PART II. CASE STUDIES OF URBAN AI GOVERNANCE FRAMEWORKS

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The first report of GOUAI's Atlas of Urban AI (Galceran-Vercher and Vidal, 2024) reveals that while many cities are currently experimenting with artificial intelligence (AI), only a small percentage have implemented policies or overarching strategies to regulate its use and ensure alignment with key ethical principles. The emphasis recently has fallen on tackling immediate urban challenges in a solution-oriented pragmatism. As a result, there is a significant gap between the adoption of AI and the establishment of effective governance frameworks. However, driven by the public discourse and a rising tide of opinion pushing for global regulation of algorithms and AI, some local governments have taken the lead in creating their own governance frameworks. This trend is expected to grow exponentially in the years to come.

The following pages offer a collection of case studies from cities worldwide that have strived to establish AI local governance frameworks by adopting different policy mechanism to govern AI comprehensively. All policy mechanisms fall under one of the following categories: (1) principles, strategies and guidelines; (2) local regulations and laws; (3) transparency and explainability mechanisms; (4) algorithmic impact assessment; (5) audits and regulatory inspection; (6) human oversight, accountability, hearing and appeal procedures; (7) procurement conditions; (8) external/independent oversight and advisory bodies; (9) alliances, communities of practice and learning groups; (10) capacity-building programmes; (11) promotion of local innovation, knowledge and experimentation; (12) community engagement; (13) data governance; and (14) other policies and measures. It is worth noting that although some of the policies presented are believed to be under development, they may have already been implemented without notice.

The chosen cities vary in geographic location, size and income per capita. The following case studies are presented:

1.Barcelona (Spain)
2.Amsterdam (The Netherlands)
3.New York (United States of America)
4.San José (United States of America)
5.Dubai (United Arab Emirates)
6.Singapore (Republic of Singapore)

Case study 1: Barcelona

Population: 1,655,956 (2023)	**Income per capita:** €31,531 (2022)	**Region:** Europe

AI GOVERNANCE FRAMEWORK		
[1] Principles, strategies and guidelines	AI strategy	Municipal strategy on algorithms and data to ethically drive artificial intelligence: defines a set of guiding principles and 20 actions for ethical AI deployment, including: • the use of AI for automated recommendation systems, rather than decision-making systems. • transparency and auditability: the algorithmic models and databases should be accessible, understandable and auditable by the general public. • the establishment of liability regimes for any harm or loss that may occur.
	Local AI principles	Included in the AI municipal strategy: (1) action and human supervision; (2) technical robustness and security; (3) privacy and data governance; (4) transparency; (5) diversity, equity and inclusion ; (6) social and environmental commitment; (7) responsibility, democratic control and accountability
	Internal protocols for AI use	Definition of work methodologies and protocols for implementing algorithmic systems: defines the mechanisms for each stage of the tendering and implementation of AI systems by the city council and establishes the governance and supervision bodies that will ensure alignment with ethical principles.
[3] Transparency and explainability mechanisms	Public algorithm register (*)	Creation of a municipal register of current and future algorithms that impact municipal procedures and services. The register will be public and will also serve to classify algorithms according to the risk they pose, with clear explanations for citizens and other interested parties. For each registered algorithm, it will incorporate a public contact point that citizens can contact.
	Algorithmic transparency standard	Development of a common algorithmic model that ensures the appropriate use of data. Project developed with 7 other European cities within the framework of Eurocities.
	Municipal website disclosing all AI relevant information	Barcelona Digital City: municipal website disclosing all resources available in the city to boost digitalisation, including all relevant information regarding AI projects and initiatives.
[4] Algorithmic impact assessment	Risk assessment and management	Risk analysis (included in the protocol): The AI Technical Office evaluates the algorithms in use by the municipality and issues a report including the risk assessment. Depending on the risk determined by the office, the following steps are taken. All algorithms categorised under "unacceptable risk" are rejected, whilst "high risk" algorithms undergo a mandatory algorithmic impact assessment by the municipal Transversal Commission (see below).
	Human rights impact assessment	Mandatory algorithmic impact assessments for high-risk systems (included in the strategy and protocol).
[5] Audits and regulatory inspection	Audits	Mandatory audits for high-risk systems (included in the strategy and protocol). The conclusions will be made public through the algorithm register.

