THE USE OF ARTIFICIAL INTELLIGENCE IN CITIES

What opportunities and challenges does AI pose in cities and how can international organisations support AI's ethical use?

A needs-based, mission-oriented and ethical use of AI, including genAI, is the most responsible way to create smart cities that deliver a sustainable urban future and enhance the well-being of their populations, leaving no one behind

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INTRODUCTION

It is predicted that artificial intelligence (AI) will generate great technological changes in our lives. Alongside the Internet of Things (IoT), blockchain, image processing and digital apps, AI is considered to be one of the most disruptive technologies. It is already impacting numerous areas, including education, healthcare, business, agriculture, and urban development.[1] Each year, generative AI acquires new capabilities, becomes more accessible, and scales up, creating massive opportunities and risks.

It is widely assumed that AI and AI-associated technologies will enhance economic growth and public well-being in 'smart cities'. This paper argues that local and regional governments (LRGs) should deploy these technologies, but only when they contribute to LRGs' public mission and enhance the quality of life and meet the needs of their citizens.

The paper examines the opportunities and challenges that the use of AI might pose in cities. It reviews where AI can best serve local governments and gives an overview of the guiding principles that ensure AI's ethical use. It argues that LRGs should be able to feed their needs and expectations into global processes for AI regulation.

"The last few years in AI have seen a shift away from using multiple small models, each trained to do different tasks—identifying images, drawing them, captioning them— toward single, monolithic models trained to do all these things and more."[2] The business sector has already taken important steps towards adaption. Public institutions are not the quickest to adapt, but local authorities are usually praised for being more reactive to meet the needs of their populations.

USE OF AI IN CITIES

By 2050, about 70% of the world's population will live in cities. Cities attract people because they offer a broad array of services and opportunities – in education, health, employment, housing, water and sanitation, transportation, as well as cultural activities. If cities can learn to use AI properly, they will manage their increasingly complex socio-economic systems more efficiently.

The 'smart city' is an urban development concept. Smart cities aim to improve their residents' quality of life by applying new technologies (AI, IoT, ICT, digitalisation, etc.) to make life more sustainable, resilient, adaptive, and efficient. A smart city relies on an ecosystem of objects and services that interact with each other and with their users. That said, smartness is a tool (use of technology), not an aim in itself; the aim is a city that is more sustainable, resilient, adaptive, efficient, etc.

Using AI technology, for example, cities can improve:[3]

- Traffic management
- Public transport
- Parking systems
- Waste management
- Infrastructure maintenance

[1] Ursino, D., de la Prieta Pintado, F., Artificial Intelligence as a Disruptive Technology—A Systematic Literature Review.

[2] Heaven, W. D., What's next for AI in 2024 | MIT Technology Review.

[3] Berry, I., 10 ways AI can be used in Smart Cities | AI Magazine.

In other areas, the use of AI is hotly debated due to the challenges it presents:

- Security and surveillance
- Energy consumption and distribution
- Predicting future needs
- Measuring the environmental effects of AI infrastructure

Cities have also started to rely on 'digital twins'. This concept goes one step further, offering a holistic model of sustainable urban planning. By combining digital technology, including AI-enabled algorithms, with urban operational mechanisms, it offers an opportunity to leap straight towards a future-proof urban upgrade. "Through the precise mapping, virtual-real integration and intelligent feedback of physical and digital cities, it promotes safer, more efficient urban activities and more convenient and inclusive everyday services, as well as helping to create more low-carbon, sustainable environments."[4]

Smart cities are highly exposed to the disruptive nature of AI; indeed, they are the outcome of disruptive innovations. **However, cities need to ensure that technological changes benefit all their citizens.** Cities that are smart and sustainable, from online services to developing citiverses, must have solid foundations; they must be able to apply AI applications across urban management, land use, data analytics, business development and environmental sustainability, while using data ethically and meeting the need for local public services.

