# Harnessing Artificial Intelligence for Development Redefined

Leah Darbyson

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## Executive summary

Artificial intelligence (AI) has rapidly emerged as one of the most disruptive technologies of our time, reshaping economies, governance, and social systems worldwide. For sustainable development, AI offers transformative potential in health, education, climate adaptation, finance, and peacebuilding. AI could contribute up to $4 trillion annual to global economic value with most gains risk being concentrated in advanced economies (IMF, 2024; McKinsey Global Institute, 2023). Barriers like weak governance, limited digital infrastructure, gaps in data and skills, obstruct less advanced economies from realizing these gains.

Without deliberate governance and innovative financing, AI could deepen dependency on advanced economies, widen global inequalities, and entrench new forms of surveillance and militarization. Women, the elderly, and Indigenous communities—already under-represented in data and decision-making—face greater exclusion. Environmental costs. notably the high water and energy use of large AI models, threaten to undermine progress on climate-related development goals.

The global race over AI is reshaping geopolitics. Big tech firms in the United States (U.S.) are pushing frontier models for global commercialization. Their market-led approach is increasingly challenged by China's state-led ambition to lead globally by 2030 through massive investment in "national champions" and digital infrastructure exports. A third key player, India, positions itself as a bridge-builder between U.S. corporate dominance and China's statist approach via digital public goods. India's *Digital Public Infrastructure* (DPI) such as Aadhaar and UPI are deployed as open, affordable, and scalable infrastructure that lowers barriers to exclusion.

AI carries profound risks in the security and military domains. It is destabilizing nuclear deterrence and disarmament agendas by normalizing autonomous weapons and eroding human control over critical decisions. Civil society organizations such as the Future of Life Institute (FLI) warn that integrating AI into nuclear command systems could accelerate response times and heighten the risk of catastrophic miscalculation

This paper highlights sectoral case studies that demonstrate promising applications of AI in development as well as simultaneous risks. It argues for reframing AI governance through inclusive, justice-oriented approaches that centre gender equity, Indigenous and local knowledge, and South-South cooperation. It also pushes for embedding disarmament into AI policies, frameworks and governance. Building on this analysis, six actionable recommendations for Global Affairs Canada and International Development Research Centre (IDRC) are put forward.

Key recommendations:

1. **Support a South–Led AI Commons** to scale open datasets, benchmarks, and algorithms for public-good applications in health, education, climate adaptation, and peacebuilding.
2. **Strengthen compute access in the Global South** through regional cooperatives that provide affordable infrastructure governed by local institutions like universities.
3. **Expand innovative finance for inclusive AI,** blending public, private, and philanthropic capital to back climate-smart and gender-transformative applications.
4. **Embed gender equity across AI policies and investments,** ensuring women and girls are included as decision-makers, innovators, and beneficiaries.
5. **Support Indigenous-led AI pathways** to reshape AI design and governance and ensure AI reflects diverse worldviews, languages, and priorities.
6. **Back regional foresight and governance on AI and security,** enabling governments to anticipate risks, adapt, and safeguard against misuse.

These measures would allow Canada to position itself as a constructive actor in shaping a sustainable future that supports development, peace and disarmament, and amplifying Global South leadership in global governance.

## Résumé

L'intelligence artificielle (IA) s'est rapidement imposée comme l'une des technologies les plus perturbatrices de notre époque, modifiant les économies, la gouvernance et les systèmes sociaux à l'échelle mondiale. Pour le développement durable, l'IA offre un potentiel transformateur dans les domaines de la santé, de l'éducation, de l'adaptation climatique, de la finance et de la consolidation de la paix. L'IA pourrait contribuer jusqu'à 4 000 milliards $ par année à la valeur économique mondiale, la majorité des bénéfices étant concentrée dans les économies avancées (FMI, 2024; McKinsey Global Institute, 2023). Cependant, des obstacles comme une gouvernance faible, des infrastructures numériques limitées, ainsi que des lacunes en matière de données et de compétences empêchent les économies moins avancées de tirer pleinement profit de ces gains.

Sans une gouvernance intentionnelle et un financement innovant, l'IA risque d'approfondir la dépendance envers les économies avancées, d'élargir les inégalités mondiales et de renforcer de nouvelles formes de surveillance et de militarisation. Les femmes, les personnes âgées et les communautés autochtones—déjà sous-représentées dans les données et les processus décisionnels—sont particulièrement exposées au risque d'exclusion accrue. Les coûts environnementaux, notamment la forte consommation d'eau et d'énergie des grands modèles d'IA, menacent aussi les progrès liés aux objectifs climatiques.

La course mondiale à l'IA redéfinit la géopolitique. Les grandes entreprises technologiques aux États-Unis poussent au développement de modèles de pointe pour une commercialisation globale. Leur approche axée sur le marché est de plus en plus contestée par l'ambition étatique de la Chine, visant la domination d'ici 2030 grâce à des investissements massifs dans des « champions nationaux » et l'exportation d'infrastructures numériques. L'Inde, pour sa part, se positionne comme un pont entre la domination d'entreprise des États-Unis et l'approche étatiste chinoise, grâce à ses biens publics numériques comme « Aadhaar » et « UPI », conçus comme des infrastructures ouvertes, abordables et évolutives qui réduisent les barrières à l'exclusion.

L'IA entraîne aussi des risques profonds en matière de sécurité et militaire. Elle fragilise la dissuasion nucléaire et les agendas de désarmement en normalisant les armes autonomes et en érodant le contrôle humain sur des décisions critiques. Des organisations de la société civile, comme le « Future of Life Institute (FLI) », préviennent que l'intégration de l'IA aux systèmes de commandement nucléaire pourrait accélérer les temps de réponse et accroître le risque de mauvaises évaluations catastrophiques.

Ce document présente des études de cas sectorielles qui illustrent autant des usages prometteurs de l'IA pour le développement que ses risques simultanés. Il avance l'idée de repenser la gouvernance de l'IA à travers des approches inclusives et axées sur la justice, en plaçant l'équité entre les genres, les savoirs autochtones et locaux, ainsi que la coopération Sud-Sud au centre. Il insiste également sur l'importance d'intégrer le désarmement aux politiques, cadres et gouvernances de l'IA. En s'appuyant sur cette analyse, six recommandations concrètes sont proposées à Affaires mondiales Canada et au Centre de recherches pour le développement international (CRDI).

**Recommandations clés**

1. Soutenir un « Projet Commun des IA » dirigé par le Sud pour élargir les ensembles de données ouverts, les indicateurs et les algorithmes destinés aux applications d'intérêt public en santé, éducation, adaptation climatique et consolidation de la paix.

2. Renforcer l'accès à la puissance de calcul dans le Sud global par la création de coopératives régionales offrant des infrastructures abordables sous gouvernance locale (ex. universités).