[7] Procurement conditions	Procurement clauses*	Inclusion of clauses related to digital rights in the tendering of solutions based on artificial intelligence.
[8] External/ independent oversight and advisory bodies	Advisory council	Advisory Council on AI, Ethics and Digital Rights: comprised of 15 independent and multidisciplinary experts. Its mission includes advising the government in the use of AI, conducting algorithmic impact studies on high-risk algorithmic systems and assessing the development of the municipal AI strategy.
[9] Alliances, communities of practice and learning groups	Community of practice member	Cities Coalition for Digital Rights (CC4DR) (founding member): a global city network of 60+ members working in the greenfield of digital rights-based policymaking.
[10] Capacity-building programmes	Municipal capacity-building	Municipal staff training (included in the strategy).
	Municipal body	Transversal commission to encourage ethical AI: comprising 25 members, its mission is to guide and align municipal policies to develop tools that use AI and promote interdepartmental collaboration. They developed the AI strategy.
[11] Promotion of local innovation, knowledge and experi-mentation	Local AI observatories	Global Observatory for Urban AI (GOUAI): an initiative of Barcelona, led by CIDOB and established in collaboration with Amsterdam and London, within the framework of the CC4DR, and the support of UN-Habitat. It conducts research on urban AI from an ethical standpoint.
[12] Community engagement	Public engagement	Communication channels with the public (included in the strategy). Promotion of spaces for reflection and debate on the impact of AI on public services (included in the strategy).
[13] Data governance	Data transparency	Open data BCN: the city's open data portal. It aims to maximise available public resources, making the data generated or stored by public bodies accessible, free and usable to all.
	Data rights	Decode project: a collaborative EU initiative to strengthen citizens' data rights and put them in control of their data, as well as enable them to share it for the common good.

* Planned policy mechanism not fully implemented in December 2024.

Case study 2: Amsterdam

Population: 921,402 (2022)	**Income per capita:** €54,700 (2022)	**Region:** Europe

AI GOVERNANCE FRAMEWORK		
[1] Principles, strategies and guidelines	AI agenda	Amsterdam Intelligence Agenda (2020-2024): highlighted the city's goals in the area of algorithms, particularly AI. The objectives focused on taking action that improved the quality of life for Amsterdam's residents, reduced the harmful effects of digitalisation and boosted its beneficial outcomes. Amsterdam's vision on AI (2024): in its new policy, the city outlines how AI should be integrated into urban life and how it should influence the city. The vision was developed through discussions with Amsterdam residents, experts and municipal staff. To put it into operation, the municipality is currently developing a new AI Agenda, expected to be published in 2025. It will provide guidelines for the responsible use of AI within the municipality, ensuring the technology is applied in an ethical, inclusive and sustainable way.
	Local AI principles	Tada principles endorsement (from the Tada manifesto) which guide the Amsterdam Digital Agenda and also apply to the AI field: (1) inclusive; (2) control; (3) tailored to the people; (4) legitimate and monitored; (5) open and transparent; (6) from everyone – for everyone. Local AI guiding principles (as included in Amsterdam's vision on AI (2024): (1) human-centric; (2) reliable; (3) future-proof.
	Guidelines, playbooks and manuals	Algorithms playbook: guideline document that sets out the city's integral approach and policy tools for the responsible use of algorithms. The Algorithm Lifecycle Approach consists of seven tools to manage, assess risks and investigate algorithms throughout their life cycle, namely: (1) algorithm register; (2) contractual terms; (3) objections procedure; (4) governance definition and life cycle model; (5) audit; (6) bias analysis model; and (7) human rights impact analysis model.
		The Fairness Handbook: standard for bias analysis, a step-by-step plan to evaluate a model for biases and mitigate their effects.
	Internal protocols for AI use	Governance establishment and life cycle model: specifies tasks and responsibilities, measures to be taken to prevent risks when applying algorithms, information to be documented and who is responsible if an algorithm does not meet its intended purpose. The Algorithm Lifecycle Approach describes the process of an algorithm from start to finish. Included in the playbook.
[3] Transparency and explainability mechanisms	Public algorithm register	Algorithm Register: overview of the AI systems and algorithms used by the municipality.
	Algorithmic transparency standard	Development of a common algorithmic model developed by 7 European cities within the framework of Eurocities based on Amsterdam's and Helsinki's transparency standard.
	Municipal website disclosing all AI relevant information	Municipal accessible portal disclosing all AI relevant information and resources, such as landmark projects and strategic documents.

