connections underlying AI and the various aims. The authors considered the data from the following sources to be adequate evidence: given confirmation on laboratory situations (we ensured that the publications considered in the assessment were of adequate standard, offering a level of variation contingent on the venue); reports from reputable organizations (such as government bodies); published articles with practical applications (we ensured that the papers considered in the evaluation were of appropriate quality, thinking about the quality variance cantered on the venue); and documented promotional phase applications. However, the press, popular opinion, well-

informed speculation, use in practice without peer-reviewed research, and other knowledge sources were not regarded as trustworthy. [42]

The method used for expert elicitation was outlined below: every SDG was credited to a certain number of primary contributors, and in certain situations, to a large number of additional contributors. [43] For that SDG, the primary contributors conducted an initial literature search, and the secondary contributors finished the primary analysis. For the purpose of mapping the inter-linkage, one available research investigating the trade-off or synergy among an objective and AI was deemed sufficient. On the other hand, multiple references are given for almost every target. Once the authors had finished their research of a particular SDG, a reviewer was tasked with assessing the links and logic they had provided. We attempted to choose specialists with competencies for the SDGs as the primary contributor and reviewer, as the reviewer was not included in the initial study. The reviewer's job was to critically evaluate the analysis and raise any new points of view or considerations. After then, until the analysis for every SDG was sufficiently improved, the primary contributors and reviewers engaged in an iterative discussion to improve the results offered for each of the SDGs.

Following agreement on the assessment presented throughout the Supplemental Data, we examined the targets that showed that AI could serve to be an enabling or an inhibitor. We then computed the proportion of targets over each of the 17 goals for which AI had a positive or negative impact, as illustrated in Fig. 1. In addition, in accordance with the classification described by Ref. [8], we separated the SDGs into three main groups: society, economy, and environment. Figure 6 displays the SDGs allocated for every of the categories, while Figures 2-4 display the specific outcomes for each of these groupings. These numbers show if significant documented evidence of either a beneficial or adverse effect was discovered for every target within each SDG. [44]

Figure 6 the SDGs Categorization

4. Conclusion

The writers' viewpoint is reflected in the analysis that is being presented. It's possible that the writers overlooked some research regarding how AI might impact particular SDGs or that there isn't yet public proof of such connections. However, the techniques used made an effort to reduce the assessment's subjectivity. Several writers evaluated and studied the potential impact of AI on achieving each SDG, and numerous researches were examined for each inter-linkage. Lastly, the SDG analysis is the foundation of this work. In comparison to the Development Goals, the SDGs represent a significant advancement in the representation of all aspects of sustainable development, including rights for humans, sustainability in society, ecological results, and economic development. [45] The SDGs offer a potent lens through which to view around the world recognized objectives on sustainable growth. The SDGs, however, are the result of political compromise and may not adequately capture all of the intricate relationships and interplay between the various aims. As a result, the SDGs must be taken into account alongside other international accords, both past and present.

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