3. Étendre les mécanismes de financement novateurs pour une IA inclusive, combinant capitaux publics, privés et philanthropiques afin de soutenir des applications respectueuses du climat et transformatrices en matière de genre.

4. Intégrer l'équité entre les genres dans toutes les politiques et les investissements liés à l'IA, en incluant les femmes et les filles comme décideuses, innovatrices et bénéficiaires.

5. Appuyer les démarches autochtones en IA afin de transformer le design et la gouvernance de l'IA pour qu'elle reflète la diversité des visions du monde, des langues et des priorités.

6. Soutenir la prospective régionale et la gouvernance sur l'IA et la sécurité, permettant aux gouvernements d'anticiper les risques, de s'adapter et de prévenir les usages abusifs.

Ces mesures permettraient au Canada de se positionner comme un acteur constructif dans la construction d'un avenir durable favorisant le développement, la paix et le désarmement, tout en amplifiant le rôle de leadership du Sud global dans la gouvernance internationale.

## Introduction

AI's global diffusion is reshaping economies, governance, and social systems worldwide. For sustainable development, AI offers transformative potential in health, education, climate resilience, finance, and peacebuilding, with the capacity to accelerate progress on the Sustainable Development Goals (SDGs) and address the world's most urgent challenges (IDRC, 2024; IMF, 2024; World Bank, 2021). Yet the promise of these benefits for low- and middle-income countries (LMICs) is elusive. Access to AI's opportunities is restricted by systemic barriers and limited digital capacity. As AEs deploy new digital technologies, LMICs confront the dual challenge of addressing deep inequalities while navigating the pressures of an ever-evolving digital landscape.

These dynamics are further complicated by the fact that AI's development is unfolding within an increasingly multipolar and contested global order, where a handful of major powers shape standards, markets, and governance models that will affect how AI diffuses worldwide. Beyond the United States and China, the dominant rivals leading AI, other significant players include the European Union as a regulatory power, India as a bridge-builder between the East and West, Israel and Russia with military and surveillance priorities, and emerging AI hubs in Gulf states like the United Arab Emirates and Saudi Arabia. If investment, deployment, and governance of AI are shaped primarily by the strategic priorities of a few major powers, there is a risk that LMICs will become more, rather than less, dependent.

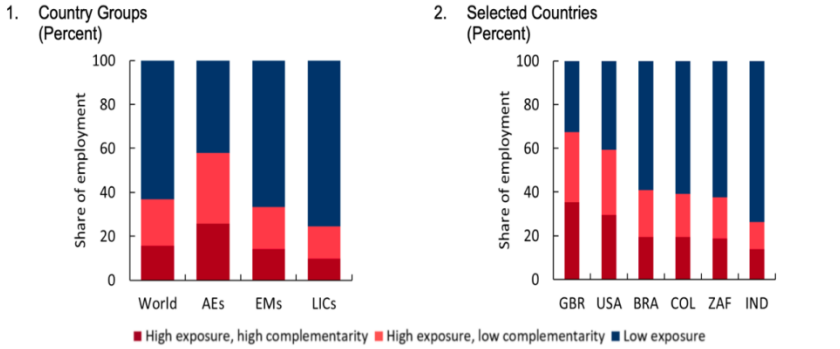
This background paper examines both the opportunities and the risks of AI for sustainable development. It highlights sectoral applications where AI is already advancing healthcare, agriculture, education, finance, climate adaptation, and peacebuilding. It identifies risks — inequality, surveillance, militarization, and epistemic injustice —that threaten SDG progress. Finally, the paper explores innovative pathways for finance and governance, with a focus on justice, peace, and reimagined models of global cooperation. In doing so, it aligns with the themes of the Group of 78's 2025 Annual Conference on harnessing AI and innovative finance to reach the SDGs.

## Global context

The global digital landscape is tremendously uneven. Research, investment, adoption, and market power remain concentrated in advanced economy (AE) firms and investors, largely bypassing LMICs in global AI research, policy debates and practice. Only 0.03% of conference publications on AI originate from Sub-Saharan Africa, compared to Europe and Central Asia (19%), North America (22%), and East Asia (27%) (OECD, 2023; Khan et al., 2024). The divide is not only in AI research and development (R&D) but in how its gains are distributed, with AEs positioned to reap the rewards. As shown in Figure 1, jobs in AEs are more likely to be "complemented" by AI, meaning workers can leverage AI tools to enhance productivity (IMF, 2024). Alternatively, in LMICs exposure is often without complementarity, signaling higher risks of displacement without productivity gains For LMICs, this underscores the urgent need for investment in digital infrastructure, skills development, and

inclusive policies that can maximize AI's complementarity and prevent deepening inequality (IMF, 2024).

**Figure 1: Employment share by AI exposure and complementarity across country groups and selected economies (IMF, 2024)**




Sources: American Community Survey; Gran Encuesta Integrada de Hogares; India Periodic Labour Force Survey; International Labour Organization; Labour Market Dynamics in South Africa; Pesquisa Nacional por Amostra de Domicílios Contínua; UK Labour Force Survey; and IMF staff calculations.
Note: Country labels use International Organization for Standardization (ISO) country codes. AEs = advanced economies; EMs = emerging market economies; LICs = low-income countries; World = all countries in the sample. Share of employment within each country group is calculated as the working-age-population-weighted average.

Unlike earlier waves of technological change, such as the Industrial Revolution, the Cold War, and the dot-com boom, AI is distinguished by its speed of diffusion, reliance on vast data infrastructure, and dual-use potential across civilian and military domains. This makes it simultaneously a powerful development tool and a source of new vulnerabilities. AI's ubiquitous and invisible nature is perhaps the most distinguishable feature of this new era, with almost all parts operating beyond public view (Rohozinski, 2025).

The growing global enthusiasm for AI adoption is evidenced by initiatives such as the Pan-Canadian AI Strategy, the African Union (AU) Continental AI Strategy, the OECD AI Principles (2019), the G20 Principles for Responsible Stewardship of Trustworthy AI (2019), the G7 Hiroshima Process (2023), and the Global Index on Responsible AI (GIRAI), among many others. These efforts represent a new era of cooperation to harness sustainable opportunities and mitigate harm, with signs of convergence around responsible and ethical AI principles across very different political and regional contexts.

The realities of AI adoption reveal a paradox: It is optimistically positioned as a tool to accelerate innovation needed to reach the SDGs. Yet structural challenges in access, governance, and capacity risk amplifying divides within and between countries, potentially undoing development progress. A central issue is not only the degree to which AI spreads, but on whose terms, under whose control, and toward whose priorities (Lipcsey, 2025).

