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OPEN WASTE DATA FOR A CIRCULAR MENA
PRACTICAL TRANSPARENCY FOR BETTER SERVICES, TRUST, AND A JUST TRANSITION

Elias El Hayek
Lawyer | Senior Legal Advisor, Transparency International Lebanon |
Associate Researcher, University of Sussex

Abstract

Solid waste systems in the Middle East and North Africa (MENA) struggle with low transparency, fragmented responsibilities, and limited reuse of information, which together hold back service quality and circular economy[1] outcomes such as prevention, reuse, and recovery. This paper proposes a practical path to routine disclosure by defining a minimum set of city level datasets and a simple scoring tool, the Open Waste Data Index (OWDI), which rates publication from zero to two across six pillars: contracts and projects, budgets and payments, service performance, environmental monitoring, citizen complaints, and data usability. The approach draws on recognised references for contracts, public finance, environmental and city indicators, and open data practice, while keeping only what is compatible with municipal workflows so costs remain low and replication is easy. The result is a method that any city, regulator, or civic team can apply to publish, verify, and reuse evidence on a regular schedule, improving value for money, strengthening integrity, and accelerating circular economy goals.

[1] **Circular economy** is a model that reduces waste and keeps materials in use through reuse, repair, remanufacturing, and recycling. It is widely recognised as part of climate and industrial policy roadmaps.

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IEMed. European Institute of the Mediterranean
aecid Agencia Española de Cooperación Internacional para el Desarrollo

Introduction

Cities in the Middle East and North Africa (MENA) region spend significant public resources on waste collection, transfer, disposal, and recovery, yet residents and oversight actors often lack basic information about who holds the contracts, what services are promised, how much is paid, and whether facilities meet standards. Transparency is not a cosmetic add-on. It is the foundation for routine scrutiny of routes, tonnages, costs, and environmental performance, and it is the starting point for circular economy planning that prioritises prevention, reuse, and recovery. Without clear, reusable data, cities cannot see where collection breaks down, where diversion stalls, or where contracts drift away from agreed scope and price (Kaza et al., 2018; World Bank, 2018).

Waste management is a basic service that shapes health, the environment, and public money in MENA countries. Cities are growing fast, and waste is rising faster than services. When waste is dumped or burned, it adds smoke and methane to the air, leaks into water, and brings pests. Missed pickups block drains and make floods worse, and plastics reach rivers and the sea, hurting coasts and tourism.

The data gap is legal, institutional, and technical. Access to information rules do not always translate into machine readable releases for the waste sector. Responsibilities are split among municipal units, environmental authorities, treasuries, and private operators. Contract texts may include broad confidentiality clauses. Portals often host static files with unclear licences and no predictable update schedule.

On the demand side, civil society and the media struggle to assemble a full picture or to compare across time and place. These conditions reduce value for money for taxpayers and service users by masking missed collections, cost overruns, scope creep, and weak competition in future tenders, and by limiting audit and community verification (International Budget Partnership, 2023). They also slow circular economy outcomes such as prevention, separation at source, recycling, and recovery because planners and operators cannot target hotspots, price services correctly, or verify diversion and compliance on a monthly basis (UN-Habitat, 2020; Kaza et al., 2018). In a region where more than half of municipal waste is still openly dumped, the absence of routine, reusable data keeps material value low, increases methane and leachate risks, and leaves potential jobs in repair, sorting, and reprocessing unrealised (World Bank, 2018; Yale Center for Environmental Law & Policy, 2024b). This brief sets out a workable response. First, it defines a minimum set of datasets that matter for oversight and for circular economy planning, using widely recognised references so that cities do not need to invent new structures. Second, it introduces the Open Waste Data Index (OWDI), a light scoring method from 0 to 2 that anyone can apply at a low cost to check publication, completeness, and reuse across six pillars. Third, it shows how to operationalise publication and verification through clear roles for municipalities, regulators, treasuries, operators, auditors, donors, and civic tech teams.

Transparency legal framework in the MENA region

The MENA region has witnessed the largest decline in data transparency among all developing regions, with its statistical capacity indicator dropping from 63 out of 100 points in 2005 to 54 in 2020, which directly affects the routine publication of waste budgets, contracts, monitoring, and monthly service results (Islam, 2023).