AI and AI-enabled solutions provide new opportunities for service provision and support future-oriented urban development but to do this successfully, cities must adopt a people-centred approach. AI and other technologies can serve a common purpose if their implementation respects human rights and foster sustainable development. To **balance technological opportunities and socio-economic needs appropriately,** and ensure they are fully equipped to govern, to collect and analyse data, and to regulate, adopt and deploy AI-led solutions, local governments must invest in both building their capacity and meeting international standards. International organisations can help them in this complex endeavor.

ETHICAL USE OF AI BY LRGs

The massive use of AI in cities will probably "usher in a period of hardship and economic pain for some whose jobs are directly impacted and who find it hard to adapt — what economists euphemistically call "adjustment costs*." However, the genie* is not going back into the bottle. The forward march of technology will continue, and we must harness the new capabilities to benefit

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[4] WEF, Digital Twin Cities: Framework and Global Practices | World Economic Forum (weforum.org).

society."[5] Regulated and standardised frameworks as well as associated procedures to integrate technology in governance and decision-making, are required to make cities truly smart.

> *Understanding the value of locally-generated data and how data should be used for the common good are the primary responsibilities of local and regional governments.*

Obviously, **operationalising new technologies is also associated with challenges and risks.** These risks include bias and discrimination, worsening inequality, and human rights violations. AI-based solutions need to be lawful and ethical, and should involve all relevant stakeholders. "The private sector must lead the way in funding and supporting a responsible AI ecosystem. The solutions lie in open collaboration between policymakers establishing guidance frameworks, academic communities developing safety mechanisms, tech firms sustainably integrating AI, and civil society keeping its promise of empowerment for all."[6]

LRGs play a key role in developing the local AI ecosystem for smart cities. They:

- Build awareness at city level of AI's potential to solve local problems.
- Develop procurement policies that deploy AI ethically and incentivise its ethical use.
- Encourage urban businesses to use AI.

- Encourage local schools to teach AI and adopt AI and digitalisation.
- Invest in AI R&D and deploy AI applications innovatively and to good effect.
- Encourage the public to discuss the risks and opportunities of AI to meet local needs.

Data and data management are particularly important issues. The adoption of AI implies the adoption of data-driven decision-making, in various fields and at different levels of government. This change impacts job markets, healthcare, local businesses, and education. LRGs have a primary responsibility to understand the value of locally-generated data and how data should be used for the common good. They need to establish a robust framework to regulate national or local data, protect data privacy, and address data concerns associated with AI.

"Data is the new oil – and it's a good thing."[7] **Cities generate hundreds of petabytes of data** from which advanced machine-learning solutions can be derived. Data is sourced from public service providers as well as private businesses. Local governments are in a position – but sometimes lack the capacity – to regulate the ownership and use of data that they harvest from their own activities and by arrangement with private service providers.

The **Global Cities Hub recommends that LRGs should make sure that all the data they collect and use serve a mission-oriented purpose and the common good.**

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5 Agrawal, A., Gans, J., Goldfarb, A., and ChatGPT, ChatGPT and How AI Disrupts Industries (hbr.org).
6 Minevich, M., The Dawn Of AI Disruption: How 2024 Marks A New Era In Innovation (forbes.com).
7 Bhageshpur, K., Data Is The New Oil -- And That's A Good Thing (forbes.com).

INTERNATIONAL ORGANISATIONS AND THE USE OF AI

Most international organisations have started to integrate AI in their work, and some support initiatives that seek to shape and regulate AI at international level. This section reviews multilateral processes, many of which involve multistakeholder cooperation. It suggests that **LRGs should be involved in international regulatory processes from their inception.**

Various multilateral initiatives seek to regulate AI. The **UN Secretary-General's High-Level Advisory Board on AI** released its final report outlining "a blueprint for addressing AI-related risks and sharing its transformative potential globally." At the Summit of the Future in 2024, world leaders adopted the Pact for the Future, which includes a **Global Digital Compact** for global cooperation to harness the potential of digital technology and close digital divides between and within countries. Governments committed to promote coordination and compatibility of artificial intelligence governance frameworks and to ensure that the application of AI fosters diverse cultures and languages and supports locally generated data for the benefit of countries and communities' development. The **Council of Europe** adopted in 2024 an international instrument on the development, design and application of AI systems.