The global contest over AI is increasingly multipolar, shaped most visibly by the rivalry between the United States and China. On one side, U.S. firms dominate frontier AI research, commercialization (e.g., Google, Microsoft, OpenAI, Amazon, Meta), backed by a digital ecosystem that reflects decades of American hegemony over the internet's core infrastructure. Staggeringly, U.S. companies control roughly 63 percent of the global cloud computing market, own or operate the majority of the world's undersea cables, and host 9 of the 13 root domain name servers (Rohozinski, 2025). American data centres handle up to 70 percent of global internet traffic, "making the United States

the de facto gatekeeper of global communication" (Rohozinski, 2025).

On another side, China pursues a state-led ambition to become lead globally by 2030, backed by massive investment in national innovation zones, supercomputing, and "national champions" (e.g., Baidu, Alibaba, Tencent, iFlytek, SenseTime) while restricting foreign competition (Melnik, 2018). The consulting firm PwC estimates that AI will add $7 trillion to the Chinese economy by 2030 (26.1% of China's GDP) and account for almost half of the global economic impact of AI (Sheehan, 2018).

China is also expanding its influence through BRICS cooperation, the Shanghai Cooperation Organization, and the "One Belt, One Road" strategy (State Council of China, 2017). This creates both opportunities and dependencies: while Chinese partnerships offer affordable technology and infrastructure, they also risk exporting models of data governance and digital surveillance that may entrench authoritarian practices. Evidence shows that global value chain integration for AI diffusion is already stronger with China than with the United States in many LMICs (Lipscey, 2025), reflecting China's growing role in shaping AI pathways in the Global South. But as Rohozinski (2025) notes, America's advantage in research, talent, and investment ultimately gives it "decisive influence over how this transformative technology evolves."

Meanwhile, India is emerging as a pivotal actor, pursuing its own AI strategy through the National Institution for Transforming India. Unlike China's centralized model, India emphasizes context-specific applications such as smart cities, agriculture, and cyber-physical systems, reflecting both democratic governance and developmental priorities (NITI Aayog, 2018). India positions itself as a bridge-builder between the East and the West through digital public goods like Aadhaar and UPI (Chatterjee, 2025). While these systems are applauded for expanding access, India too wields significant influence in shaping digital dependencies as LMICs adopting India's digital public infrastructure may rely on Indian standards, vendors, and governance models which potentially limits local sovereignty. For Canada and its partners, this raises the strategic challenge of supporting AI for sustainable development in ways that avoid reproducing dependency on any single bloc and promote multilateral governance, equitable partnerships, and local capacity building.

## Promising applications of AI for development

Pilot projects and early-scale deployments show that AI can play a pivotal role in advancing the SDGs, particularly in food security (SDG 2), health (SDG 3), education (SDG 4), clean energy (SDG 7), decent work and economic growth (SDG 8), climate adaptation (SDG 13), and strong institutions (SDG 16). In many cases, AI applications are affordable, scalable, and designed for contexts where resources are scarce. This section highlights promising applications of AI in key development sectors. A broader set of examples is provided in Annex A, which demonstrates the diversity of innovation across sectors and regions.

### Health systems and public health

AI offers transformative potential in healthcare delivery and disease prevention (Ciecierski-Holmes et al., 2022). AI-powered clinical tools can increase the quantity and quality of care received. AI applications are particularly useful in expanding healthcare in rural and remote areas. This may improve access for women and girls who face mobility, financial, or cultural barriers to reaching clinics. Projects such as PROMPTs in East Africa, supply-chain forecasting tools in India, and AI-driven disease tracking in Latin America are scalable applications of AI that directly improve primary care, access to medicines, and control of infectious disease.

The success and scalability of AI-driven health outcomes is so far largely based on sustained donor or government funding that often come with conditions. Importantly, these applications require large, regularly updated datasets which are scarce across most LMICs. Most AI systems are trained on data collected outside the context of implementation, which risks additional bias and potentially harmful results. The absence of robust women's health data illustrates this gap, lowering the transformative effects of AI on public health (UNESCO, 2023). IDRC-funded research in Africa, Asia and Latin America offer optimism that efficient and affordable applications can be sustained in places outside of the Global North (see: Sinha, 2025, for a comprehensive set of global health cases funded by IDRC).

**Box 1: PROMPTS Maternal Health in Kenya**

The PROMPTS platform, developed by Jacaranda Health in Kenya, is an AI-enabled SMS service that provides maternal health information and support to pregnant women and new mothers. The system sends stage-specific messages and uses natural language processing to triage user responses, flagging high-risk cases for follow-up by healthcare providers. PROMPTS has reached over one million mothers across Kenya, improving early detection of complications and encouraging health-seeking behaviors. As a low-cost solution being scaled across Sub-Saharan Africa, it demonstrates how AI can strengthen health systems by enhancing access to timely, context-relevant information (IDRC, 2024; Jacaranda Health, 2024).

### Agriculture and food security

Agriculture is the backbone of many economies and is central to food security. AI in agri-food technology is projected to grow at an annual rate of 23% between 2023 and 2028 (World Bank, 2025), driven by a need for sustainable farming, labour shortages, and rising food demand. AI tools that integrate satellite imagery, weather data, and pest monitoring are helping smallholder farmers optimize planting cycles and adapt to climate shocks (Ozor et al., 2025). Drones with high-resolution sensors allow real-time monitoring of crop health and nutrient levels (World Bank, 2025). However, these tools must be designed for inclusion. Agri-food innovations must be affordable, accommodate communities with poor connectivity, and remain resilient during

network disruptions. There is also a risk that technology-enabled large farms significantly outpace smallholders, and that automation displaces rural labour (Schoeman, 2024). Thus, automated technologies should not be designed with the intent to replace labour but complement it to improve efficiency. Schoeman (2024) provides four areas of priority to strike a balance between the benefits and risks of AI in agriculture: 1) building strong data and technology infrastructure, 2) championing farmer-centric solutions, 3) balancing innovation with demographic and environmental transition, and 4) upholding ethical standards in AI and data use.

**Inclusive business and finance**

Micro, small and medium enterprises (MSMEs) provide most employment in LMICs but face major barriers to growth, especially accessing finance and digital tools. AI-enabled credit scoring systems are helping to bridge this gap by drawing on alternative data sources, such as mobile phone usage patterns, transaction histories, and social network activity, to extend financial services to entrepreneurs who lack traditional collateral (World Economic Forum, 2025).

**Box 2: AI Credit Scoring in the Philippines**

Fintech firms in the are using AI to extend Credit to populations who lack traditional financial histories. Filippino platforms like GCash use machine learning on telco and mobile transaction data to generate alternative credit scores, while JuanScore applies deep learning to assess borrower risk in real time. These approaches have expanded financial access to millions, but they also raise concerns about data privacy, algorithmic bias and transparency, and the potential for over-indebtedness.

**Clean energy and climate adaptation**

AI has a pivotal role to play in advancing clean energy transitions. Globally, AI tools are being applied to optimize renewable energy, enhance grid reliability, and improve climate forecasting. For example, Brazil has emerged as a testing ground for AI-grid management, with officials leveraging its renewable-heavy grid to entice major investments (Worland, 2024). Brazil's grid has become a strategic asset in attracting foreign investment as global companies seek clean energy to meet climate commitments.