In Jordan, a 2007 access to information law was updated in 2024 to introduce the proactive publication of "essential information", yet vague "legitimate interest" requirements, the 1971 State Secrets and Documents Law, and an appeals council that is not independent still constrain disclosure (The Hashemite Kingdom of Jordan, 1971). In the waste sector, this means tenders, signed contracts, changing orders, and landfill or facility monitoring data are often difficult to obtain on time for public verification (The Hashemite Kingdom of Jordan, 2007; The Hashemite Kingdom of Jordan, 2024; Almadhoun, 2015). In Lebanon, Law 28 of 2017 amended in 2021 and Decree 6940 of 2020 require the proactive publication of organisational structures, budgets, decisions, contracts, and reports that directly cover municipal waste portfolios, but compliance is uneven, and the National Anti-Corruption Commission lacks binding powers to compel release (The Republic of Lebanon, 2017; 2020; 2021). Tunisia's 2016 organic law embeds maximum disclosure and mandates the proactive publication of budgets, procurement, and service delivery under an independent authority. These duties map directly to waste procurement bundles, programme budgets, monthly service indicators, and environmental monitoring, though underfunding and leadership gaps since 2021 have slowed enforcement (The Republic of Tunisia, 2016; ARTICLE 19 MENA, 2024). Egypt's 2014 Constitution declares information the property of the people, but there is no access to an information statute. Broad security grounds and weak rule-of-law scores leave no clear pathway to routinely publish or obtain waste-sector records such as landfill monitoring, project assessments, tender evaluations, and payment ledgers (Arab Republic of Egypt, 2014; Kodmani et al., 2016; World Justice Project, 2023).

Altogether, the frameworks show that legal bases to publish waste contracts, budgets and execution, performance indicators, and environmental monitoring exist to varying degrees, and, where environmental project rules apply, they can surface site information; yet gaps in scope, enforcement, and appeals often keep essential waste data out of public view (Beschel & Yousef, 2023).

Barriers that keep waste data out of sight

The main barriers are legal rules that do not require proactive publication, split responsibilities inside government, weak technical practices, and limited incentives to publish waste data. There is no binding regional framework like the European Union (EU) system based on the Aarhus Convention that creates a clear duty to publish environmental information, meaning that basic figures such as missed collection rates by route, weighbridge tonnage by station, landfill methane flare uptime, and contract key performance indicators often stay hidden (European Union, 2003; UNECE, 2021). Within government, sanitation units record tonnage, private operators hold vehicle

logs, environment authorities track emissions, and treasuries manage payments, but no single team owns the full picture or posts one clean machine-readable release on a set schedule. On the technical side, publication still means quarterly PDFs with inconsistent units, no metadata, no bulk download or Application Programming Interfaces (API), and unclear licences. Even when procurement or facility data exist, the limited use of the Open Contracting Data Standard[2] and the Open Contracting for Infrastructure Data Standard[3] makes it hard to compare cities and to connect contracts, facilities, and performance in one view (Open Contracting Partnership, n.d.-a; Open Contracting Partnership, n.d.-b). Political and economic pressures add to this. Government officials worry that numbers will be used against them; public-private partnership and concession contracts often include wide confidentiality clauses; and contractors sometimes claim proprietary control of logs and data, which blocks the release of the data (World Bank, 2019). On the demand side, civic space is narrow in many MENA countries, which weakens watchdogs, journalists, and civic tech groups that would reuse and explain the data (CIVICUS, 2024). Finally, incentives and resources are weak. Open data teams often do not have a budget for curation and quality assurance or a clear update calendar, and the publication of data is rarely tied to milestones or disbursements, even though international evidence shows that standard open data and open contracting practices improve competition, value for money, and service delivery, including sanitation (OECD, 2018, 2020; Open Contracting Partnership, 2022).

International best practices and indexes

Rather than reinventing the wheel, reformers in the MENA region can adopt proven standards and use established indexes to publish waste data and track results with clarity. To stay simple to implement and strong on results, the Open Waste Data Index (OWDI) will take from the following internationally recognised references what is directly compatible with city waste services, align units and definitions, and leave out what adds cost without value.

Table 1. Internationally recognised standards

Reference	What it measures/provides	What OWDI takes
Open Contracting Data Standard (OCDS) (*Open Contracting Partnership, n.d.-a*)	Structured fields for planning, tender, award, contract, amendments, implementation, payments, and performance	Core identifiers and fields to link waste tenders, awards, contracts, change orders, payments, and key performance indicators (KPIs)
Open Contracting for Infrastructure Data Standard	Project-level disclosure (scope, location, budgets, risks, milestones,	Project schema to structure landfill/sorting-plant pages with

[2] **Open Contracting Data Standard (OCDS)** is a global, open data schema for publishing the full lifecycle of public procurement: planning, tender, award, contract, and implementation with unique IDs, dates, values, suppliers, amendments, and payments. Using OCDS lets cities compare contracts and link them to budgets and performance across time and place.

[3] **Open Contracting for Infrastructure Data Standard (OC4IDS)** is a project level schema that complements OCDS for infrastructure. It structures information on project scope, location, budgets, funding, risks, milestones, physical and financial progress, and contract packages, and links those packages to the underlying OCDS records. This makes it possible to view facilities and their contracts alongside delivery results.