In Geneva, which gathers an important number of international stakeholders, "most organizations seem to work in their silos, which makes it difficult to speak with a strong voice in global AI conversations. The majority of international institutions based in Geneva have already embarked on the AI journey, either by applying AI tools internally or by contributing to or building AI-enhanced instruments for global benefit. Directly and indirectly, Geneva is a part of how consequential AI decisions are taken."[8] International Geneva is at the forefront of the 'AI for Good' movement. Therefore, the **Global Cities Hub recommends using the convening power of Geneva** – based on the broad multistakeholder presence – to discuss AI-related disruption, including with LRGs, and develop common narratives and definitions.

The **International Telecommunication Union** (ITU) supports technical studies, and brings governments, industry and other stakeholders together to improve the reliability, security, and interoperability of urban ICT infrastructure. The ITU contributes to sustainable smart city development by setting standards and promoting global collaboration. Its '**Guide for smart and sustainable city leaders**'[9] sets out a strategy for sustainable local digital transformation. The **United for Smart Sustainable Cities** (U4SSC) supports cities and communities in accelerating digital transformation and achieving the SDGs. The **AI for Good Global Summit** is a leading United Nations platform that promotes the use of AI to improve health, mitigate climate change, gender rights, inclusive prosperity, and sustainable infrastructure; its concerns are highly relevant to LRGs.[10]

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8   Radu, R., The variable geometry of AI governance (genevapolicyoutlook.ch).

9   ITU, UNEP, WMO, UNU, Guide for smart and sustainable city leaders: Envisioning sustainable digital transformation (itu.int).

10   UN-Habitat and UNITAC, United Nations Innovation Technology Accelerator for Cities (UNITAC) Hamburg |.

'People-Centered Smart Cities' is a flagship programme of **UN-Habitat.** It provides strategic and technical support on digital transformation to national, regional and local governments. The **United Nations Innovation Technology Accelerator for Cities (UNITAC)** develops innovative solutions that accelerate the achievement of the SDGs, and tests ideas, tools, scenarios and solutions before deploying them in cities around the world.[11] The risk framework presented in UN-Habitat's white paper 'AI & Cities' (2022) promotes a people-centered approach to AI and community engagement.[12]

According to the **High Commissioner for Human Rights**, Volker Türk, "The human rights framework provides the foundation we urgently need to innovate and harness the potential of AI".[13] The use of AI affects several human rights, including the rights to non-discrimination, to privacy, to work, and to an adequate standard of living. LRGs consistently face such issues, which are concentrated in the dense social environment of cities. **OHCHR**'s programme B-Tech,[14] which seeks to improve the tech sector's implementation of the Guiding Principles on Business and Human Rights, is particularly relevant. Human rights mechanisms, notably UN Special Rapporteurs, are producing reports on key issues, including the right to privacy in the digital age, and the impact of AI technologies on freedom of expression.[15]

The **World Economic Forum** (WEF) Centre for Urban Transformation supports collaboration in cities to create more sustainable, inclusive, and resilient local communities and economies. WEF's White Paper 'Governing Smart Cities. Use cases for urban transformation' profiles governance and policy programmes designed to achieve responsible and ethical technology adoption. It addresses three policy challenges: making data available to the public; ensuring privacy; and improving access.[16]

LOOKING BEYOND GENEVA HERE IS A FURTHER LIST – *JUST FOR FUN GENERATED BY CHATGPT*:

"While there might not be specific guidelines exclusively tailored for the use of AI by local governments, several general AI ethics and governance frameworks provide principles that can be adapted and applied at the local level. Here are some relevant guidelines and guiding principles for the use of AI:

1. **OECD Principles on Artificial Intelligence.** Developed by the Organisation for Economic Co-operation and Development, these principles provide guidance for responsible stewardship of trustworthy AI. The principles cover fairness, transparency, accountability, and inclusivity, and can be applied by LRGs.

2. **EU Ethics Guidelines for Trustworthy AI.** The European Commission's guidelines emphasise human-centric AI that respects fundamental rights, ethical principles, and societal values. Local governments can align their AI strategies with these guidelines.