Beyond grid management, AI is also being deployed to support climate adaptation in highly vulnerable contexts. In South Asia, AI-powered flood forecasting systems provide millions with early warnings, reducing disaster impacts (UNDP, 2023). In Sub-Saharan Africa, AI tools are being piloted to predict droughts and optimize irrigation scheduling, supporting food security under changing climate conditions. Additionally, AI-enhanced satellite monitoring is helping LMICs track deforestation, tree growth, and biomass

changes, enabling more effective participation in climate finance and carbon markets (Ministry of Agriculture and Rural Development of Vietnam 2023).

An important note to keep in mind are the growing debates on "techno-solutionism" in climate governance, where AI is presented as a silver bullet for mitigation and adaptation. Managing the climate crisis requires systemic changes in energy use and governance, with AI serving as a complementary tool rather than a substitute for political will, equitable finance, and sustainable transformation.

**Peacebuilding and conflict management**

Scholarship on AI has extensively examined ethical concerns and militarization but comparatively little literature addresses its impact on what technology can do to achieve peace and provide humanitarian aid (Giovanardi, 2024, p. 2). Peacebuilding and conflict management are one of the most promising areas in which AI may shape global security (Ianese, 2024). Mäki (2020) identifies three areas of opportunity: AI-assisted conflict analysis, early warning systems, and support for human communication. The United Nations Institute for Disarmament Research (UNIDIR), for example, highlights how predictive analytics and natural language processing (NLP) can enhance early warning systems, giving peace operations new tools to detect risk of violence and intervene before they escalate (UNIDIR, 2022).

Other uses include AI-assisted drones to deliver supplies in conflict-affected regions. These drones use machine learning algorithms to optimize flight routes under volatile conditions, reducing delivery delays and reaching populations cut off by conflict. These technologies, if embedded within cooperative governance frameworks, could strengthen preventive diplomacy and peacekeeping missions by enabling faster, evidence-based interventions (UNIDIR, 2022; Albrecht, 2023; Thompson & Piirtola, 2024).

**Box 3: Hate Speech Detection in Myanmar**

In Myanmar, AI has been used to identify hate speech and incitement to violence on social media platforms, particularly relating to the persecution of Rohingya communities. NLP models detect and flag harmful content in Burmese and related dialects, supporting both content moderation and conflict prevention efforts (Mozur, 2018).

**Labour markets and skills**

Artificial intelligence is emerging as one of the most transformative forces in the global economy with major implications for the future of work. McKinsey Global estimates that generative AI could add between $2.6 trillion and $4.4 trillion annually across 63 use cases — comparable to an economy the size of the United Kingdom Institute (Chui et al., 2018). This would increase the total economic impact of AI by 15 to 40 percent, with about three-quarters of the value concentrated in customer operations, marketing and sales, software engineering, and R&D (Chui et al., 2018). Globally, nearly 40 percent of jobs are exposed to AI, and as much as 60 percent of jobs in AEs could be transformed through automation (Cazzaniga, 2024; IMF, 2024; Tavares et al., 2025). Unlike

earlier waves of automation that displaced mostly low-skilled routine work, AI has the capacity to affect both high- and low-skilled occupations, creating both opportunities and risks. Research generally shows that AI tools can significantly enhance worker performance and productivity, especially for less experienced workers and those with lower baseline skills (IMF, 2024).

The Tony Blair Institute for Global Change (2024) finds that although some job displacement is expected, AI will likely generate a long-term net increase in labour demand, redistributing jobs into emerging sectors. This means advanced economies will face greater risks of disruption, but they also stand to capture more opportunities if AI is harnessed effectively. For LMICs, the immediate risks of labour transformations are lower, but the opportunities are still significant. If measures like infrastructure, responsible financing, R&D, and labour shifts are addressed, LMICs could position themselves to capture more AI-driven benefits in the global economy (Cazzaniga, 2024; IMF, 2024).

### Education and human capital

Education is a core driver of human capital formation and sustainable development. Investment in girls' education yields some of the highest returns in development, improving health outcomes, reducing fertility rates, and breaking cycles of poverty. AI applications in education can help overcome persistent barriers that keep girls out of school or limit their performance. Adaptive learning platforms, such as those being piloted in India (Mindspark) and Kenya (Eneza), tailor math and literacy to individual student needs and allow students to progress at their own pace (Khan, Umer & Faruqe, 2024). This may be especially useful in including students with disabilities who face barriers to traditional schooling. AI in learning environments also helps foster critical digital skills, equipping students to participate in increasingly technology-intensive labour markets.

At a systemic level, AI-driven analytics enable data-informed decision making. For example, early warning systems that analyze attendance and performance data can identify girls at risk of dropping out due to household responsibilities or other absences and allocate resources more effectively (World Bank, 2024). The World Bank (2024) provides a comprehensive report on the digital transition of education systems and stresses that with gender inclusion, the digital transition of education systems can yield substantial benefits for all.

## Potential threats of AI for development

While AI offers significant promise for advancing sustainable development, it also introduces risks that could exacerbate inequality, undermine sovereignty, and destabilize fragile contexts. These threats have been grouped into six broad domains: climate change, economic inequality, digital colonialism and epistemic injustice, surveillance, and militarization, disarmament and global security.

### Climate injustice and environmental harm

AI has a significant impact on global energy demand despite being positioned as an invaluable tool for clean energy

transition. Developing and training AI models requires vast computational resources only accessible through advanced data centres that rely on evaporative cooling in water-stressed areas (Sirmacek et al., 2023). A UK report "*Water Use in AI Data Centres"* reported "substantial year-on-year increases in their data centre water consumption," with a 34% water use increase by Microsoft in 2022, and 20% by Google (Kenny, 2025). Ironically, there is no requirement for tech companies to submit mandatory reports on energy, water consumption, or carbon emissions for data centres in the UK (Kenny, 2025).

On a global level, the International Energy Agency (IEA) projects energy demand from data centres will more than double by 2030, to ~945 TWh (IEA, 2025). Global AI energy demand is projected to increase tenfold by 2026, with U.S. data centres alone expected to account for six percent of national electricity consumption (Ren & Wierman, 2024).

Beyond emissions, the global demand for AI hardware, especially batteries, has pushed cobalt, lithium, and copper extraction in Sub-Saharan Africa to unprecedented levels. The minerals required for building the hardware that powers AI do not originate in Silicon Valley tech firms but are extracted from mines in countries like the Democratic Republic of Congo (DRC), Zimbabwe, and Mozambique, where rich mineral reserves bring about severe labour and environmental abuses (Lemma, 2025).