[4] Algorithmic impact assessment	Human rights impact assessment	Human Rights Impact Assessment Model: based on practical lessons learned and existing tools (included in the playbook).
	Bias analysis	Step-by-step plan to evaluate a model for biases, including the following components: (a) defining the ("sensitive") groups to be studied; (b) drafting hypotheses on features that may lead to indirect biases; (c) selecting metrics that fit the project; (d) analysis of direct and indirect bias; (e) analysing bias on non-measurable variables; (f) weighing and reviewing biases found with responsible management; (g) mitigating biases where necessary; and (h) drafting conclusions. The above-mentioned Fairness Handbook provides the guidelines to conduct bias analysis.
[5] Audits and regulatory inspection	Audits	Annual audits: commissioned by the CIO's office and carried out by the Audit Service ACAM. A framework of standards has been developed for these audits (included in the playbook).
[6] Human oversight, accountability, hearing and appeal procedures	Feedback and objections procedures accessible for citizens	Objections procedures and guidelines for objections handlers (included in the playbook).
[7] Procurement conditions	Procurement clauses	Standard Clauses for Procurement of Trustworthy Algorithmic Systems: the pioneer standard stipulating the contractual conditions and information requirements needed from suppliers of procured AI systems.
[8] External/ independent oversight and advisory bodies	External advisory and oversight body	Amsterdam Personal Data Committee: advises the municipality on algorithms, data ethics, digital human rights and the exposure of personal data. Includes ethical assessment in the use of algorithms. The committee upholds transparency by organising public meetings and by issuing opinions.
[9] Alliances, communities of practice and learning groups	Community of practice member	Cities Coalition for Digital Rights (CC4DR) (founding member)
	Multistakeholder AI collaborations	Amsterdam AI: collaboration between the municipality, Amsterdam knowledge institutions, research centres, medical centres and the Amsterdam Economic Board. This collaboration focuses on responsible AI with a human-centred approach. NL AI Coalition: the city is part of the national working group on AI in the public sector, together with Amsterdam AI coalition. Smart Health Amsterdam network: the regional network for data- and AI-driven innovation in the life sciences and health sector in Amsterdam (also part of the Amsterdam AI coalition).
[10] Capacity-building programmes	Municipal capacity-building	Municipal staff training: all officials must take the National AI course. Legal, procurement and auditing services must take regular refresher courses. Municipal AI team creation.

[11] Promotion of local innovation, knowledge and experimentation	Innovative AI centres, hubs and laboratories	Civic AI Lab: set up by the municipality, the public university and a national ministry, the aim is to investigate how AI can counteract social inequality or prevent AI from reinforcing it. DataLab: creates open accountable tech solutions.
[13] Data governance	Data transparency	Data Amsterdam (beta version): the city's open data portal. It aims to maximise available public resources, making the data generated or stored by public bodies accessible, free and usable to all.
	Data rights	Decode project
	Data sharing mechanisms	Amsterdam Data Exchange (AMdEX): for data sharing between organisations through the creation of a digital notary.

Case study 3: New York

Population: 8,258,000 (2023)	**Income per capita:** €44,537 (2022)	**Region:** North America