3. **IEEE's Global Initiative on Ethics of Autonomous and Intelligent Systems.** IEEE's framework offers principles for the

[11] UN-Habitat, AI & Cities, https://unhabitat.org/ai-cities-risks-applications-and-governance.
[12] UN-Habitat, AI & Cities, https://unhabitat.org/ai-cities-risks-applications-and-governance.
[13] OHCHR, Human rights must be at the core of generative AI technologies, says Türk | OHCHR.
[14] OHCHR, B-Tech Project | OHCHR.
[15] OHCHR, Is AI a force for good? | OHCHR.
[16] WEF, Governing Smart Cities: Use Cases for Urban Transformation | World Economic Forum (weforum.org).

ethical design and development of AI systems. It considers transparency, accountability, privacy, and inclusivity.

4. **UNESCO Recommendation on the Ethics of Artificial Intelligence.** UNESCO's recommendation emphasises that AI should respect human rights, diversity, and the environment. Local governments can use these principles to ensure they benefit society while minimizing potential harms.

5. **G20 AI Principles.** The G20's high-level principles address transparency, accountability, fairness, and privacy. While primarily aimed at national governments, they are also relevant for the development of AI policies at the local level.

6. **AI4People's Ethical Framework for a Good AI Society.** Developed by the AI4People initiative, this framework proposes ethical guidelines for the development and use of AI, including principles such as transparency, accountability, fairness, and sustainability.

7. **National AI Strategies.** Some countries have developed national AI strategies that include principles and guidelines for the ethical and responsible use of AI. Local governments can refer to these strategies and adapt relevant principles to their specific contexts."

GUIDING PRINCIPLES FOR THE USE OF AI BY LRGs

When they adopt guidelines and principles for the efficient and ethical use of AI-enabled technologies at local level, LRGs should choose an inclusive multistakeholder approach. International organisations should also involve LRGs in their workstreams, to help local decision-makers find effective smart strategies for their citizens.

The new 'Guiding principles for artificial intelligence in cities', published by U4SSC (ITU), sets out principles, enablers and governance methods for LRGs. It emphasises that ethical AI should be:

- Lawful;
- Privacy preserving;
- Fair and inclusive;
- Explainable and transparent;
- Accountable;
- Safe and secure;
- High performing and robust;
- Assessed for impact and sustainability;
- Enabling human autonomy.

Local governments have an increasing number of AI-based tools at their disposal. The guiding principles can help them deploy these responsibly and successfully. International cooperation will continue to be critical because the "exchange of knowledge at the local, regional, and international levels will help develop AI principles formulation and implementation and will also increase its sustainability in the long run".[17]

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[17] U4SSC, U4SSC Guiding principles for artificial intelligence in cities (itu.int).

UN-Habitat also supports national and local governments to harness digital technologies. It encourages the inclusion of marginalised and vulnerable groups in smart city and digital transformation processes. UN-Habitat has been mandated to develop **International Guidelines on people-centred smart cities** (see the table below).