**Box 4: Carbon Emissions from Training Algorithms**

Training a single large-scale AI model consumes thousands of megawatt hours of electricity and emit hundreds of tons of carbon, releasing vast quantities of water vapor into the atmosphere during cooling. One study found that training a machine learning algorithm emits up to 626 lbs of $CO_2$ — five times the lifetime fuel use of a car and 60 times that of a transatlantic flight (Mulgan, 2023). Critically, many of the data centres used to support AI do not need to report their water usage at all (IEA, 2025).

**Economic inequality**

AI adoption risks reinforcing the digital divide and deepening existing economic disparities. Cazzaniga et al. (2024) emphasize that AEs are much better positioned to harness AI because of their stronger digital infrastructure, higher-skilled labour force, and institutional capacity. In contrast, LMICs may face weaker infrastructure and governance, smaller talent pool, and limited financial resources. This asymmetry risks exacerbating inequality in LMICs by widening the gap between firms rapidly advancing exports and small, informal firms that employ a large share of low-skilled and manual labour (Lipcsey, 2025; Sinha, 2025). Without deliberate redistribution of resources, AI itself could determine who captures the gains of AI.

Generative AI also creates new risks in healthcare access and insurance markets. Through access to text-based claims, electronic health records, and other sensitive data, AI may allow insurers to set premiums based on risk profiles with far greater accuracy (Capero, et al., 2024). Companies may further exclude vulnerable populations from healthcare. AI in this context, according to Capero et al. (2024), is ripe for abuse by insurers who

wish to maximize profits over ensuring equitable access.

Finally, AI-enabled automation could encourage offshoring manufacturing back to AEs. This may reduce foreign direct investment in LMICs, limiting job creation and opportunities (Lipcsey, 2025). For export-dependent economies, this represents a serious threat to growth prospects.

**Digital colonialism and epistemic injustice**

Digital colonialism describes the concentration of AI infrastructure, data, and platforms in a small number of countries and firms, often headquartered in the United States and Europe. Importantly, though, it is not only a North–South phenomenon, but a wider structural challenge in how AI infrastructures are built and controlled. Mirroring earlier patterns of exploitation, digital colonialism risks creating external dependencies where LMICs supply raw data but lack control over how knowledge is produced or monetized (Couldry & Mejias, 2019). Extending this critique, Heeks (2021) emphasizes how AI systems risk overriding local epistemologies and reinforcing Western-centric knowledge hierarchies. This is especially of concern considering the stark differences in R&D globally.

Importantly, the West is not the only actor shaping imbalances that digital colonialism critiques. China has exported surveillance architectures through its Belt and Road Initiative and "Safe Cities" projects, exporting governance models that entrench authoritarian practices. (Feldstein, 2019). India, meanwhile, promotes digital public infrastructure such as Aadhaar and UPI abroad, offering these systems as low-cost tools for expanding access. Yet, when LMICs adopt them wholesale, they risk being locked into Indian-designed standards as data sources or testbeds for technologies developed elsewhere, without equal participation in shaping architecture, regulation, or value extraction.

**Surveillance**

AI surveillance risks extend deeply into development. UNIDIR stresses that technologies designed for peacebuilding can just as easily be repurposed for surveillance, disinformation, or lethal autonomous systems (UNIDIR, 2023a; UNIDIR, 2023b). In LMICs, predictive analytics are increasingly embedded in welfare targeting, credit scoring, and health systems. NLP and early-warning systems designed for peacebuilding can blur into population monitoring, potentially undermining public trust (CMI, 2024). For example, China's widescale domestic adoption of surveillance tools are embedded within their broader strategy of civil–military fusion which deliberately integrates AI tools developed for civilian use into military and surveillance infrastructures (State Council of China, 2017).

Feldstein (2019) notes that an increasing number of governments—including China, Russia, Saudi Arabia and the United States—are exploiting AI technology for mass surveillance purposes. China's "Safe Cities" program and major firms like Huawei, Hikvision, Dahua, and ZTE have supplied AI-enabled monitoring systems in at least 63 countries, 36 of which have signed onto

China's Belt Road Initiative (BRI). These exports are almost always accompanied by soft loans to subsidize the diffusion of new technologies (Feldstein, 2019).

U.S. firms, the other lead exporters, supply AI surveillance to at least 32 countries (Feldstein, 2019), though the total number is unknown. European and Israeli companies are also significant players. Liberal democracies are not only exporters but major users, with Feldstein's (2019) index showing 51% of 'advanced democracies' deploy AI surveillance technologies, meaning even democratic contexts risk overreach given AI's opacity and scale.

Weak data protection opaque decision-making makes AI especially susceptible to weaponization for misuse by state and private actors. The African Union (2022) warns that critical infrastructure in Africa is frequently procured from foreign cloud data and data service providers, raising issues of sovereignty and ownership. Without safeguards, AI surveillance tools risk targeting vulnerable groups or reinforcing bias under the guise of efficiency (GIRAI, 2025; Heeks, 2021; UNIDIR, 2022).

**Box 5: Civil–Military Fusion in China's AI Strategy, 军民融合, junmin ronghe**

China's Next Generation AI Development Plan (2017) identifies AI as a dual-use strategic tool essential to both national development and surveillance defence. Advances in civilian AI—such as computer vision, robotics, and NLP—are rapidly integrated into military and security domains through a national policy of civil–military fusion. This approach allows China to accelerate innovation and compete with the U.S. in what it frames as a global AI race (State Council of China, 2017).

**Militarization, disarmament, and global security**

The risks of applying AI in the military domain are profound. AI is not only fuelling another global technological arms race, it is destabilizing nuclear deterrence and disarmament agendas by normalizing autonomous weapons and increasing barriers to arms control verification (Garcia, 2018; Paoli & Afina, 2025). It particularly destabilizes nuclear deterrence by eroding the foundations of stability that rely on predictability and human judgement. Slgorithmically targeted disinformation campaigns and propaganda pose destabilizing risks to fragile contexts, while the dual-use nature of AI challenges existing arms control regimes that are not designed to govern private-sector platforms.

AI is increasingly integrated into military logistics, targeting, and decision-making. This raises concerns about unintended escalation and the erosion of human control over critical decisions (Paoli and

Afina, 2025). Regional perspectives collected by UNIDIR show that fragile states in Africa, Asia, and Latin America are particularly concerned about the destabilizing effects of autonomous weapons systems (Afina, 2023). As the UNIDIR cautions, the tools that support conflict management, peacebuilding and humanitarian aid often have dual-use risks (UNIDIR, 2023a; UNIDIR, 2023b).

At the strategic level, AI threatens to lower the threshold for war and deepen power asymmetries. Garcia (2018) argues that AI weapons will significantly diminish the ceilings for war to start, accelerating the dehumanization of armed forces by reducing human beings to data points for pattern recognition technologies. Much of the human judgement and moral responsibility is being stripped away. Algorithms programmed to strike and kill may also increase the likelihood of unpredictable and unintended violence (Garcia, 2024).