AI GOVERNANCE FRAMEWORK		
[1] Principles, strategies and guidelines	AI strategy	AI strategy (2021-2023): foundational effort to foster a healthy cross-sector AI local ecosystem. The document established a baseline of information about AI to help ensure decision-makers were working from a shared understanding of the technology and the issues it presented. It included a set of ethics, governance and policy framework.
	AI action plan	AI Action Plan (2023-2025): includes 37 actions across seven initiatives to create governance for the city's use of AI. Mandates an annual progress report of the plan.
	Local AI principles	New York City AI Principles (included in its AI Action Plan): (1) validity and reliability; (2) social responsibility; (3) information privacy; (4) cybersecurity; (5) trust and transparency. Principles included in its former AI Strategy: (1) accountability; (2) fairness; (3) privacy and security; (4) community engagement and participation.
	Guidelines, playbooks and manuals	Guideline on AI Principles and Definitions: specifies the city's AI principles, provides concrete definitions of AI-related terms, and specifies related laws, policies, requirements and processes that apply. Preliminary Use Guidance: Generative Artificial Intelligence: includes terms and definitions, roles and responsibilities, guidance for GenAI use by the municipality, and specifies related laws, policies, requirements and processes that apply.
	Internal protocols for AI use	Internal protocols specified in the Action Plan, including a mandatory annual report by city agencies to expand public AI reporting.
[2] Local regulations and laws	Regulation of controversial AI application	Biometric data protection law for businesses. Recruitment technology required to audit for bias.
[3] Transparency and explainability mechanisms	Municipal website disclosing all AI relevant information	Municipal accessible portal disclosing all AI relevant information and resources, such as landmark projects and strategic documents.
	Municipal directory of procured AI tools (for internal use)	Establishment of an internal directory of procured AI tools and guidance on their appropriate use, shared across agencies to support visibility and access. Included in the action plan.
[4] Algorithmic impact assessment	Risk assessment and management (*)	AI Risk Assessment and Project Review Process (included in the action plan).
[7] Procurement conditions	Procurement clauses (*)	AI-specific procurement standards.

[8] External/ independent oversight and advisory bodies	External advisory and oversight body	AI Advisory Network: brings together independent experts from private industry, academia, labour and civic organisations to support the city's AI efforts on a consultative basis.
[9] Alliances, communities of practice and learning groups	Community of practice member	Cities Coalition for Digital Rights (CC4DR) (founding member).
[10] Capacity-building programmes	Municipal body	NYC Automated Decision Systems Task Force: established and tasked with issuing recommendations addressing how the city ought to manage the use of algorithms. It was the first of its kind in the country and culminated in the publication of an accessible report. Citywide AI Steering Committee: brings stakeholders from across city government together to provide input and oversight AI activities.
[12] Community engagement	Public engagement	Public listening sessions.
[13] Data governance	Data transparency	NYC Open Data: the city's open data portal. It aims to maximise available public resources, making the data generated or stored by public bodies accessible, free and usable to all.

* Planned policy mechanism not fully implemented in December 2024.

Case study 4: San José

Population: 969,655 (2023)	**Income per capita:** €139,761 (2023)	**Region:** North America

AI GOVERNANCE FRAMEWORK		
[1] Principles, strategies and guidelines	AI handbook	City's AI Handbook: provides comprehensive guidance on how to comply with the city's AI policy. It includes: (1) AI policy, (2) AI review (required for all procurements and data initiatives); (3) AI governance (the framework for managing and monitoring the AI life cycle); (4) GenAI guidelines.
	Guidelines, playbooks and manuals	Generative AI Guidelines: was the first step in a collaborative process to develop the city's overall AI policy. Registered users were invited to join the IT Department in a working group to share their experience and co-develop the city's AI policies.
	Local AI principles	San José AI Principles: (1) effectiveness (reliability); (2) transparency; (3) equity; (4) accountability; (5) human-centred design; (6) privacy; (7) security and safety; (8) workforce empowerment
[3] Transparency and explainability mechanisms	Public algorithm register	AI Inventory (Step 5 of the Review process): overview of the AI systems and algorithms used by the municipality.
	Municipal website disclosing all AI relevant information	Municipal accessible portal disclosing all AI relevant information and resources, such as landmark projects and strategic documents.
[4] Algorithmic impact assessment	Risk assessment and management	AI Risk Threshold Analysis model: conducted by the Digital Privacy Office (Step 2 of the Review process).
	Human rights impact assessment	Algorithmic impact assessment: conducted by the municipality when procured AI systems are categorised as medium-high risk by the risk analysis (Step 3 of the Review process).
[6] Human oversight, accountability, hearing and appeal procedures	Feedback and objections procedures accessible for citizens	Public Comment Form: citizens can submit comments on projects that involve a new usage of personal information using the form. Information on new projects can be found online.
	Internal monitoring and reporting	Annual Usage Report: the business-owning department of the AI system must submit an Annual Usage Report detailing: 1. Project summary 2. Required performance metrics 3. Future plans for the technology initiative The public can comment online on data usage and annual updates (Step 6 of the Review process).
[7] Procurement conditions	Internal protocols for AI procurement	AI Review framework: to assess the benefits and risks in municipal procurement. Review process: 1. Procurement request 2. Risk analysis 3. Algorithmic impact assessment (for medium-high risk systems): includes the municipal algorithmic impact assessment and vendor AI factsheet 4. Final review 5. Pre-launch preparation: data usage protocol, training users and AI inventory posting 6. Ongoing monitoring
	Procurement clauses	Vendor AI Factsheet: includes a factsheet and an algorithmic impact assessment questionnaire for the vendor (Step 3 of the review process).