(OC4IDS) (*Open Contracting Partnership, n.d.-b*)	physical and financial progress)	scope, costs, contractors, and milestones
Open Budget Survey (OBS) (*International Budget Partnership, 2023, 2024*)	Transparency across eight key budget documents, public participation, and oversight	Signals gaps and priorities for publishing programme budgets and payment ledgers for waste services
PEFA Framework (*PEFA Secretariat, 2016*)	Strength of public financial management: reliability, transparency, control in execution (incl. procurement), reporting, and audit	Controls to link contracts to spending and to test arrears, commitments, and reporting consistency
Environmental Performance Index (EPI) (*Yale Center for Environmental Law & Policy, 2024a, 2024b*)	Waste management indicators (e.g., controlled disposal, recovery of materials/energy) with transparent methods	Outcome benchmarks and definitions to align disposal and recovery metrics
Waste Wise Cities Tool (WaCT) (*UN-Habitat, 2020*)	City method for per-capita generation, collection coverage, controlled disposal, recovery, and leakage hotspots	Field method and indicator definitions for monthly service tables and hotspot mapping
ISO 37120:2018; ISO 37122:2019; ISO 14001:2015; ISO 14031:2013 *(International Organization for Standardization, 2013, 2015, 2018, 2019*)	City service indicators; smart-city operations; environmental management systems; performance evaluation	KPI names/definitions and management processes to keep city metrics consistent and auditable
GRI 306: Waste (*Global Reporting Initiative, 2020*)	Disclosure of waste generated by type/destination, diverted from disposal, directed to disposal	Disclosure fields reusable for municipal service dashboards and facility reports
SDG 11.6.1 and 12.5.1 (*UN Statistics Division, 2023a, 2023b*)	Proportion of urban waste collected and managed in controlled facilities; national recycling rate and tons recycled	Globally aligned outcome measures for collection, controlled disposal, and recycling
EU Open Data Directive; Open Data Charter (*European Union, 2019; Open Data Charter, n.d.*)	Rules and principles for open formats, licences, bulk access/APIs, and proactive release	Usability requirements: machine-readable formats, open licences, bulk download/API, update cadence
Corruption Perceptions Index (CPI) (*Transparency International, 2025*)	Perceived public sector integrity on a 0-100 scale	Integrity context to underscore why routine publication and verification matter

Note. Compiled by the author

Methodology of the index and the indicator table

The OWDI checks whether a country or a city publishes the waste-sector datasets that matter for oversight and service improvement across five pillars: contracts and projects, budgets and payments,

service performance, environmental monitoring, and citizen complaints with a sixth meta pillar on open-data quality. Each indicator is scored on a simple 0–1–2 scale: 0 means nothing is published, 1 means something is published but incomplete or not reusable, and 2 means complete, up-to-date, machine-readable data with an open licence and a predictable update schedule. Results are comparable because the index borrows only compatible elements from recognised standards: contract and project fields follow open contracting principles, budget indicators align with public finance transparency frameworks, and service performance and environmental measures draw from established waste reporting norms. The publication practice is judged against open-data basics such as format, licence, cadence, and portal usability. Pillar scores are the sum of their indicators, and the overall score is the sum of the pillar scores, so youth teams or civil society organisations (CSOs) can replicate the method city by city at a low cost and track progress over time.

Table 2. Open Waste Data Index indicator table

Pillar	Indicator	What to look for	0 points	1 points	2 points	Score	Remarks
Contracts and projects 	Contract disclosure	Publication of tenders, awards, contract texts and key terms for collection, landfill, recycling	No tenders or contracts online	Some award/contractor info, scans or summaries only	Full texts and/or structured data with value, duration, obligations, KPI clauses; updated as new contracts are signed		
	Contractor performance clauses	Whether KPI clauses and service levels in contracts are visible	No visibility	Clauses mentioned in narrative reports only	KPI clauses openly published with the contract; links to KPI datasets		
					Section total	/4	
					Section percentage	%	
Budgets and payments 	Waste budget breakdown	Operating vs capital, by sub-program (collection, street sweeping, disposal, recycling)	No breakdown	Totals in a report or chart only	Itemised tables in open format, updated yearly		
	Actual spending and payments	Executed spending and payment ledgers linked to contracts	No actuals	Annual totals only, not linked to contracts	Contract-linked ledgers or execution reports in open format		
					Section total	/4	
					Section percentage	%	
Service performance 	Monthly tonnage and recycling	Regular data on tons collected and % recycled	No statistics	Occasional figures without cadence	Monthly or quarterly datasets or dashboard		
	Coverage and frequency	Collection frequency and area/route coverage	No statistics	Narrative mention only	Structured datasets or dashboard fields tracking coverage/frequency		
	Asset and route efficiency	Bin counts and route efficiency metrics	No info	One-off report figures	Reusable datasets with defined fields and periodic updates		
					Section total	/6	
					Section percentage	%	
Environmental monitoring 	Landfill gas emissions	Time-series for methane and related gases at major sites	No data	One-off summaries or press releases	Quarterly or monthly tables in open format		
	Water/leachate and groundwater	Test results around landfills or dumpsites	No data	Occasional Environmental Impact Assessment summary only	Regular results posted with dates, methods, locations		
	Incinerator/waste to energy stack emissions	Emission levels and compliance indicators	No data	Narrative claims only	Tabular time-series downloadable		
					Section total	/6	
					Section percentage	%	
Citizen complaints 	Complaint volume and categories	Number and type of complaints on missed pickup, illegal dumping	No public info	Aggregate annual total only	Monthly dataset with categories and timestamps		
	Resolution time and rate	% Resolved and time to resolution	No info	One-off figure in a report	Routine dataset with open fields for resolution and dates		
					Section total	/4	
					Section percentage	%	