Civil society organizations echo these warnings. The Future of Life Institute (FLI) warns that integrating AI into nuclear command-and-control systems could accelerate response times, reduce opportunities for human hesitation, and heighten the risk of catastrophic miscalculation. Their research also highlights convergence risks across nuclear, chemical, biological, and cyber domains, where AI tools used in drug discovery or synthetic biology could be misused to generate novel toxins or pathogens (Chaudhry & Klein, 2024).

Rohozinski (2025) further argues that AI is becoming integral to global intelligence, risk analysis, and information warfare, leaving LMICs vulnerable to dependency on foreign digital infrastructure. His concept of the "brutalist web" captures how the very infrastructure LMICs depend on for connectivity, commerce, and governance can be weaponized in times of conflict. Specifically, the U.S., as the long-standing digital hegemon with control over platforms, cloud services, undersea cables and satellite networks, is producing a fractured, geopolitically contested digital landscape. The alleged leveraging of Starlink access in Ukraine illustrates how digital dependency can be weaponized in international power struggles (Rohozinski, 2025).

## Innovative reframing

The debate on AI and development cannot be confined to weighing opportunities against risks. It requires a reframing of the models through which technology is imagined, financed, and governed. Traditional aid paradigms—premised on North-to-South knowledge transfer and donor-led initiatives—are ill-suited to the data-driven infrastructure that AI requires. More suitable approaches emphasize equity, South-South cooperation and innovative financing on terms defined by the Global South.

### Post-aid paradigms

The post-aid paradigm refers to a shift in global development thinking away from traditional aid models, which frame poverty as a problem of resource scarcity to be fixed by external assistance, toward context-specific and results-oriented approaches to improve aid effectiveness. It recognizes that global economic systems, political power imbalances, and technological dependencies reproduce underdevelopment. Instead of providing

short-term aid, the post-aid paradigm emphasizes sovereignty, ownership, and justice by prioritizing locally-led solutions and alternative financing.

This reframing echoes critiques of digital colonialism where sovereignty and local ownership are undermined by external control over data and platforms (Lewis et al., 2020). The challenge is not just a lack of aid but adverse conditions of incorporation and participation in global markets and governance systems (Heeks, 2021). In essence, the post-aid paradigm calls for rights-based digital justice frameworks. Examples include the African Union's Data Policy Framework (2022) and various Indigenous-led data sovereignty projects such Concordia University's *Indigenizing AI* project (Visive AI, 2025). This initiative is about reframing AI through Indigenous epistemologies, governance and values.

### South-South cooperation

South–South cooperation offers a sustainable pathway for AI in development and alternative to traditional dependencies. IDRC-supported projects in AI for health—such as PROMPTS for maternal health in Africa, tuberculosis detection in South Asia, and mosquito vector control in Latin America—show that LMIC researchers can lead innovation when resources are decentralized (IDRC, 2024). These projects are rooted in locally led partnerships to ensure solutions are tailored to context rather than imported one-size-fits-all approaches.

### Alternative financing models

Financing is a critical bottleneck for aligning AI with the SDGs. The IMF (2024) notes that while AI could generate significant productivity gains, LMICs can only realize these benefits if they mobilize capital for digital infrastructure and skills. To treat AI as a global public good, financing mechanisms must also align with just transitions and realign incentives for funders to support AI for development (Mulgan, 2023). Alignment to alternative finance involves embodying the post-aid paradigms discussed above, which shift models' focus away from aid in the form of financial support from multilateral agencies (e.g., World Bank, IMF, bilateral donors), official development assistance (ODA) through grants or concessional loans, or private sector investment like foreign direct investment and venture capital. In a post-aid framing, alternative financing models are critical because the current mechanisms — largely short-term aid and for-profit private investment — are insufficient to meet the scale of need. Alternative models are better suited to address public goods (e.g., health, education, climate adaptation), reduce dependency on external actors, mobilize blended and pooled resources to de-risk investment, and build resilience by channeling financing toward long-term capacity like skills, data infrastructure, and compute access.

## Future directions

AI is not a distant worry but a present reality shaping all domains of life. With no signs of its development slowing, the challenge now for policymakers is to ensure that AI systems are deployed, governed and financed sustainably and equitably. Building on the evidence and reframing approaches outlined above, three broad directions emerge for the decade ahead.

### Strengthening AI governance for equity and justice

Governance will determine whether AI systems are harnessed for sustainable development or a driver of instability. Governance includes ethical frameworks, regulations, technical standards, public policies, and institutional responsibilities. These are needed to address privacy, transparency, bias mitigation, and oversight and accountability. Peace- and rights-based governance frameworks must be prioritized. Importantly, governance frameworks must integrate safeguards against military misuse, and advance participatory and inclusive that reflects diverse voices and regional priorities. At the international level, initiatives such as UNESCO's *Recommendation on the Ethics of Artificial Intelligence* (2021), the OECD AI Principles (2019), the G20 Principles for Responsible Stewardship of Trustworthy AI (2019), and the Global Digital Compact (2024), signal growing recognition that global coordination and cooperation is essential (Giovanardi, 2024). In March 2024, the UN General Assembly unanimously adopted a resolution on safe, secure, and trustworthy AI, while the UN Secretary-General's High-Level Advisory Body continues to advance recommendations for globally coordinated governance.

### Embedding disarmament into AI governance

Strengthening disarmament and nuclear stability requires proactive governance of AI in military and security domains. AI must be embedded within the broader disarmament and arms control architecture, rather than treated in isolation (UNIDIR, 2023a). This includes exploring how AI could enhance transparency and arms control verification processes. At the multilateral level, UNIDIR (2023b) proposes establishing UN-led platforms to align states on common principles for responsible military AI, which could evolve into voluntary norms, political declarations, or even binding agreements on specific applications. Confidence-building measures—such as transparency on doctrine, technical testing, and the human role in nuclear command and control—are also highlighted as urgent steps to prevent miscalculation (UNIDIR, 2022). Importantly, future disarmament agendas must clarify how International Humanitarian Law applies to lethal autonomous weapons systems, with growing calls for prohibitions on those that lack meaningful human control (UNIDIR, 2021). Together, these directions suggest that the path forward about embedding AI governance into the very structures that uphold nuclear deterrence and disarmament.

### Expanding South–South research and cooperation

The World Bank (2021) report *Harnessing AI to reach the SDGs* stresses that AI's contributions to the SDGs depend on cross-country cooperation and context-specific adaptation. Future directions should prioritize South–South research partnerships in areas like health, agriculture, and education, modeled on IDRC-style consortia that foreground local leadership and participatory design. Addressing the overabundance of research and frameworks produced by outside actors requires greater investment in research centres,

partnerships, and observatories within the Global South with the recognition that local researchers are best positioned to identify context-specific risks and opportunities.