[8] External/ independent oversight and advisory bodies	Multistakeholder advisory and oversight body	AI Advisory Group: led by the municipality, external stakeholders advise city departments and the CIO on the policies and activities related to AI governance. Consists of AI experts from industry, academia, civil rights and members of the public. The Advisory Group meets quarterly, and the decision-making power remains within the municipality.
[9] Alliances, communities of practice and learning groups	Multistakeholder alliance	GovAI Coalition: the San José led coalition brings together public agencies, civil society, academic institutions and companies to promote responsible AI in the public sector. Composed of 1,500+ members and 500+ local, state and federal agencies.
	Community of practice member	Cities Coalition for Digital Rights (CC4DR)
[10] Capacity-building programmes	Municipal working group	AI Working Group (AIWG): employees from various municipal departments discuss AI-related issues and projects in the city. Composed of department AI-leads and potentially other department representatives.
[12] Community engagement	Public engagement	If a procured AI system is considered of public interest, the municipality conducts online and in-person outreach (targeting communities with limited online access). Community feedback is then incorporated into the Data Usage Protocol.
[13] Data governance	Data transparency	San Jose CA Open Data Portal: the city's open data portal. It aims to maximise available public resources, making the data generated or stored by public bodies accessible, free and usable to all.
	Data protocol	Data Usage Protocol: protocol for medium-high risk systems to govern the collection, access, processing and sharing of data around and ensure compliance with the city's Digital Privacy Policy (Step 5 of the Review process).

Case study 5: Dubai

Population: 3,051,000 (2023)	**Income per capita:** €47,995 (2023)	**Region:** Middle East and North Africa

AI GOVERNANCE FRAMEWORK		
[1] Principles, strategies and guidelines	AI blueprint and roadmap	AI Roadmap (2024) is part of the emirate's Dubai Universal Blueprint for Artificial Intelligence and supports the goals of the Dubai Economic Agenda D33
	Local AI principles	AI Ethics Principles and Guidelines explained below: • AI Ethics Principles: (1) ethics (fair, accountable, transparent and explainable); (2) security (safe and secure); (3) humanity; (4) inclusiveness • AI Ethics Guidelines, make AI systems: (1) fair; (2) accountable; (3) transparent; (4) explainable
[3] Transparency and explainability mechanisms	Municipal website disclosing all AI relevant information	Municipal accessible portal disclosing all AI relevant information and resources, such as landmark projects and strategic documents.
[5] Audits and regulatory inspection	Self-assessment tool	AI ethics self-assessment tool: built to enable AI developer organisations or AI operator organisations to evaluate the ethics level of an AI system, using Dubai's AI Ethics Guidelines.
[11] Promotion of local innovation, knowledge & experimenta-tion	Innovative centres, hubs and laboratories	AI Lab: established in partnership with IBM, it works with a growing network of partners from across governmental and private sectors. Leads Dubai's AI Roadmap.
[13] Data governance	Data transparency	Dubai Pulse: the city's open data portal. It aims to maximise available public resources, making the data generated or stored by public bodies accessible, free and usable to all.
	Data sharing mechanisms	Data sharing toolkit: provides guidance and resources for individuals and private and public organisations to prepare for and design a data-sharing initiative.
	Data privacy	Synthetic Data Framework: designed to aid organisations adopt AI technology, preventing any violation of privacy.