Open-data quality (meta) 	Format and license	Machine-readable format and explicit open license	PDFs, images, or behind login	Some files but unclear license or mixed formats	CSV/JSON/XLSX with open license for all key datasets		
	Update cadence	Predictable updates suited to the dataset	No cadence	Irregular or ad-hoc posting	Defined schedule: real-time, monthly, quarterly, or annual		
	Portal usability and bulk access	Single place to find data, bulk download or API	Dispersed files, no bulk access	Some pages, no bulk option	Usable portal with search, bulk download or API access		
					Section total	/6	
					Section percentage	%	
Index total						**/ 30**	
Index total percentage						**%**	

Note. Compiled by the author

Conclusion and recommendations to turn OWDI into results

In conclusion, improving solid waste sector data transparency in the MENA region is achievable and would yield a high return. It can increase recycling, strengthen public trust, reduce the risk of corruption, and spark innovation. By learning from global practices and tapping youth and civic tech energy, the region can use the OWDI to drive steady progress. Transparency in waste is not only about data. It empowers citizens, protects the environment, and improves day-to-day governance of a service that touches everyone. Embedding simple transparency scorecards in investments gives European institutions, international funders and local governments a practical tool to track impact, reward reformers, and build confidence in the green transition. The OWDI can also plug directly into ongoing EU and regional initiatives that already fund circular-economy and waste reforms in the Southern Mediterranean, including SwitchMed (EU-funded support for sustainable consumption and circular economy), Med4Waste under ENI CBC Med (municipal waste governance tools and capacity), the NDICI-Global Europe instrument that finances environment and climate action with partner countries, and the Union for the Mediterranean (UfM)'s 2030 GreenerMed agenda promoting a green and circular Mediterranean economy (ENI CBC Med, 2023; SwitchMed, n.d.; Union for the Mediterranean, 2022). The moment is right to make open waste data a pillar of the circular economy agenda in the MENA region, pairing modern infrastructure with open and accountable service delivery. To turn the OWDI into concrete action, the path forward for each stakeholder should include the following steps:

- **Municipal governments should** publish easy datasets first, including collection schedules, annual tonnages, and facility locations on existing official portals; specifically the municipality's official website and, where available, the national open data portal, as part of proactive disclosure obligations; embed transparency requirements in new contracts; use OWDI indicators as an internal checklist to improve before any external review; invite youth and local tech groups to help build dashboards and prioritise datasets; and aim to join programmes like OGP Local[4] for support.
- **National policy-makers should** update access to information rules to mandate the proactive release of key environmental service data; provide a central platform such as a national waste data observatory that aggregates city data; and create a race to the top by recognising transparent cities and offering performance-based funding to those that meet clear benchmarks.
- **International donors and institutions should** link funding to concrete transparency deliverables; require public reporting for each EU or European Investment Bank (EIB) supported project, including

[4] OGP Local is the subnational programme of the Open Government Partnership through which cities and regions co-create time-bound transparency and participation commitments with civil society and publicly report on results.

construction progress and at least five years of operating data; sponsor OWDI pilots and technical assistance; enable peer exchanges with EU cities; fund portal and standardisation tools; and amplify regional success stories so others follow.

- **Civil society and youth should** use access to information channels to request missing files; reuse what exists, i.e., convert already-published data into easy, actionable outputs (quick charts from monthly tonnage and cost tables, maps of missed pickups or illegal dumping, and short, plain-language explainers that connect service gaps to complaint spikes), to show value **by turning posted tables into simple charts, mapping problem spots, and writing short, plain-language explainers that link costs, service gaps, and complaints;** build coalitions between environmental groups and open data advocates; and launch a public transparency tracker for waste where residents record whether their city publishes data, creating visible pressure for improvement. This practical reuse shows value, invites feedback, and motivates agencies to keep publishing.

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