"The guidelines, which will be developed by 2025, will serve as a non-binding framework for developing national and local smart city regulations, plans and strategies to ensure that digital urban infrastructure and data contribute to making cities and human settlements sustainable, inclusive, prosperous and respectful of human rights."[18]
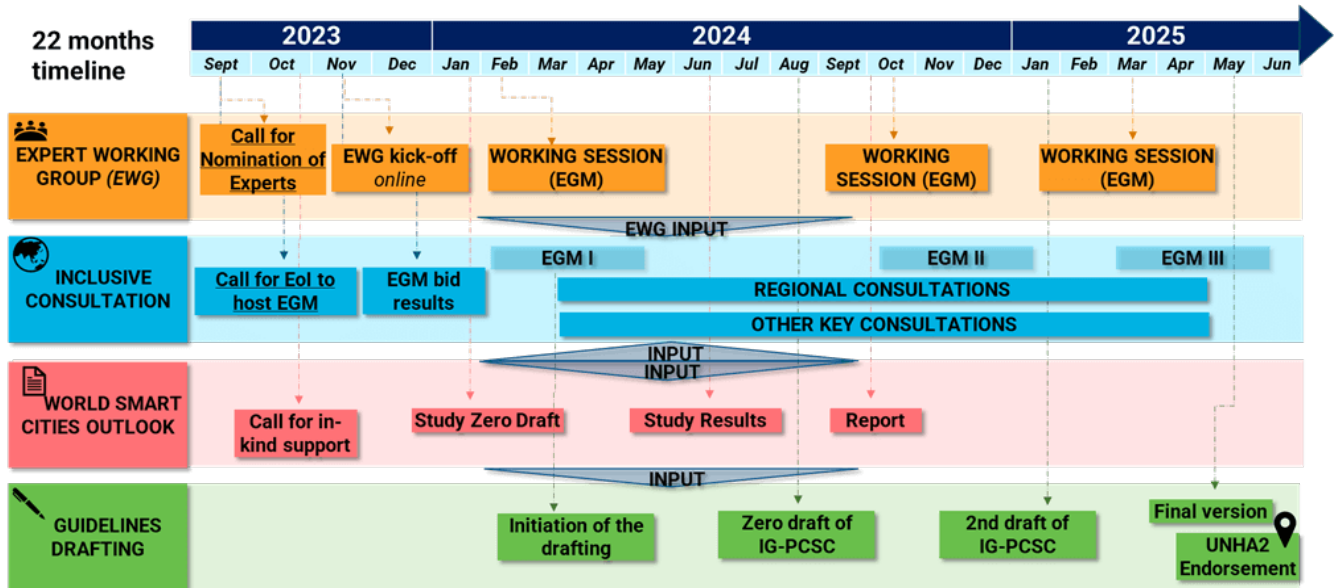
[18] UN-Habitat, International guidelines on people-centred smart cities | UN-Habitat (unhabitat.org).

CONCLUSIONS

Smart cities that want to deliver better public services and increase the well-being of their residents **need to deploy AI and genAI in ways that meet needs and advance their mission.** AI initiatives should align with LRGs' overall strategic priorities. LRGs that set clear goals and objectives can communicate their vision effectively and are in a position to make sound policy and technological choices.

The various guidelines and guiding principles developed or under development by relevant international organisations serve as frameworks for creating national and local smart city regulations, plans and strategies to ensure that digital urban infrastructures and data make cities and human settlements more sustainable, inclusive, prosperous and respectful of human rights.

Cities are especially active in innovation using AI. Smart cities are able to control and predict the consequences of planned services and infrastructures. To profit from the use of technology, LRGs need to set clear standards for the ethical use of AI. They also play a key role in developing local AI ecosystems for businesses, and making sure that new local technologies are used efficiently and ethically. International organisations should involve LRGs in their efforts to promote viable, human-centred smart cities.

Local governments are in a position to regulate data ownership and use in their own activities and by arrangement with private service providers. LRGs should ensure that all data is collected, processed and exploited ethically, to advance their mission and the common good.

Various multilateral initiatives seek to regulate AI and genAI. It would make sense to use Geneva's convening power of a broad multistakeholder presence to encourage discussion of AI-related disruption, to involve LRGs, and to develop common narratives and definitions.

The Global Cities Hub recommends that

- Relevant international organisations should formally and actively involve LRGs in an institutionalized manner in AI-related global decision-making processes, because cities are able to significantly enhance the implementation of international instruments;
- International organisations should take their fair share in identifying and promoting local best practices when creating international regulations, taking into account the expertise of those in local public service delivery.

THE GLOBAL CITIES HUB

The Global Cities Hub (GCH) **connects cities and local and regional governments to International Geneva's ecosystem**, which includes the United Nations, other international organizations, representatives of States, and a wide range of academic and civil society actors.

Our three main objectives

1. **We facilite participation.** We help cities and city networks to contribute to multilateral processes..
2. **We build partnerships.** We help cities and city networks to create relationships with international organizations and other actors in Geneva.
3. **We highlight urban concerns.** We provide a space in which Geneva-based actors can discuss urban issues and increase the impact of their work.