Case study 6: Singapore

Population: 5,918,000 (2023)	**Income per capita:** €79,996 (2023)	**Region:** East Asia and Pacific

AI GOVERNANCE FRAMEWORK		
[1] Principles, strategies and guidelines	AI strategy	National AI Strategy 2.0 (includes an AI playbook).
	Local AI principles	Model AI governance framework's guiding principles: (1) explainability, transparency and fairness; (2) human-centric solutions. AI Verify governance principles: (1) transparency; (2) explainability; (3) repeatability/reproducibility; (4) safety; (5) security; (6) robustness; (7) fairness; (8) data governance; (9) accountability; (10) human agency and oversight; (11) inclusive growth, societal and environmental well-being.
	Guidelines, playbooks and manuals	Public Sector AI Playbook: a resource from the AI strategy for the government. The playbook explains AI, displays common applications in the public sector, provides steps on how to start an AI project and how to develop municipal AI capabilities. Model AI Governance Framework (2nd edition): provides detailed and readily implementable guidance on how to translate ethical principles into practical recommendations that organisations can adopt to deploy AI responsibly. Model AI Governance Framework for Generative AI Advisory Guidelines on Use of Personal Data in AI Recommendation and Decision Systems: done including public consultations. *Other sectorial guidelines:* AI in Healthcare guidelines: provides recommendations to encourage the safe development and implementation of AI medical devices and other AI implemented in healthcare. A Guide to Job Redesign in the Age of AI
[3] Transparency and explainability mechanisms	Municipal website disclosing all AI relevant information	Municipal accessible portal disclosing all AI relevant information and resources, such as landmark projects and strategic documents.
[8] External/ independent oversight and advisory bodies	External advisory and oversight body	Advisory Council on the Ethical Use of AI and Data: comprising 11 multidisciplinary members, it assists the government in developing ethics standards and governance frameworks, and publishes advisory guidelines, practical guides and codes of practice for voluntary adoption by industry.
[9] Alliances, communities of practice and learning groups	Multistakeholder AI coalition	AI Singapore: brings together research institutions and the business ecosystem to research on trustworthy AI and ethical governance, create open-source tools and develop talent for Singapore's AI efforts. Veritas consortium: comprising industry partners and the governmental Monetary Authority of Singapore, it aims to enable financial institutions to evaluate their AI- and data-driven solutions against the principles of fairness, ethics, accountability and transparency.
	Community of practice member	AI Verify Foundation: a global open-source community that convenes AI owners, solution providers, users and policymakers to build trustworthy AI.
[10] Capacity-building programmes	Municipal capacity-building	Municipal staff training: customised for different types of municipal users, Singapore has a directory of courses to achieve various competencies. Included in the Public Sector AI playbook.

[11] Promotion of local innovation, knowledge and experimentation	Innovative centres, hubs and laboratories	Centre for AI and Data Governance (CAIDG): interdisciplinary research centre with multistakeholder partnerships, from governmental agencies to intergovernmental organisations, corporations, academia, think tanks, NGOs and CSOs.
	Regulatory sandboxes	Sandboxes: GenAI Sandbox; Privacy Enhancing Technologies Sandboxes
[13] Data governance	Data transparency	Singapore's open data portal: the city's open data portal. It aims to maximise available public resources, making the data generated or stored by public bodies accessible, free and usable to all.
[14] Other policies and measures	Testing frameworks and toolkits	A.I. Verify: an AI governance testing framework and software toolkit for companies that validates the performance of AI systems against a set of internationally recognised ethical principles through standardised tests. Implementation and Self-Assessment Guide for Organisations (ISAGO): helps organisations assess the alignment of their AI governance practices with the Model Framework. Veritas open-source toolkit: enables the responsible use of AI in the financial industry.
	Green marks	Green Mark for Data Centres Roadmap: charts a sustainable pathway for the continued growth of data centres in Singapore. Green Mark for Data Centres Scheme: for operators that have successfully deployed green data centre best practices, demonstrating superior sustainability and environmental performance.