Recent policy declarations and intergovernmental summits aim to steer regional cooperation on AI governance and development, such as the African Observatory on Responsible Artificial Intelligence, the *Declaration of Santiago* (2023) and the *Declaration of Montevideo* (2024). Regional networks, including the AU's efforts to develop digital justice frameworks, China's Belt and Road Initiative, and India's export of services like Aadhaar and UPI as public goods illustrate how digital infrastructures are increasingly deployed as instruments of influence.

Emerging South–South initiatives like the Pan-African e-Network Project demonstrate the potential for autonomous innovation. At a global policy level, UNDP in collaboration with other partners launched the Data to Policy Network for Policymakers initiative, a peer-to-peer platform fostering South–South learning in data-informed policymaking (UNDP, 2023).

Another key enabler of such cooperation is the Global Index on Responsible AI (GIRAI), the first global study to gather primary data on AI commitments and practices from 138 countries (Adams and Grossman, 2025). Its findings were explicitly intended to amplify voices in Global South AI governance debates. GIRAI's metrics have already shaped Colombia's and Kenya's draft National AI Policies, UNESCO readiness assessments in Kenya, Rwanda and Mauritius, OECD–EU dialogues, and government discussions involving UNDP, APEC, and the Organization of American States. These efforts demonstrate South—South and triangular cooperation.

**Innovative development finance for AI**

Echoing *Harnessing AI to Reach the SDGs* (Mazzi & Floridi, Eds., 2023), future financing should prioritize approaches that connect capital flows directly to SDG outcomes. Structural reforms in financing and taxation will be essential to ensure benefits are distributed equitably. Caparo et al. (2024) argue that many tax codes in advanced economies favour investment in automation over labour, penalizing firms that hire or train workers. A more symmetric tax structure could help shift incentives toward human-complementary technologies. Global cooperation will be required to design fair tax and redistribution tools. This is already being challenged, as seen when Canada and France proposed digital service taxes on major technology firms and the United States responded with retaliatory tariffs (Reuters, 2025).

Specific instruments offer means to scale responsible innovation. These include blended finance to de-risk private capital, government-backed programs that help start-ups and small firms scale up, and concessional capital, loans or investments on more favourable terms than market conditions, to give projects time to become sustainable, especially in contexts where commercial investors are reluctant (Mazzi et al., 2023; Stephenson et al., 2023). Funds, prizes and public procurement are other means which create competition and reward solutions that target development priorities. For

example, Grand Challenges Canada (GCC) is an organization that launches innovation competition. GCC offers blended finance, investment funds and gender lens investing, and launch innovation competitions.

### Embedding environmental sustainability and social equity into AI design and financing

At present, the majority of AI investment is in military and defence sectors. The emerging PeaceTech movement seeks to rebalance these priorities by positioning technology for peacebuilding and humanitarian action at the centre of development finance (Giovanardi, 2024). Extending this trajectory, development finance must also prioritize green and inclusive financing even in the face of rising military budgets around the world. On the environmental front, international standards should require companies and governments to disclose the carbon and water footprints of AI models. This requires transparency on where, when, and how data are collected and used.

Embedding social equity into AI design and financing mechanisms is also essential. AI can help close the gender gap in healthcare by connecting patients in remote and underserved areas with untapped pools of female doctors, expanding both access to care and opportunities for women to remain in the workforce. It can overcome gender gaps in schooling through flexible and personalized learning opportunities. In entrepreneurship, AI can lower entry barriers by facilitating women's participation in digital markets. Despite this potential, GIRAI finds that only 24 of 138 countries assessed mention gender in their AI frameworks, and fewer still provide actionable strategies or resources. A lack of gender-disaggregated data further hampers effective policymaking. Investment in such data is essential.

## Conclusion

AI has already begun to expand into virtually every facet of society in ways that are profoundly altering economic and social structures. Current trajectories risk exacerbating economic, social and environmental inequalities if left unchanged. This is especially likely given the concentration of AI investment in military and commercial applications. Yet AI also offers powerful tools for inclusive health systems, equitable education, peacebuilding, and climate resilience. As Giovanardi (2024) importantly points out, a similar approach to the multilateral agreements for de-escalation and arms control during the nuclear age may be needed to mitigate risks that could cascade globally in ways unparalleled by previous technological revolutions.

Given AI's unprecedented speed of diffusion, dual-use potential, and truly global reach, governance frameworks must aim to prevent harms of an unparalleled scale, ensuring that risks are contained through cooperative mechanisms rather than managed in isolation by individual states. This also means recognition of the threat of ubiquity: the seemingly inevitable existence of AI across sectors and in daily decisions, like how people access health care, learn, work, communicate, shop, and travel (Sinha, 2025). On the question of harnessing AI to reach sustainable development, the challenge, then, is not whether AI will transform development,

but whose priorities and values will shape that transformation.

## Recommendations for Global Affairs Canada and Canada's International Development Research Centre

To harness AI for development redefined, Canada and its partners must support approaches that are not only technically innovative, but also socially just and environmentally sustainable. It is recommended that Global Affairs Canada (GAC) and IDRC consider the following recommendations:

1. **Support a South-Led AI Commons for Public Good**

   Back regional consortia in Africa, Asia, and Latin America to scale open and shared digital infrastructure (e.g., datasets, benchmarks, algorithms) for health, education, and climate adaptation. GAC could channel support through its *Partnerships for Development Innovation Branch*, while IDRC increases its research funding to strengthen Southern leadership in responsible AI and governance.

2. **Strengthen a Global South Compute-Sharing Cooperative**

   Invest in regional compute-sharing cooperatives governed by universities and civil society. IDRC's AI4D program could anchor pilots in Africa and Latin America, while GAC supports cooperatives as core digital infrastructure through is digital inclusion programs and its climate finance initiatives.

3. **Expand Innovative Finance for Inclusive AI**

   Move beyond traditional grants by supporting blended finance models that channel public, private, and philanthropic investment into gender-transformative, climate-smart, and public-interest AI applications. GAC could convene partners via its *International Assistance Innovation Program* while IDRC ensures projects are evidence-based and accessible for women- and youth-led innovators.

4. **Embed Gender Equity Across AI Polices and Investments**

   Make gender-transformative design a non-negotiable condition for any AI policy or initiative supported by GAC/IDRC. This includes targeted programs to empower women and girls (STEM scholarships, incubators, digital literacy programs) as well as mainstreaming gender at every stage of AI governance and deployment. GAC can align this with its *Feminist International Assistance Policy* (FIAP) while IDRC could lead the development of gender-sensitive AI assessment tools for governments.

5. **Support Indigenous-Led AI Pathways**

   GAC and IDRC should strengthen initiatives that embed Indigenous knowledge and governance into AI systems. Backing projects like Concordia's *Indigenizing AI* can provide models reflective of diverse cultural contexts for meaningful collaboration with Indigenous

communities. Extending this trajectory to Indigenous populations in the Americas, Asia, Africa, and Oceania can help resist epistemic injustice, strengthen digital sovereignty, and ensure AI reflects diverse worldviews, languages, and priorities.

6. **Back a Regional Foresight and Governance Initiative on AI**

   Support LMIC governments and regional platforms (e.g., AU AI Strategy, Latin American AI summits and declarations) in developing foresight, risk assessment, and adaptive regulation. This should also include peace and disarmament dimensions, such as safeguard against misuse in autonomous weapons or nuclear systems. GAC could support the creation of a foresight and governance hub, while IDRC supports building it out through research partnerships with Global South universities, think tanks, and civil society groups.

## Annex A: Applications of AI in Development

| Case Study | Location & Scope | Key Features |
|---|---|---|
| **Jacaranda Health's PROMPTS Platform** | Kenya, Nigeria, Ghana, Eswatini; maternal & child health | AI-enabled SMS platform uses NLP to provide pregnant women with personalized messages, answer health questions, and triage urgent risks. Reached nearly 3M women across 1,000+ facilities in Kenya; now piloted in Ghana, Nigeria, Eswatini, and Nepal (IDRC, 2025; Sinha, 2025, p. 17). |
| **AI4GH – Artificial Intelligence for Global Health (IDRC)** | Global South; Responsible AI in health | Funds LMIC researchers to strengthen health systems with responsible AI, focusing on sexual, reproductive, and maternal health. Projects include epidemic preparedness, dengue surveillance (Ghana/Philippines), Aedes virus early-warning (Dominican Republic), and representative LMIC datasets (IDRC, 2025). |
| **AI-Optimized Medicine Supply Chains** | Sierra Leone, Nigeria, Malawi, Rwanda, Ghana | Decision-aware machine-learning system improved essential medicine allocation across 1,040 health facilities in Sierra Leone. Similar AI systems strengthen vaccine supply chains in Nigeria, Malawi, Rwanda, and Ghana through logistical coordination (Khan et al., 2024). |
| **Drones for Medical Supply Delivery** | Sub-Saharan Africa | AI-enabled autonomous drones deliver blood, vaccines, and medicines to remote areas faster than ground transportation. Madagascar, Rwanda, Malawi, and Senegal are early adopters of drones for health. Public–private partnership with California-based Zipline has created the world's largest logistics network in Sub-Saharan Africa (Appio et al., 2023; Damoah et al., 2021; (Knoblauch et al., 2019). |
| **Climate forecasting** | Global; Accurate weather forecasting | Aardvark Weather provides highly accurate weather forecasts using only a fraction of the computational power and energy required by traditional supercomputers. Aurora (Microsoft) delivers more precise forecasts of air quality, ocean waves, tropical cyclones, and global weather patterns, outperformed conventional systems in 74–92% of cases. |
| **THE Labs AI Education** | Pune, India; inclusive education | After-school AI literacy and bias-awareness program for low-income students, combining tech and critical thinking skills. |
| **Hello Tractor** | Africa; agriculture | Hello Tractor use AI, Internet of Things (IoT), and data analytics to match smallholder smallholder farmers with tractor owners, optimizing demand forecasting and rental services. Enables pay as you go financing, reaching over 4.5 million acres and boosting farmer productivity and incomes |

| Case Study | Location & Scope | Key Features |
|---|---|---|
| **AI for Smart Energy (SteamaCo)** | Kenya; rural electrification | AI-powered smart meters and distributed grids ensure affordable electricity in remote regions. Combines AI, IoT, cloud computing to optimize energy distribution, minimize grid losses, and improve reliability (Cheng & Yu, 2019; Ashden, 2015; Khan et al., 2024, p. 8). |
| **AI-Enabled Smart Electricity Grids** | Global; affordable and clean energy | AI systems optimize advanced grid technologies. Favourable policies and investments in smart grids are reducing infrastructure costs and making green technologies more affordable. |
| **Stream Ocean** | Global; ocean biodiversity | Uses AI/ML with underwater video cameras for real-time marine biodiversity monitoring. Supports coral restoration by generating advanced ocean data analytics and biodiversity metrics (Stream Ocean, 2024). |
| **Pano AI** | North America, Australia; wildfire monitoring | Uses AI to detect, verify, and classify wildfire events in real time. Improves resilience against intensifying climate-related disasters (Pano AI, 2024). |
| **Laina Finance** | Tanzania; Digital finance; women & youth financial inclusion | Tanzanian fintech startup offering flexible payment plans and instant credit to women and youth. Applies gender-specific financial solutions and actively works with strategic partners to digitize small businesses for better financial access (UNCDF, 2024). |
| **UNCDF DFS4Resilience Program** | Africa–Pacific–Caribbean; digital finance & economic resilience | 'Digital Finance for Resilience' deploys digital finance services to enhance financial inclusion for women, youth, and MSMEs, through scalable infrastructure, early emergency response, cash transfers, and innovative credit systems. |
| **PulseSatellite (UN Global Pulse + UNOSAT + Google Research)** | Global, use cases in Bangladesh, Somalia & Uganda; | AI-assisted, human-in-the-loop satellite imagery toolkit featuring models for mapping refugee settlement structures, transportation networks, and flood assessment. Accelerated analysis of disaster and displacement zones. |
| **AI for Early Warning Systems** | Sudan; peace and security | Local researchers, NGOs, and government agencies collectively strengthened Sudan's disaster risk reduction. Used AI-assisted analysis of radio and social media data to detect hate speech and escalating violence. Provided real-time insights to humanitarian and peacebuilding actors in fragile contexts (CMI, 2024) |
| **UNIDIR Ceasefire Monitoring** | Global, in contexts such as Mali (MINUSMA), Central African Republic (MINUSCA), and Cyprus (UNFICYP) | Assessment of technologies (drones, satellite imagery, acoustics, UAVs) to support remote ceasefire monitoring and verification in conflict zones (Grand-Clément, 2022). |

## Annex B: List of Global and Regional AI Initiatives

*Multilateral Principles and Agreements*

- OECD AI Principles (2019)
- G20 Principles for Responsible Stewardship of Trustworthy AI (2019)
- G7 Hiroshima Process (2023)
- UNESCO AI Ethics Recommendation (2021)
- Council of Europe Framework Convention on AI (2024)
- UN General Assembly Resolution on AI (2024)
- UN Ethical Principles for AI Use (UN System, 2022)

*South-South Observatories*

- African Observatory on Responsible AI
- Latin American Initiative on Responsible AI (ALAI)

*Regional Strategies*

- African Union Continental AI Strategy (2024)
- Latin American Santiago Declaration (2023)
- Montevideo Declaration and Roadmap (2024)
- ASEAN Guide on AI Governance and Ethics (2024)

*National & Multilateral Programs*

- Pan-Canadian AI Strategy
- Global Index on Responsible AI (GIRAI)
- AI Governance International Evaluation Index (AGILE)
- IDRC/AI4D Africa program

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